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The ORGANIZATION AND ADMINISTRATION *of the* NEW JERSEY STATE HIGHWAY DEPARTMENT

—1941—

By
SIDNEY GOLDMANN
and
THOMAS J. GRAVES

Prepared for
ROGER HINDS
Governor's Examiner of the
New Jersey State Highway Department
as Part IV of his
Report to the

Honorable CHARLES EDISON
Governor of the State of New Jersey

New Jersey State Library

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ORGANIZATION AND ADMINISTRATION
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Governor's Examiner of the
New Jersey State Highway Department

TRENTON, NEW JERSEY
June, 1942

Letter of Transmittal

Trenton, New Jersey
July 14, 1942

Honorable CHARLES EDISON
Governor of New Jersey
State House
Trenton, N. J.

Dear Governor Edison:

It became evident, soon after I undertook to examine into the affairs of the New Jersey State Highway Department upon your order, that the full benefits of such an examination could not be realized unless investigation into possible irregularities were supplemented by a comparative study of the administration and organization of the Department. Such a study might serve as a basis for a sound reorganization of the agency and the taking of appropriate remedial measures.

After thoroughly canvassing the State, I concluded that the man best equipped to undertake the administrative study was Mr. Sidney Goldmann, who had been asked to join our staff. Mr. Goldmann had already rendered distinguished public service to his own City of Trenton. His training and experience in the law and in public administration qualified him for the very important study I had in mind.

To aid Mr. Goldmann, I was able to persuade the New Jersey State Chamber of Commerce to lend us Mr. Thomas J. Graves, who had been doing research work for that body, and was thoroughly familiar with governmental affairs in New Jersey.

Messrs. Goldmann and Graves devoted practically all of their time to gathering the information for this report from the middle of August to December, 1941. Mr. Graves was obliged to return to his regular duties in

December, but has since devoted such time as has been available to him in the preparation of the report. For the past six months Mr. Goldmann, at a great sacrifice of his personal practice, has devoted an enormous amount of time to completing the research work and to the actual writing of this volume.

Since I have not contributed to the research or composition that has gone into this study, I feel free to say that I believe this to be the most complete and usable study that has been made of any New Jersey department. I believe that it will be difficult to find a more ably conceived and conscientiously and skillfully executed study of any State highway department.

I am sure that this volume will constitute both a reservoir of data and information, and a model for highway officials and students of administration everywhere.

I think that it is proper to express my appreciation in this place for the work done by Mr. Goldmann. The report testifies to his untiring devotion to the task that had been assigned him. He is entitled to the gratitude of the New Jersey community for this definitive work.

Respectfully yours,

ROGER HINDS,
Governor's Examiner of the New Jersey State Highway Department.

Contents

PAGE

LETTER OF TRANSMITTAL vii
CHARTS xii
STATISTICAL TABLES xiii
PREFACE xvii

CHAPTER I

HISTORY OF THE NEW JERSEY STATE HIGHWAY DEPARTMENT 1
The Department under the Highway Commissions 14

CHAPTER II

THE ORGANIZATION OF THE NEW JERSEY STATE HIGHWAY DEPARTMENT 31
The State Highway Commissioner 33
The State Highway Engineer 44
Administration Division 47
Legal Division 57
Real Estate Division 63
Construction Division 69
Maintenance Division 91
State Aid Projects Division 107
Electrical Division 115
Equipment and Transportation Division 123
Laboratory Division 129

CHAPTER III

THE REORGANIZATION OF THE NEW JERSEY STATE HIGHWAY DEPARTMENT 137
State Highway Organization in the United States 138
State Administration Reorganization Proposals 142
External Reorganization of the State Highway Department 145
Internal Reorganization of the State Highway Department 151

CHAPTER IV

FISCAL ADMINISTRATION OF THE NEW JERSEY STATE HIGHWAY DEPARTMENT 163
The Fiscal Year of the Department 163
The State Highway Fund 167
The State Highway Department Budget 190
The Annual Budget and the State Highway Fund Appropriation Act 194
Relations to Other State Officers and Agencies 202
Highway Cost Allocation 219

CHAPTER V PAGE

THE WORK OF THE NEW JERSEY STATE HIGHWAY DEPARTMENT 229

Administration Division 230
Chief Clerk and Secretary 230
Chief Auditor and Accountant 231
Accounts Receivable 231
Insurance 232
Safety Education 233
Prequalification of Bidders 234
Personnel Administration 235
Payroll Procedure 256
Staff Conferences 260
Department Manual 261
Purchasing Procedure 262
Stores 273
Mail Room and Office Boys 277
Mimeograph and Printing Room 277
Central Files 278
Public Relations 280
Summary of Administrative Functions 284

Legal Division 285
General Solicitor 286
Legal Assistants 286
Supervisor of Titles 290
Title Officer 291
Workmen's Compensation and Claims Clerk 294

Real Estate Division 297
Appraisal Procedure 310
Condemnation Procedure 323
Right-of-Way Engineering and Mapping 336
Disposal of Excess Real Estate 338
Right-of-Way Widths 339
Roadside Control 342
Regulation of Attorneys and Agents 348

Construction Division 349
Routes 349
The Legislated State Highway System 357
Highway Planning 361
The Annual Highway Program 373
Surveys and Plans 377
Road Location 381
Design 384
Bridge Design 401
Contracts 407
Construction Work in Progress 419
Highway Costs 423
W. P. A. Projects 426

PAGE

Federal Aid Work 430
Roadside Improvement 439
Construction Work and the War 440
Reorganization 442

Maintenance Division 443
Annual Maintenance Program 443
Road Maintenance 446
Road Patching and Bituminous Applications 455
Bridge Maintenance 457
Institutional Roads 458
Signs and Traffic Line Work 459
Permits 462
Highway Encroachments 464
Heavy Construction Work 466
Mudjacking 466
Roadside Improvement 467
W. P. A. Projects 469
Snow Removal 472
Property Damage and Personal Injury Reports 476
Expense Accounts 477
Maintenance Costs 478

State Aid Projects Division 484
State Aid to Counties 486
Motor Vehicle Aid (Construction and Reconstruction) 493
Motor Vehicle Aid (Maintenance and Repair) 497
Township and Borough Aid (Construction) 501
Township and Borough Aid (Dirt Road Fund) 517
Township and Borough Aid (Maintenance and Repair) 518
A Secondary Highway System 527
Lapsing of State Aid Funds 535
Road Institutes 535

Electrical Division 537
Highway Safety Lighting 537
Traffic Signals 544
Electric Signs 547
Highway Safety Program Results and Costs 549
Accident Investigations and Traffic Surveys 551
Electrical Construction and Maintenance 554
Bridge Operations 557
Electrical Division Costs 560
Research 560
Reorganization 562

Equipment and Transportation Division 563
Operating Costs 563
Equipment 565
Plant 570
Car Assignments 575

PAGE

Equipment Servicing and Repair 578
Cost Accounts 581
Work Executed for Other Divisions and Agencies 584
Snow Removal 585

Laboratory Division 587
Coordination of Research and Testing 593

CHAPTER VI

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS 597

APPENDICES

APPENDIX A

Executive Order No. 1, June 24, 1941 i
Executive Order No. 2, July 1, 1941 iv

APPENDIX B

The New Jersey State Highway Department and the Courts v

APPENDIX C

A Proposed Condemnation Act (prepared by General H. L. Scott, State Highway Commission Chairman, 1931) viii

APPENDIX D

An Act Providing for the Acquisition and Development of Limited Access Highways and Parkways (prepared by the New Jersey State Chamber of Commerce Highways and Parkways Committee) xvii

APPENDIX E

The Rule Making Power of the State Highway Commissioner xix

BIBLIOGRAPHY xxvi

INDEX xxxiv

Charts

New Jersey State Highway Department Organization, 1941 .....*facing* 31
Administration Division Organization, 1941 46
Legal Division Organization, 1941 56
Real Estate Division Organization, 1941 62
Construction Division Organization, 1941 68
Maintenance Division Organization, 1941 90
State Aid Projects Division Organization, 1941 106
Electrical Division Organization, 1941 114
Equipment and Transportation Division Organization, 1941 122
Laboratory Division Organization, 1941 128
Proposed Reorganization of the New Jersey State Highway Department .....*facing* 156
Payrolls, Salaried and Hourly Basis Employees, 1928-1940 239

Statistical Tables

PAGE

State Highway Fund: Funds, 1931-1941 (revenues by source; total funds by year; total expended and committed by year; balance forward by year) (Schedule 1) 169
Federal Grants in Aid, Railroad Grade Crossing Elimination, 1937-1940 ..... *footnote* 177
Federal Grants-in-Aid, Secondary Road Construction, 1937-1940 ... *footnote* 177
Federal Grants-in-Aid to New Jersey, 1931-1940 179
Appropriations from Dedicated Funds for Other Than Highway Purposes, 1931-1940 186
State Highway Fund: Expenditures and Commitments Administered by State Highway Department, 1931-1941 (total expended and committed—sub-total—by year) (Schedule 2) 187
State Highway Fund: Expenditures and Commitments Administered by Other State Departments (total expended and committed—sub-total—by year); Diversion (total expended and committed—sub-total—by year; percentage of diversion to total available funds by year); Total Expended and Committed (all accounts on Schedule 2 and Schedule 2A) by Year; Cost of Operation of Plant and Equipment Distributed in Expenditure of State Highway Department (Schedule 2A) 188
Number of Employees and Departmental Payrolls, 1931-1941 237
Number of Employees and Departmental Payrolls, 1937-1941 (Unemployment Relief) ..... *footnote* 237
Legal Division, Operating Costs and Salaries, 1931-1941 288
Legal Division, Work Arising out of Real Estate Acquisitions, 1931-1941 (Schedule 3) 289
Title Bureau, Work and Operating Costs, 1931-1941 (Schedule 4) 293
Compensation Costs and Savings, 1937-1941 296
Claims and Compensation Cases, 1936-1941 297
Real Estate Division, New Cases Acted On, 1931-1941 306
Real Estate Division, Work of the Division, 1931-1941 (Schedule 5) 307
Appraisals and Negotiations, Titles and Settlements, and Legal Division—Total Cases Acted On and Operating Cost, 1931-1941 (Schedule 6) ... 309
Total Parcels Authorized for Condemnation Pending, 1937-1941 310
Right-of-Way Acquisitions Involving Over $2000—Comparison of Prices Paid to Average Appraisals and Departmental Appraisals 312
State Highway System, Right-of-Way Widths 341
State Highway System, Legislated and Operating Mileages, 1931-1942 357
State Highway System, Pavement Types, 1942 358
State Highway System, Mileage by Counties, 1942 359
State Highway System, Status of Needed Improvements to Legislated System, 1941 360
State Highway System, Status of Needed Improvements and Additions (Northern Metropolitan Area), 1941 361
State Highway System and State Aid Expenditures and Commitments, 1917-1941 ..... *footnote* 367
State Highway System, Highway Construction, 1935-1942 375

PAGE

State Highway System, Number and Number per 100 Miles of Restricted Sights 387
State Highway System, Number and Number per 100 Miles, and Length and Length per 100 Miles of Curves of 3° or More on Main Rural Highways 388
State Highway System, Number and Number per 100 Miles, and Length and Length per 100 Miles of Grades of 3% or More on Main Rural Highways 389
State Highway System, Travel Lanes 390
State Highway System, Number of Railroad Grade Structures over 20′ Span 398
State Highway System, Status of Railroad Crossings, 1940 .....*footnote* 400
State Highway System, Number of Highway Bridges over 20′ Span Classified by Clear Width and Condition 406
State Highway System, Number of Highway Bridges 5′-20′ Span Classified by Clear Width and Condition 406
Construction Division, Value of Work Performed and Engineering and Inspection Costs, 1931-1941 420
Construction Division, Construction Work in Progress, 1931-1941 (Schedule 7) 421
Representative Road Construction Costs (Exclusive of Bridges and Right-of-Way), 1941 424
Expenditures and Commitments, W. P. A. Projects, 1938-1941 428
W. P. A. Primary Projects, Completed and Operating, 1938-1941 429
W. P. A. Highway Projects, Employment, 1938-1941 429
Federal Aid Secondary Program, Construction in Progress and Value of Work Actually Performed, 1936-1941 436
Federal Aid Secondary Program, Allotments and Balances, 1937-1941 437
Maintenance Division, Equipment Rental Rates 453
Maintenance Division, Sign Program, 1941 461
Maintenance Division, Permits Issued, 1937-1941 464
Maintenance Division, W. P. A. Projects, Sponsor's Share, 1938-1941 471
Maintenance Division, W. P. A. Projects Completed and Operating, 1938-1941 472
Maintenance Division, Snow Removal Program, 1937-1941 475
Institutional Roads, Expenditures and Commitments, 1933-1941 ....*footnote* 478
Maintenance Expenditures on Roads and Bridges, State Highway System, 1931-1941 (Schedule 8) 479
State Highway Mileage under Maintenance, 1931-1941 481
State Highway Maintenance Costs, 1931-1941 482
State Aid to Counties, 1922-1933 (Amount and County Road Mileage Maintained) 487
State Aid to Counties, 1931-1941 (Amount; Miles of Roads Constructed and Reconstructed; and Miles of Roads Maintained) 490
Motor Vehicle Aid to Counties, Approved Allocation of Funds, 1937-1941 (Schedule 9) 500
Township and Borough Aid Construction Funds, 1916-1941 501
Township and Borough Aid Construction Mileages, 1931-1941 505
Township and Borough Aid Construction Fund Requests, 1938-1942 508
Township and Borough Aid Construction Costs, 1937-1941 514
Township and Borough Aid Construction, Road Types, 1937-1941 515
Township and Borough Aid Construction, Road Locations, 1937-1941 515

PAGE

County and Municipal W. P. A. Projects, Completed and Operating, 1938-1941 524
Township and Borough Aid Maintenance Program, 1937-1941 524
New Jersey Road Mileage Survey, All Roads-by Types, July 1, 1939 (Schedule 10) 526
Township and Borough Roads, Improved and Unimproved Mileage 527
Highway Safety Lighting Program, 1939-1942 542
Traffic Signals in Operation, 1941, by Types 545
Electrical Signs in Service, 1938-1941 547
Fatalities and Fatal Accidents, State Highway System, 1935-1941 549
Highway Safety Lighting, Traffic Signals and Electric Signs, Expenditures and Commitments, 1938-1941 550
Savings Effected by the Electrical Division, 1937-1941 551
Traffic Counting and Accident Investigation Personnel and Costs, 1937-1941 553
Electrical Installation and Maintenance Costs, 1937-1941 557
Cost of Operation of Drawbridges, 1937-1941 560
Electrical Division, Expenditures and Commitments, 1936-1941 (Schedule 11) 561
Equipment and Transportation Division, Cost of Operation of Plant and Equipment, 1931-1941 (Schedule 12) 564
Purchases of Plant and Equipment, 1931-1941 566
Cars, Trucks and Equipment, 1931-1941 567
Equipment on Hand, December 31, 1941 568-9
Laboratory Division, Expenditures and Commitments, 1931-1941 593

Schedule 1—State Highway Fund, Funds, 1931-1941 169
Schedule 2—State Highway Fund, Expenditures and Commitments Administered by State Highway Department 187
Schedule 2A—State Highway Fund, Expenditures and Commitments Administered by Other State Departments 188
Schedule 3—Legal Division, Work Arising out of Real Estate Acquisitions, 1931-1941 289
Schedule 4—Title Bureau, Work and Operating Costs, 1931-1941 293
Schedule 5—Real Estate Division, Work of the Division, 1931-1941 307
Schedule 6—Appraisals and Negotiations, Titles and Settlements, and Legal Division—Total Cases Acted On and Operating Cost, 1931-1941 309
Schedule 7—Construction Division, Construction Work in Progress, 1931-1941 421
Schedule 8—Maintenance Expenditures on Roads and Bridges, State Highway System, 1931-1941 479
Schedule 9—Motor Vehicle Aid to Counties, Approved Allocation of Funds, 1937-1941 500
Schedule 10—New Jersey Road Mileage Survey, All Roads-by Types, July 1, 1939 526
Schedule 11—Electrical Division, Expenditures and Commitments, 1936-1941 561
Schedule 12—Equipment and Transportation Division, Cost of Operation of Plant and Equipment, 1931-1941 564

Preface

An investigation of the New Jersey State Highway Department would be incomplete without a thorough study of the department in action. Realizing this from the outset, the Governor's Examiner of the New Jersey State Highway Department, on August 15, 1941, designated Sidney Goldmann, Esq., to take charge of and conduct a systematic and complete administrative study of the entire department.

At the request of the Examiner, the New Jersey State Chamber of Commerce granted a leave of absence to Thomas J. Graves, for four months, beginning September 1, 1941, for the purpose of assisting Mr. Goldmann in this administrative study.

The study originally contemplated sections dealing with the history of the department, its place in the State administrative system, the organization of the department, the work of the department, personnel, finance, the rule-making powers of the Highway Commissioner, his quasi-judicial functions, and the department and the courts. This tentative outline had to be modified as the study progressed because it was discovered that some phases of highway administration were more important than others. Certain subjects which seemed important at the beginning assumed their proper proportions during the course of the survey.

More than one hundred conferences and interviews were held over a period of three months. These included every highway official as well as numerous State officials whose duties bring them into contact with the Department. Correspondence was conducted with each of the forty-seven other State highway departments and their reports studied for helpful suggestions and an understanding of highway problems. The annual reports of the New Jersey department from 1918 to date were consulted extensively to the same end, as were the minutes of meetings held by the Highway Commissioner since he took office on April 30, 1935.

A fairly complete bibliography was prepared for the purpose of reviewing the literature in the field. This included the transcripts of commission and committee hearings, among them the inquiry made by the

Abell Commission in 1929-1930 and the report of the National Institute of Public Administration which grew out of that Commission's efforts. It also included the original Princeton Survey report on State government and administration.

The entire body of legislation on highways since 1891 was analyzed, including all related statutes which have some bearing on the subject.

A special trip was made to Washington to consult with officials of the Public Roads Administration, Federal Works Agency; the staff of the Brookings Institution; the National Resources Planning Board, and others.

It is believed that this is the first work to present a comprehensive picture of the administration and organization of a modern State highway department. Other studies have emphasized the historical background or the technical aspects of the work of the department under consideration. Only a part of the National Institute of Public Administration and the Princeton Survey reports was devoted to the State Highway Department. The main object of these works was to survey the entire State government. This volume is intended to give the reader a complete picture of the New Jersey State Highway Department as it was at the close of 1941.

The writers wish to acknowledge their great debt to the many public officials, administrators, highway engineers and others who gave so generously of their time and energy to assist in this survey. This report could not have been written without the wholehearted cooperation shown by the State Highway Commissioner, the State Highway Engineer and the several executive heads of the New Jersey State Highway Department.

Our appreciation must also be extended to Roger Hinds, Esq., the Governor's Highway Department Examiner, who originally directed that the study be instituted. His enthusiatic interest in the project has remained constant from its inception.

Special appreciation is due Clark C. Vogel, Esq., for his research assistance in the various legal phases of highway administration; to Lawrence H. Wendrich, Institute of Politics, Indiana University, who assisted during the formative stages of the survey and prepared certain comparative data on other State highway departments; to Commissioner Thomas

H. MacDonald, Commissioner, and Mr. H. S. Fairbank of the Public Roads Administration; to A. Lee Grover, Chief Clerk and Secretary, and Marvin L. Howell, Chief Auditor and Accountant of the State Highway Department, who served as constant sources of important information, administrative and financial; to Walter Kidde, Chairman of the Cost of Government Committee (a former member of the State Highway Commission) and Alvin A. Burger, Director of Governmental Research, both of the New Jersey State Chamber of Commerce; to Vincent Lanigan, Head Clerk in the Administration Division of the Highway Department, for important statistical information; to John Madden of the Survey and Plans Bureau, who drafted the division organizational charts appearing in this report; to Peter Cimbala, for valuable secretarial assistance, and to Anna Shea Manion for aid in typing some of the chapters, both of them members of the department; and finally, Mrs. Joseph E. McLean who prepared the index.

We alone, however, are responsible for any errors or omissions and for the conclusions reached.

S. G.,
T. J. G.

Trenton, N. J.,
June 30, 1942.

CHAPTER I

HISTORY OF THE NEW JERSEY STATE HIGHWAY DEPARTMENT

CHAPTER I

HISTORY OF THE NEW JERSEY STATE HIGHWAY DEPARTMENT

The interest of New Jersey in the increasingly important problem of highways may be said to have begun with the passage in 1891 of a law providing for State aid for county and municipal road improvement,[1] and with the creation in 1894 of the office of State Commissioner of Public Roads.[2] This action represented the first move in the entire nation toward centralized control of highway development.

There had been some tendency toward national and state centralization of highway administration in the early days of the Republic,—a period that witnessed the building of the famous Cumberland Road, from the Potomac to the Ohio River, under Federal auspices. The successful development of railroad transportation marked the end of this trend, however. The Dark Ages in American highway history began. Highway work was given over very largely to county, township and subordinate road district control. Bad roads and poor highway administration were the common experience of the American public for more than half a century preceding the 1890's.

The reasons for this state of affairs have been summarized as follows: "The excellence of the railway system and the extensive waterways; long familiarity with bad roads and the indifference of the public generally and especially highway officials; the lack of appreciation of the social, commercial and economic value of good roads and the fear of increased taxation, especially on the part of the farmers; the wasteful and inefficient system of payment of road taxes in labor; and finally, very meager general knowledge of the practical necessity of good business methods in highway construction and maintenance."[3]

The movement back to centralized highway administration began about 1890. The widespread popularity of the bicycle brought about

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[1] Permanent Improvement Road Act of April 14, 1891, *P. L. 1891, p. 378.*

[2] *P. L. 1894, c. 75, p. 409.*

[3] *Highway Administration and Finance,* by Thomas R. Agg and John E. Brindley, (New York, 1927), *p. 25.*

a growing public sentiment in favor of improved highways,—a sentiment which increased with every year until the advent of the automobile, when the so-called good roads movement acquired its present significance.

The inequitable plan of highway taxation which prevailed generally throughout the country in 1890 was the outstanding economic reason for inaugurating the policy of State aid. Under the system of local management of public highways, the tax burden for road purposes rested almost entirely upon farm property. This not only resulted in an unjust distribution of the burden, but in inadequate revenue to construct and maintain proper roads and bridges. There were other considerations which led to the institution of State aid, not the least of which was that the new traffic conditions gave rise to more difficult problems of road construction and maintenance beyond the limited ability of local officials to deal with in satisfactory fashion. In many places, highway taxes were paid for in labor; it can be readily understood how this resulted in a condition which rendered State action essential.[4]

The New Jersey State aid law of 1891 was the first enactment of its kind in the United States. It duly noted that "public roads in this State have heretofore been built and maintained solely at the expense of the respective townships in which they are located," and then made provision for payment from the State treasury of one-third of the cost of road improvements authorized by the various Boards of Chosen Freeholders "within the limit, at present of $75,000 per annum." It further provided for the raising of money by bonds for the improvement of township and county roads; abolition of the office of road overseer; and the payment of road taxes in money. This brief law of sixteen sections put an end to the road labor tax and established a cooperative plan of financing highways embracing the State, subordinate governmental agencies, as well as the abutting property owners. The 1891 act was the first of a number of similar statutes, each one extending still further the scope of the State aid program and the supervision and control of the State government over the carrying out of this program.[5]

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[4] Agg and Brindley, *op. cit.*, pp. 37-38.

[5] *P. L. 1895, p. 424; P. L. 1903, p. 145; P. L. 1905, p. 94; P. L. 1912, c. 395, p. 809;* all as amended.

The act of 1894 providing for the appointment of a State Commissioner of Public Roads, required that the office be filled "by some suitable person nominated by the Governor and confirmed by the Senate," for a three-year term. The State Commissioner of Public Roads was required "to perform all the duties with respect to the public roads of this State which are now by law imposed upon the President of the State Board of Agriculture, and to collect such data with respect to the construction of permanently-improved roads as he may think will subserve the interests of the public, and to report to the Legislature what roads are constructed with State aid for the year ending on the next preceding thirty-first day of December, and the amount of their cost, and, in general, the operations of his office for such year."[6] This statute, following closely upon the heels of the act of Congress[7] creating the Federal Office of Road Inquiry, predecessor to the Bureau of Public Roads, gave impetus to the creation of centralized highway agencies in other States.[8]

It will be seen that this early legislation tended to give all possible recognition to the existing theory of local self-government in highway affairs. Like the Federal Secretary of Agriculture, the Commissioner was limited in his duties mainly to the collection and dissemination of data relative to the construction of permanently improved roads; in addition, he was to supervise the use of State aid funds by the local governmental agencies.

By 1906, the problem of the motor vehicle had become important enough to gain the serious attention of the Legislature. The result was the passage of an act[9] defining motor vehicles, regulating their construction, equipment, operation and use of the roads, and setting up a Department of Motor Vehicle Registration and Regulation. The act fixed the amount to be charged for licenses and registration fees

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[6] *P. L. 1894, c. 75, s. 2.*

[7] *Act of March 3, 1893.* This act appropriated ten thousand dollars to enable the Secretary of Agriculture to make inquiries in regard to the systems of road management throughout the United States, investigate the best methods of road building, prepare publications suitable for distribution, and assist the agricultural colleges and experimental stations in disseminating information on the subject of public highways.

[8] See, *Preliminary Report of the Select Committee to Investigate the Executive Agencies of the Government,* 1937, Senate Report No. 1275, 75th Cong., 1st Sess., c. VIII, p. 352.

[9] *P. L. 1906, c. 113.*

and provided for penalties for violation of the act. Section 37 declared that all monies received from fines, penalties, registration fees, license fees, or otherwise, under the provisions of the act, were to be turned over to the State Treasurer "to be appropriated annually to the Commissioner of Public Roads, to be used as a fund for the repair of the improved roads throughout the State." This is the first example of "dedicated" highway funds in New Jersey, and represented an important step in highway financing.

The next important step took place in 1909 with the creation of a State Highway Commission, consisting of the Governor, President of the Senate, Speaker of the House of Assembly, and the Commissioner of Public Roads.[10] The members of the Commission received no compensation for their services. Originally, the function of the Commission was limited to supervising the preparation by the Commissioner of Public Roads of a map for an "Ocean Highway" from Atlantic Highlands to Cape May, to follow "as far as practicable the available and convenient improved roads now constructed, which route shall be as near the ocean front as is practicable." By an act passed in 1910[11], the Commissioner of Public Roads was authorized to repair and improve this road, or any part thereof, with the approval of the Commission and to expend $50,000 from motor vehicle fees for this purpose.[12]

In 1912 the Legislature passed a highway law of outstanding importance. The State Highway Commission was authorized and directed "to establish what shall be known as the State Highway System; a comprehensive scheme of roads, improved or unimproved, and of routes for roads unbuilt, which shall be ultimately a continuous or intercom-

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[10] *P. L. 1909, p. 51, sec. 1.*

[11] *P. L. 1910, p. 343.*

[12] *P. L. 1911, c. 114, p. 164,* supplementing *P. L. 1909, p. 51,* provided for the preparation of a map of the "Delaware River Drive" by the Commissioner of Public Roads under the direction of the State Highway Commission, from Trenton north to the New Jersey-New York boundary, "which route shall be as near the Delaware River as practicable." *P. L. 1913, c. 173, p. 300,* supplemented this law by providing for the extension of the Delaware River Drive southward from Trenton to Cape May City, and *P. L. 1912, c. 229, p. 372,* authorized and directed the State Highway Commission to lay out and construct the route from Trenton to the New York line.

municating system of improved State highways through the State."[13] This system was not to exceed 1,500 miles. The statute recognized the State Commissioner of Public Roads as head of the State Department of Public Roads and gave him plenary powers to administer the affairs of the agency. He was directed to take charge of the construction, improvement, maintenance and repair of the State highways, assisted by a State Highway Engineer, Division Highway Engineers and subordinate clerical and engineering assistants.

The 1912 statute also established a State Road Fund comprising appropriations made therefor by the Legislature, receipts from motor vehicle licenses and certain fines. Expenditures from this fund were limited to those for the extension, construction, maintenance and repair of State highways; for State aid to counties and municipalities; and for the maintenance and administration of the State Department of Public Roads.

The plan for the proposed State Highway System was completed by the State Commissioner of Public Roads pursuant to the provisions of the 1912 act, and submitted to and approved by the Commission in 1913. It was proposed to take over the roads in the system in three installments of about five hundred miles each. Accordingly, the State Highway Commission was authorized to take over the first installment, and $250,000 was appropriated for the further improvement, maintenance and repair of these roads.[14]

As a matter of fact, none of these roads was taken over by the State, either for construction or maintenance. However, convict labor camps were set up in 1913 and succeeding years under direct State

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[13] *P. L. 1912, c. 396, p. 828, s. 1.* Section 2 provided that "It is the intent of this act that the State Highway System shall include: such roads, highways, turnpikes or toll roads as may be later acquired, or any parts or portions thereof as now are or will form, main-traveled roads of reasonably direct route between the county seats of the several counties of the State; existing improved highways being chief lines of travel between seaside resorts and large centers of population; important roads affording outlets at the boundaries of the State for which, in the judgment of the Commission, by the character and amount of travel upon them are in repair and maintenance costs an inequitable burden upon local districts and fall properly in the State Highway System, the Ocean Highway and the Delaware River Drive." In taking over any road as a State highway, the State Highway Commission was to be guided in its decision "by the character and amount of travel thereon, its consequent relative importance in the system and with due regard to the mileage of roads heretofore improved in each county and to the burden of maintenance and repair costs therein which it is the intent of this act to relieve" (*s. 4*).

[14] *P. L. 1913, c. 275,* supplementing *P. L. 1912, c. 396.*

supervision, and several sections of highway were thus built by the State in collaboration with the counties.

When the Federal government renewed its early interest in good roads by the passage in 1916 of an act offering Federal funds in aid of highway construction,[15] the New Jersey Legislature authorized the State Commissioner, for and on behalf of the State, to apply to and enter into contract with the government of the United States or any official thereof for aid in road work, and with the governing bodies of counties or other subdivisions of the State for the doing of such work with the aid of the State and of the Federal government. This was the beginning of a long period of cooperation between the State and Federal governments in carrying out a constructive and valuable program of road improvement in New Jersey.

Although, as has been noted in connection with the 1912 act, New Jersey already enjoyed a form of centralized State highway administration, the logical and definite step of establishing an integrated State Highway Department was taken in 1917. The 1916 Federal act had directed the Federal Secretary of Agriculture to cooperate with *State highway departments,* and a subsequent statute specified that these departments must have "adequate powers" and be "suitably equipped and organized." The insistence was upon a strong, central highway authority, capable of dealing with the problem of main highways.

The 1917 statute[16] established a State Highway Department to be governed by a State Highway Commission of eight members, two of whom were required to be "qualified and competent engineers." The Governor was designated as a member *ex-officio.* Members of the Commission were to be appointed by the Governor by and with the advice and consent of the Senate, two for one year, two for two years, two for three years and two for four years, with two members to be appointed annually thereafter for a term of four years. The Governor was given the power "to summarily remove any or all members of the Commission." The members were to serve without compensation. The Commission organized yearly with the selection of a chairman and the appointment of a secretary who was to be an employee of the Department. The Com-

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[15] *Act of July 11, 1916.*

[16] *P. L. 1917, c. 15.*

mission was to hold no less than twelve stated meetings each year, the meetings and the minutes thereof to be open to the public.

The salary of each Commissioner was fixed at $4,000 a year by *P. L. 1921, c. 336.* Under the provisions of *P. L. 1923, c. 6,* the salary was raised to $7,500, and the membership reduced from eight to four members, two being appointed for two years and two for four years, with two members to be appointed biannually for four years thereafter. No more than two members could belong to the same political party. The Governor's power of removal was limited to neglect of duty or misconduct in office of any member, upon charges and after public hearing.

Among its other duties, the Commission was charged with the selection of a State Highway Engineer, who was to be "a qualified and competent engineer, who has had actual experience in road and bridge construction and maintenance." His term of office was five years, and his salary was to be fixed by the Commission. The Commission was also to select an Assistant State Highway Engineer with the same qualifications as those prescribed for the State Highway Engineer. His salary was to be fixed by the board and his term of office was five years. The Commission was authorized to summarily remove the State Highway Engineer or the Assistant State Highway Engineer for cause after hearing.

When the State Highway Commission was reorganized in 1923 and the number of members reduced to four, the terms of the State Highway Engineer and Assistant State Highway Engineer were changed to four years, the office of the then State Highway Engineer terminated and declared vacant, and the office of the Assistant State Highway Engineer declared at an end within ninety days after the act (*P. L. 1923, c. 6*) became law, subject to his reappointment in the discretion of the Commission.

By express provision of the 1917 statute (*section 8*), the State Highway Department succeeded to and was to exercise all the powers and perform all the duties conferred or charged upon the State Commissioner of Public Roads or the existing State Highway Commission by virtue of any existing laws, and was given full control and direction of all projects and work on State highways. The work of the Department was to be performed under the State Highway Commission, "which shall have all power necessary therefor without recital in detail." A

majority of the Commission was necessary for a decision; in the original 1917 act the Governor could cast the deciding vote in case of a tie, but this provision was eliminated when the law was amended in 1923.[17] The State Highway Commission was further authorized to formulate and adopt such rules and regulations, and prescribe duties for the conduct of the business, work and general administration of the Department, its officers and employees, as were necessary.

This act also preserved the idea of a dedicated highway fund first found in the 1906 statute. Section 13 declared that "The funds provided to meet lawful expenditures appertaining to roads, as required under this act or any other law, shall constitute a State Road Fund." The fund was to include all appropriations made therefor by the Legislature, as well as the receipts from motor vehicle licenses, any State tax levied for that purpose, Federal aid and other contributions, sales of condemned property, and fines, penalties or damages for violation of any law providing for the protection of roads.

At the same time that it passed the statute establishing a State Highway Department, the Legislature also passed "An Act to establish a State Highway System, and to provide for the improvement, betterment, reconstruction, resurfacing, maintenance, repair and regulation of the use thereof."[18] This act laid out fifteen routes, the routes being described by their respective terminal points and as running through certain intermediate municipalities. The Legislature provided that the roads "be as short and direct as practicable between the points specified, due regard being had for the other requirements of the act." Although the State Highway Commission was given the power to make use of existing highways wherever it was convenient so to do, it was authorized to lay out, open and improve new roads over acquired rights of way, and further, to "lay out routes in continuation of, connecting with, or in addition to the routes above specified,"—a most important provision, as later experience proved, and one that gave the Commission a very broad power.

The Legislature added routes to the 1917 system from time to time until 1927, when a revised system, as will presently be noted, was estab-

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[17] *P. L. 1923, c. 6, s. 4,* amending *P. L. 1917, c. 15, s. 10.*

[18] *P. L. 1917, c. 14.*

lished. The first route added was Route 16 in 1921, followed by Routes 17 to 20, as well as several extensions, such as Route No. 1 Extension and the Camden Extension, and unnumbered routes. The routes not taken over before 1927 and not included in the 1927 system are not now in the State Highway System. Actual construction on the 1917 system began in 1918.

Besides enacting the two laws respectively creating a State Highway Department and establishing a State Highway System, the Legislature also passed an act providing for the assessment, levy and collection, for a period of five years, of a tax on all real and personal property amounting to one mill on each dollar of assessed valuation. The tax was to be assessed, levied and collected as other municipal taxes were and was eventually to be paid over to the State Treasurer to be placed in the State Road Fund.[19]

The highway construction program which was to reach its peak in the period from 1927 to 1932, began about 1923. It was preceded by the authorization of a $40,000,000 bond issue to meet the cost of "constructing, improving, reconstructing and rebuilding the State Highway System, as now authorized by law, or portions thereof, including bridges thereon which are a part thereof."[20] Bonds were to be issued from time to time as funds were required, but in no greater amount than $8,000,000 in any calendar year. Proceeds from the sale of the bonds were to be held by the State Treasurer in a separate fund to be known as the "State Highway Fund." In order to provide funds for payment of interest and principal on these bonds, a tax was to be assessed, levied and collected, beginning with 1923, on all real and personal property in the State, the tax to be not less than one mill on each dollar of assessed valuation in the years 1923 to 1927 inclusive.

Another bond issue was authorized in 1927[21] in the amount of $30,000,000, "to pay for the cost of constructing, improving, reconstructing and rebuilding of the State Highway System, including bridges, viaducts, tunnels and rights of way as parts thereof." As in the case of

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[19] *P. L. 1917, c. 16.*

[20] *P. L. 1922, c. 262.* The bond issue was approved by the voters at the General Election held in November 1922.

[21] *P. L. 1927, c. 181.* The bond issue was approved by the voters at the General Election held in November 1927.

the 1922 issue, the bond proceeds were to be held in a separate "State Highway Fund," and a tax was to be assessed, levied and collected to meet the principal and interest on the bonds. The Legislature provided that this tax, together with the one levied under the 1922 act, was not to be less than one mill on each dollar of assessed valuation in the years 1928 to 1933, inclusive; any surplus above what was needed to meet the interest and sinking fund charges on the two issues was to be placed to the credit of the State Highway Fund and used for the construction, improvement, reconstruction and rebuilding of the State Highway System as revised in 1927, including bridges, viaducts and tunnels.

Because of the growing criticism of the legislated State Highway System, which was no longer adequate for the rapidly increasing volume of traffic, the Legislature in 1926 requested the State Highway Department "to study the highway problems of the State and suggest a more comprehensive system, classifying same as primary and secondary roads, and give approximate estimated costs of constructing each of said roads that has not been constructed."[22] The State Highway Engineer prepared a plan for such a system and reported thereon to the State Highway Commission.[23] The Commission made extensive changes in the plan and finally presented a report to the Legislature on a proposed system consisting of primary roads only, approximating 1,900 miles in length.[24] The Legislature, in turn, made extensive changes in the Commission's recommended plan and adopted a State Highway System, consisting of 42 routes.[25] As in the case of the 1917 system, the Legislature again specified that the routes be as short and direct as practicable between the points specified and that the Commission might use existing highways wherever convenient, but could lay out, open and improve new roads over acquired rights-of-way. The 1927 act continued the power originally given the Commission in 1917 of laying out "routes in continuation of, connecting with, or in addition to the routes" specified.

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[22] *Senate Concurrent Resolution, No. 3,* February 8, 1926.

[23] *Report of the State Highway Engineer to the New Jersey State Highway Commission,* (Trenton, 1926).

[24] *Report of the State Highway Commission of the State of New Jersey to the New Jersey State Legislature of 1927,* (Trenton, 1927).

[25] *P. L. 1927, c. 319* (Revision of 1927). The several plans of the Highway Engineer, Commission and Legislature are discussed at pp. 350-354, *post.*

In order to pay for the establishment of the State Highway System set up in the Revision of 1927, the Legislature provided that the following revenues be used for that purpose: the balance of the $40,000,000 bond issue of 1922; revenues from the gasoline tax imposed by the Legislature in 1927;[26] Federal aid funds; motor vehicle receipts (after certain deductions); and the excess from any tax levied pursuant to the provisions of the 1922 and 1927 bond acts.[26a]

Another bond issue was authorized in 1930 in the sum of $83,000,000 for the "construction, improvement, reconstruction and rebuilding of bridges, tunnels, viaducts, underpasses, overpasses and approaches thereof, for rights of way, and to pay the public share of the cost of eliminating railroad grade crossings, in the improvement of State highways, and to pay the public share of the cost of eliminating railroad grade crossings on highways other than State highways." $18,000,000 of these bonds was reserved to pay the State's share of the cost of grade crossing eliminations on highways other than State highways, at the rate of $2,000,000 a year. The balance of the issue was to be used for the improvement of State highways, at a rate not to exceed $18,000,000 a year.[27] Bond proceeds for the improvement of State highways were to be kept in the "State Highway Fund" and those for grade crossing eliminations on other than State highways in a "Grade Crossing Elimination Fund." Receipts from the tax on motor vehicle fuels imposed by *P. L. 1927, c. 334* were to be used to meet the interest and principal payment requirements on the bond issue, and if these were not sufficient or available for that purpose in any year, then and in that case a tax was to be assessed, levied and collected on all real and personal property in the State sufficient to meet the debt service.

A study of the State Highway Department was made in the course of a survey of the organization and administration of the State government of New Jersey conducted by the National Institute of Public Administration in 1929, pursuant to a joint resolution of the Legislature.[28] The

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[26] *P. L. 1927, c. 334.*

[26a] *P. L. 1927, c. 331.*

[27] *P. L. 1930, c. 228.* The bond issue was approved by the voters at the General Election held November 1930.

[28] *Legislative Joint Resolution No. 3,* March 12, 1929. *Report on a Survey of the Organization and Administration of the State Government of New Jersey,* National Institute of Public Administration, (Trenton, 1930).

survey criticized the semi-independent position occupied by the State Highway Department in the administration of the State government, and noted that the Department as then constituted was practically a self-contained unit, with its own fiscal year (the calendar year), its own complete accounting system, and in charge of its own budgeting, with neither the Governor nor the Legislature passing upon its annual expenditure proposals. The survey recommended various changes in the internal organization of and the methods used by the State Highway Department, for the purpose of making it part of an integrated system of State government in which the Governor is the responsible and direct head. It also recommended reorganizing the Department to the extent of coordinating its work with other public works functions.[29] It was proposed that a Department of Public Works be created, headed by the Commissioner of Public Works appointed by the Governor. The Bureau of Highways would be part of this Department, and would be headed by a qualified highway engineer selected by competitive examination who would be responsible for the work of the Bureau and report directly to the Public Works Commissioner.

The so-called Abell Commission held hearings during 1930 that involved the administration and organization of the State Highway Department.[30] The National Institute report served as a background for this investigation.

The State Highway Department was again the subject of a survey in connection with an investigation of the administration and expenditures of the State government made in 1932 by the School of Public and International Affairs of Princeton University.[31] In the course of recommending economies for the fiscal year 1933-1934, the Princeton Survey reviewed the administration and operations of the State Highway Department. It pointed out that the State Highway Commission had neglected its planning function and directed its attention instead to the details of administering the Department, dividing it into smaller and smaller units with the head of each reporting directly to the Commis-

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[29] *Op. cit.,* chapters XIV and XV, pp. 253-313.

[30] *Minutes of the Abell Commission, 1929-1930,* New Jersey State Library, Trenton, New Jersey, stenographic transcript.

[31] *Report on a Survey of Administration and Expenditures of the State Government of New Jersey,* School of Public and International Affairs of Princeton University, (Princeton, 1932), pp. 155-212.

sion. Among other things, the report recommended that the Commission be eliminated, that a Public Works Planning Commission be created, and that the State Highway Engineer be made the responsible executive of the Department, with authority to reorganize the Department at his discretion. The Highway Engineer was to be appointed by the Governor for an indefinite term and be removable by him.

The recommendation of the Princeton Survey for the reorganization of the State Highway Department received support from certain groups, but the matter did not assume major political importance until Governor Harold G. Hoffman, in his inaugural address proposed the replacement of the State Highway Commission by a single Commissioner. The Governor pointedly declared that "it is time to stop permanently the mixing of politics, cement and tar in our highway construction and maintenance." The issue immediately became one of the most important and controversial questions of the early days of his administration, and the replacement of the Commission was commonly understood to be a major test of his power.[32]

The bill which became the present law[33] was introduced in the Senate on January 28, 1935, and passed on February 12 by a 13-4 vote. The measure was held up in the House of Assembly by the insistence of the Essex County Clean Government group on an amendment requiring the appointment of an engineer as the department head, and by the Governor himself who, it was reported, did not want to make the important appointment contemplated in the bill before the final acceptance of his tax program. The bill was defeated in the Assembly by five votes on April 1, 1935. The Governor immediately requested that the measure be reconsidered, and finally, on April 28, 1935, set ten o'clock of the following night as the dead-line for the passage of the bill, stating that if favorable action were not then forthcoming he would proceed to fill the two vacancies on the Commission which had occurred since his inauguration.

The bill passed the Assembly on April 29, 1935, after a series of last minute political maneuvers and compromises between the Governor and legislative leaders concerning the appointment. The appointment of

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[32] *Newark Evening News,* January 16, 1935, p. 10, col. 1.

[33] *P. L. 1935, c. 178.*

the present State Highway Commissioner, who was the Republican State Chairman, was said to be "a personal selection by the Governor, putting in charge of the road system a man on whom the Governor could count 100 per cent."[34]

The law, as finally passed, created the office of State Highway Commissioner who was to "succeed to and exercise all the powers and perform all the duties now exercised or performed by the State Highway Department and the State Highway Commission." The Commissioner was to be appointed by the Governor, by and with the advice and consent of the Senate, for a term of six years and at a salary of $15,000 a year, and the Governor was given the power to remove the Commissioner for cause. In general, the Commissioner was to be the administrative and executive head of the State Highway Department with power to reorganize the agency. The Department was continued as a branch of the Executive Department of the State government.

The Department under the Highway Commissions

The 1935 act abolished the State Highway Commission and put an end to eighteen years of highway administration under that form. Of the four Commissions which functioned during that time, the one headed by General H. L. Scott had the longest life, continuing in office with only two changes in its original personnel from 1923 to 1933, the period of greatest highway construction activity.

The so-called "Edge Act" establishing the State Highway Department was passed March 13, 1917. Almost half a year elapsed before an actual organization was set up and began to function pursuant to the provisions of the act. The eight-man, unsalaried Commission appointed by Governor Walter E. Edge continued in office, with but three changes in personnel, until 1920. This Commission was generally regarded as conscientious and capable and did not interfere with or obstruct the engineering management of the Department to any noticeable extent. General Goethals, of Panama Canal fame, had been named State Engineer by the Governor pursuant to the provisions of an act creating that office.[35] The State Engineer was, among other things, to act as

[34] *Newark Evening News,* April 30, 1935, p. 1, col. 3.

[35] *P. L. 1917, c. 98.*

adviser to and supervisor of the newly created State Highway Department. The State Engineer resigned in 1918, but during his brief term in office exercised a substantial influence over the Commission.

In accordance with the act, the Commission selected R. A. Meeker, who had been with the Department as its first Road Supervisor and then Engineer since 1900, as State Highway Engineer at a salary of $7,500, and William G. Thompson who had been associated with General Goethals in the construction of the Panama Canal, as Assistant State Highway Engineer.

The Department was organized into three engineering divisions,—the Central Division, with headquarters at Trenton; the Northern Division, with headquarters at Newark; and the Southern Division, located at Camden. A Division Engineer headed each of these divisions and was in charge of all State, County Aid and Township Aid engineering; survey, location and design work; purchase of right-of-way; construction and inspection; and State (convict) labor; except that on County Aid roads, the County Engineers made the surveys and prepared the plans subject to the approval of the Division Engineers.

The Division of Bridges and Grade Crossings of the Public Utility Commission did all bridge designing for the Highway Department until 1922, when a Bridge Division was set up in the State Highway Department. Highway testing, laboratory work and material inspection continued to be done, as it had for many years, under the direction of the head of the State Laboratory in the Department of Conservation and Development. An independent Laboratory Division was set up in the State Highway Department within the decade.

It is to be noted that although the Bridge and Laboratory Divisions were not under exclusive Highway Department management until actually taken over, the subordinate employees were paid out of Department funds, while the salaries of those who supervised the work were paid, in part by the Highway Department and in part by the other Department involved.

Within a few months, the State Highway Engineer resigned and William G. Thompson was appointed in his place in December 1917. Edward E. Reed was selected as Assistant Highway Engineer, in which position he remained until August 1933. In the Fall of 1918 the position

of Assistant Division Engineer was officially recognized and such an engineer appointed in each of the three divisions.

The departmental organization was further extended in the Spring of 1919 when several new divisions were created. A fourth engineering division was created, known as the Western Division, with offices at Washington, New Jersey. A State-wide Division of Maintenance was set up, with offices at Trenton, and the work of taking over State roads for maintenance, begun. A separate State (convict) Labor Division was established, headed by a Superintendent of Labor with an Assistant Superintendent to help him.

Subsequently, a Purchasing Division was added, and a Supervisor of Equipment appointed to take charge of such equipment as the Department gradually acquired. The Commission also established a Right-of-Way Bureau.

The departmental organization functioned fairly well. The highway program was not yet a large one; the organization of the Department evolved gradually. Division and Bureau heads would meet with the State Highway Engineer and his Assistant at Trenton weekly to discuss general matters affecting the Department as well as specific problems. The Department showed healthy growth and a slow but steady progress.

The election of Governor Edward I. Edwards gave the Department its first experience in the cross-currents of practical politics. With rumors floating about as to what the newly elected Governor would do, and the certainty that the Department would be subject to some definite change, the Highway Engineer resigned. The Commission made the mistake of designating one of its engineer members as Acting Engineer. Governor Edwards followed this up by exercising his power to remove any or all members of the Commission summarily. He removed the entire Commission and appointed a new eight-man board in its place, of which George L. Burton became chairman. The Edward's Commission was as heavily Democratic as the Edge Commission had been Republican, and apparently more politically-minded than the first board. It took office on July 1, 1920 and appointed Thomas J. Wasser, engineer of Hudson County, as State Highway Engineer, and reappointed Assistant State Highway Engineer Reed. It also sponsored the bill that was passed giving each Commissioner a salary of $4,000 a year.[36]

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[36] *P. L. 1921, c. 336.*

Wasser immediately initiated a survey of the entire Department and laid the groundwork for a complete reorganization after the 1920 construction season. Possessed of organizing ability, energy and decision, he brought about extensive changes in the Department in a short time. Some of Wasser's first reorganization ideas were later modified, a few of them materially. His recommendations generally found acceptance with the Commission, which proceeded to put them into effect. Some of the changes were, perhaps, not too well-advised, but on the whole they met the needs of the Department.

An Administration Division, in charge of the Secretary and Chief Clerk, who is still with the Department in that position, was established. Included in this Division were the bureaus headed by the Chief Auditor and Accountant, the Purchase Clerk, and the Chief File Clerk. The former Purchasing Division was abolished.

The Construction Division was set up, headed by the Construction Engineer, a new position. The Division Engineers were limited in their duties to supervising State Highway construction, and the office of Assistant Division Engineer was abolished. The Western Division was likewise abolished. The new position of Right-of-Way Engineer in the Construction Division was created; he was to head the Right-of-Way Division and be in charge of all surveys, the preparation of all plans, and the acquisition of all rights-of-way. The Supervisor of State (convict) Labor was likewise placed under the Construction Engineer, and the Designing Engineer in the Division of Bridges and Grade Crossings of the Public Utility Commission was coordinated into the work of the Construction Division. (In 1922, upon the recommendation of the Highway Engineer, an independent Bridge Division was set up in the Department, in charge of a Bridge Engineer who was up to that time the Designing Engineer under the Public Utility Commission.)

A Maintenance, Equipment and Projects Division was also established, in charge of the Assistant State Highway Engineer. The office of Maintenance Engineer was abolished, and replaced by a Superintendent of Maintenance, an Assistant Superintendent and four Supervisors of Maintenance. Three new positions were created: a Superintendent of Equipment, a Projects Engineer in charge of State Aid projects, and an Engineer of Special Assignments. These, like the Superintendent of Maintenance, served under the Assistant State Highway Engineer. The

testing laboratory continued as it had before, the State Laboratory of the Department of Conservation and Development supplying this service. The weekly meetings of the so-called "Works Committee," consisting of Division and Bureau heads, continued.

Other changes followed. Engineering work for township roads was transferred to the townships, leaving the Projects Engineer with nominal supervision over township and county roads. The Fernwood Service Station, present headquarters for the Equipment and Laboratory Divisions, was built on the recommendation of the State Highway Engineer.

The Right-of-Way Bureau that had been established in the Construction Division in 1920, failed to operate efficiently. The Right-of-Way Engineer had personal charge of appraisals and negotiations, assisted by special negotiators. Under him, an Assistant Right-of-Way Engineer was in charge of surveys and plans, and a Right-of-Way Agent was responsible for titles and settlements.

The Assistant Right-of-Way Engineer was designated Acting Construction Engineer during an extended illness of the Construction Engineer, and subsequently made Assistant Construction Engineer with wide powers. He remained in charge of surveys and plans, with the Right-of-Way Engineer and Right-of-Way Agent carrying on their assigned duties under his nominal supervision.

By the end of 1921, the State was divided into eight "survey districts" in charge of Survey Engineers, who had formerly been Assistant Division Engineers and Resident Engineers. The Survey Engineers reported to the Assistant Construction Engineer on all survey, location and design work, (and in some districts also on right-of-way), and to the Division Engineers in the Construction Division on construction work in their respective districts. The number of Survey Engineers was gradually increased and, about 1923, their title was changed to Resident Engineers. The districts were broken up and the number of Resident Engineers finally increased to about forty. The surveys and plans were prepared in the several survey district offices and reviewed at the Trenton office by a corps of engineers and draughtsmen in charge of a Chief Draughtsman, responsible to the Assistant Construction Engineer.

Toward the close of 1922 the position of "Chief Survey Engineer" was created, corresponding to the present Engineer of Surveys and

Plans. He would coordinate all survey and plans work in the State, and report to the Assistant State Highway Engineer, who was to be released for general coordination work in the Construction Division. One of the Survey Engineers was selected to fill the position and directed to assume the work, but the plan was never actually carried out because of the political upheaval about to be mentioned. The man who was to have been Chief Survey Engineer was later, in June 1923, assigned as special assistant to the Construction Engineer, under the title of "Office Engineer," taking over some of the work of the Assistant Construction Engineer who remained in charge of surveys and plans.

In 1922 the Assistant State Highway Engineer was relieved of responsibility for the Maintenance and Equipment Divisions, so that he was left in charge of State Aid Projects, and of the Engineer of Special Assignments. The latter position was vacated as a result of the 1923 "ripper" bill, about to be mentioned, and has remained unfilled since June 1, 1923. The Construction Engineer became virtually the chief deputy of the State Highway Engineer, so that the Assistant Highway Engineer became a position of far less importance than it had been. The State Labor Division was abolished by the end of 1922 and convict labor work was handled through the Department of Institutions and Agencies, acting as an outside contractor.

The Edwards Commission, like the Edge Commission, had an Executive Committee of three members. In the former Commission, the State was divided among the several Commissioners, as "Resident Commissioners."

Governor George S. Silzer was elected in November 1922 to succeed Governor Edwards. He openly announced that he planned to remove the Edwards Commission, and the immediate and express reason given was the "Donnell Lumber Co." land deal at the site of the Victory Bridge, in the acquisition of which it was alleged that a political leader and friend of the State Highway Commission chairman received a commission of $25,000.

The result was the 1923 "ripper" act amending the 1917 act establishing the State Highway Department, passed soon after Governor Silzer took office.[37]

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[37] *P. L. 1923, c. 6,* passed February 13, 1923.

As has been noted, this statute reduced the membership of the State Highway Commission from eight to four, no more than two of whom could belong to the same political party. Appointment was by the Governor, by and with the advice and consent of the Senate, two members being appointed for two years and two for four years, successors to be appointed biannually thereafter for four-year terms. The Governor was given the power to remove members for neglect of duty or misconduct in office, upon charges and after hearing. The salary of the Commissioners was increased to $7,500.

The new four-man Commission was to appoint a State Highway Engineer as well as his Assistant, both to be qualified and competent engineers with actual experience in road and bridge construction and maintenance and to receive such salary as might be fixed by the Commission. The term of office was four years for both and the Commission was given the power to remove either one, for cause after hearing. The 1923 statute declared the term of office of the then Assistant State Highway Engineer at an end within ninety days after the effective date of the law, subject to his reappointment by the Commission. The term of office of the State Highway Engineer was terminated forthwith and the office declared vacant.

All other officers and employees of the Department were to cease holding their offices or employments at the expiration of ninety days from the time the act became law unless reappointed or reemployed by the new Commission at or before that time. The Civil Service, pension and retirement rights of any person reappointed or reemployed were to continue, and existing contracts of employment were to be honored until expiration.

The same session of the Legislature appointed a joint commission consisting of the President of the Senate and two Senators, and the Speaker of the House of Assembly and two Assemblymen to make "a full and complete investigation of the State Highway Department with relation to the construction of bridges; the acquisition of lands for the approaches thereto; and further, its dealing in said matters with any person, firm and corporation."[38] The first four-man State Highway Commission was confirmed March 16, 1923 and immediately organized, nam-

[38] *Joint Resolution No. 2,* passed March 23, 1923.

ing General Hugh L. Scott as chairman. The Commission appointed Major William G. Sloan as State Highway Engineer at $12,000 a year, and continued the Assistant State Highway Engineer in office.

No major changes were made in the departmental organization by the new Commission, nor were any suggested by the Highway Engineer. One of the first jobs of the Commission was to make plans for the approaches to the entrances of the proposed Holland Tunnel, in Jersey City, and the bridge over the Delaware River at Camden.[39] An advisory Board of Engineers was named in connection with each project in 1923, plans and surveys were prepared by the departmental Engineers, and as a result of the studies and recommendations of the two Advisory Boards, two new divisions were created in 1924 to supervise the projects, —Route 1 Extension Division, with headquarters in Jersey City, and the Camden Extension Division,[40] with Camden headquarters.

Still another division—the Metropolitan Division—was set up in 1927, with headquarters in Newark, to take charge of Route 21 that was to traverse that city, and other routes in the metropolitan area.

The highway construction program got into full swing under the Scott Commission. The 1922 and 1927 bond issues of $40,000,000 and $30,000,000, respectively, provided most of the funds for this program. Further funds were made available under the 1930 issue of $83,000,000.[41]

The Assistant Construction Engineer resigned in 1926, and the position was allowed to remain vacant thereafter. Part of his duties fell to the special assistant to the Construction Engineer, or Office Engineer. A new position—that of Field Engineer—was created in the Construction Division to supervise the work of surveys and plans, with a so-called "Division Engineer, Survey and Plans" (a title later changed to "Office

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[39] *P. L. 1921, c. 322* as amended by *P. L. 1922, c. 253,* extended Route No. 1 of the 1917 State Highway System to the entrance of the proposed Hudson River vehicular tunnel, and Routes No. 2, 3, and 6 to the proposed Delaware River Bridge.

[40] The Camden Extension Division was consolidated with the Southern Division in 1926.

[41] As has been noted, this issue consisted of $65,000,000 of State Highway bonds and $18,000,000 of Grade Crossing Elimination bonds. At the General Election held in November 1932, $20,000,000 of these bonds were cancelled pursuant to *P. L. 1932, c. 250,* and at the General Election held in November 1933, $5,000,000 additional of these bonds were cancelled pursuant to *P. L. 1933, c. 397,* thus reducing the original issue to $58,000,000. Of these bonds, $21,000,000 remain to be issued; $8,578,313.25 are for grade crossings and $12,421,686.75 are for highways.

Engineer") under him in charge of the draughting room, superseding the Chief Draughtsman. This arrangement was to develop into the Survey and Plans Bureau of the Construction Division.

One of the outstanding accomplishments of the Scott Commission was the study and recommendation made that led to the establishment of the 1927 State Highway System.[42] With the adoption of this system by the Legislature, the construction program of the Highway Department went into high gear. The carrying out of the 1927 plan was to place New Jersey in the forefront of the States in the scope and importance of its construction program. The personnel of the Department, particularly that involved in right-of-way acquisitions, survey and plans, and construction work, necessarily expanded as the volume of highway construction increased.

State Highway Engineer Sloan, who had been reappointed for another four-year term in 1927, resigned in 1929 and was replaced by Jacob L. Bauer, former Union County Engineer. Sloan, unlike his predecessor Wasser who had evolved many of the administrative features of the Department, concerned himself largely with engineering problems. The State Highway System which he had recommended in his report to the Commission had some features that might be criticized, but it was the first and only long-range highway construction plan ever laid down. It was farsighted in its conception, and as much of the plan as was left after the Commission and Legislature had added their amendments to it, was daringly executed.

The highway construction program came in for a good deal of criticism in the course of the Abell Commission hearings, and the Princeton Survey was highly critical of some of its features. It should be said in passing that the Princeton Survey conclusions regarding the highway program were only partially justified; some of them certainly took a short view of highway planning and did not go very far beneath the surface of the facts relating to the highway program.

It has been said that, probably as much as anything else, the huge expenditures required to carry out the 1927 program led to the fall of

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[42] The adoption of the dual highway system, the construction of Route No. 1 Extension, including the Pulaski high-level skyway, the introduction of separation of grades at highway intersections and the development of the cloverleaf design, remain among the outstanding engineering accomplishments of the Scott Commission.

the Scott Commission in 1933. This may be so, but it should be observed that political considerations were not without force in bringing about the change. The Scott Commission had stayed out of politics until the introduction of a new member on the Board in 1927. During their terms in office, Chairman Scott and some of his fellow members resisted attempts at political pressure and tried, to the best of their ability, to maintain administrative efficiency. The Scott Commission had not been without its other shortcomings, however, and its ten years in office could certainly provide critics with sufficient targets for their attack. The opinion held in many quarters is that the Scott Commission was dislodged by politicians advancing behind a shield of economy.

The State, like the rest of the nation, was in the depths of the depression and economy was the order of the day. The Princeton Survey recommendations promised total savings through reorganization and other economies of $1,261,000. Its chief recommendation of a Highway Department with the Highway Engineer as the responsible executive, was to wait another two years before a single-headed highway administration was to be an accomplished fact. But its insistence upon reorganization in order to accomplish needed economies found ready acceptance.

The Abell Commission had led to certain changes in the administration of highway affairs. For one thing, the State Purchasing Commissioner was given a greater measure of control over highway purchases under an act passed by the Legislature in 1931.[43] By another act passed the same year, the State Highway Department was required to submit to the Governor a detailed report of its work, operations and financial condition for the year, as well as a schedule of estimated anticipated revenues available for highway purposes during the ensuing calendar year, together with a schedule and program for that year. The Governor was required to review the schedule of anticipated revenues and the program, to formulate his budget recommendations on the basis thereof, and to submit these recommendations to the Legislature at the time he handed up his budget message.[44] In this way, the Highway Department was subjected to a greater measure of financial control.

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[43] *P. L. 1931, c. 179.*

[44] *P. L. 1931, c. 142, s. 18,* as amended; *R. S. 52:22-10.*

At the time of the Princeton Survey report, only two members remained of the original Commission appointed by Governor Silzer in 1923. The terms of Chairman Scott and another Commissioner ran out in March 1933, and Governor A. Harry Moore appointed Colonel Arthur F. Foran and one other to replace them in June after a hiatus of some three months, during which time departmental activity was virtually at a standstill. The Governor held the resignations of the remaining two members of the Scott board and in November 1933 appointed their successors.

Chairman Foran immediately proceeded to try to make good his promise of a million-dollar saving in the Highway Department. There was an attempt to have a "ripper" bill passed that would have made possible the dismissal of highway employees, whether protected by Civil Service tenure or not. The attempt failed. The Commission proceeded, nonetheless, to discharge hundreds of employees, in disregard of the Civil Service rights of many. Incidentally, it added a number of new employees in the upper salary bracket, including several additional part-time Assistant Counsel, and a Director and Assistant Director of Real Estate Acquisitions. The latter were selected and appointed in violation of the Civil Service law which contained no provision bracketing such positions into the unclassified service. The result was a disruption of the organization, morale and work of the Department. Some the aggrieved employees took steps to protect their status through their own Civil Service Association, by appeal to the Civil Service Commission, and resort to the courts. By the end of 1933, the Commission reported a reduction of 384 (from 1171 to 787) in the salaried personnel of the Department, of whom 255 were connected with the Construction Division and 85 with the Real Estate Division.[45] It should be observed that some of the latter eventually found their way into the enlarged Survey and Plans Division because the engineering work that they had been engaged in was taken over by it.

The work of the Department had come practically to a standstill because of the depression. Here was an excellent opportunity for a thorough reorganization which would give the Department a well-integrated and efficient set-up. However, aside from the wholesale dismissal of employees, only a few changes in organization were made.

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[45] *New Jersey State Highway Department Annual Report,* 1933.

The Route No. 1 Extension and the Metropolitan Divisions were abolished.[46] The three geographical divisions—the Northern, Central and Southern—were replaced by two "Construction Districts," each in charge of a District Engineer. The District Engineers and their assistants were relieved of their duties in connection with surveys and plans.

The Survey and Plans Division was enlarged and took over most of the engineering work on construction and all engineering and drafting work in right-of-way acquisitions. Its field staff was separate and apart from the field forces of the Construction Division; the one group had nothing to do with the work of the other.

The Real Estate Division experienced yet another in a series of many changes that succeeded each other from 1917 to 1933. The history of these changes can be cited as an outstanding example of what internal friction, politics, outside pressures, and a muddling departmental policy, can do. Some of these undesirable features are invariably encountered in most governmental agencies. Although these forces have been present in varying degrees in practically every Division of the Department from the earliest days down to the present, the Real Estate Division is discussed here because it has been most publicized, particularly in the course of the Abell Commission hearings.

At the time the Scott Commission went into office in 1923, right-of-way work was under the Construction Division. As has already been noted, the Engineer in charge of the Right-of-Way Division was responsible only for negotiations for the acquisition of rights-of-way; a Right-of-Way Agent was in charge of titles and settlements; and the right-of-way engineering work, mapping, etc., was the responsibility of the Survey Engineers in charge of eight field "Survey Districts" of the State, supervised by the Assistant Construction Engineer. Condemnation work was relatively inactive; the Attorney-General had not yet assigned a special Counsel to the Highway Department to try condemnation cases. As a matter of fact, relatively little right-of-way was being acquired; there was not much road construction on new location and only a limited amount of road-widening. Whatever property acquisition work there was, proceeded slowly, with a resultant delay in road construction.

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[46] Though officially abolished by the Foran Commission, the work on Route No. 1 Extension had been completed in November 1932 and virtually all the employees laid off by the end of the year, the few remaining employees being transferred ultimately to the Trenton office.

In an effort to improve the efficiency of right-of-way work, the Construction Engineer designated his special assistant, the Office Engineer, to coordinate and collaborate on all right-of-way matters, contacting the various officials engaged in that work in order to expedite acquisitions. In 1924, an Assistant Attorney-General was assigned as Counsel to the Department on a part-time basis at a $5,000 annual salary to handle condemnation cases. Negotiations began to come more and more under the direct supervision of the Office Engineer assisting the Construction Engineer. A staff of negotiators was slowly developed during the next few years, and the practice of the Commission of engaging special negotiators was gradually discontinued.

By 1926, right-of-way acquisitions had reached such volume that the Construction Engineer desired to be relieved of the increasing responsibility that this work entailed. There was an effort made to set up a separate Right-of-Way Division under the Counsel (part-time Assistant Attorney-General) to the Department. This failed, as did a compromise plan to leave engineering work involved in acquisitions in the Construction Division under the Office Engineer, and the condemnation work under the Counsel, and to set up an independent "Right-of-Way Legal Division" under an attorney who had been special negotiator for the Department on Route No. 1 Extension, to handle only appraisals, negotiations and titles.

The final result was that there was no great change in the organization for right-of-way acquisition. This work still remained under the Construction Division, but the special negotiator just mentioned was, in addition to his work on Route No. 1 Extension, made head of the so-called "Right-of-Way Legal Division," which was to remain in the Construction Division. Ostensibly, he was to be in charge of the Title Bureau. The balance of the right-of-way work—mapping, appraisals, negotiations, etc.—was handled directly by the Construction Division office through the Office Engineer, and the Right-of-Way Engineer. The Office Engineer continued as special assistant to the Construction Engineer, coordinating and collaborating with all subdivisions of the Construction Division, with special emphasis on right-of-way work. Condemnation proceedings remained under the Counsel to the Department.

This arrangement might have seemed satisfactory on the surface, but in practice it did not work so well. There was some increase in

the efficiency and speed of settlements, but there was friction between the Chief of the "Right-of-Way Legal Division," and the Right-of-Way Agent in charge of title work, who refused to recognize him as his superior. The attempt to smooth out this difficulty is indicated in the organization chart of the Construction Division for 1926,[47] which shows that the Title Bureau had two heads, side by side,—the Supervisor of the Title Bureau and the Chief of the "Right-of-Way Legal Division." These two men coordinated with the Assistant Attorney-General assigned to the Department.

Many people, both inside and outside of the Department, were dissatisfied with the whole arrangement. The State Highway Engineer, responding to this sentiment, recommended that the Right-of-Way Division be reorganized and placed in charge of a single individual.[48] The Assistant Counsel to the Department, whose salary was $5,000 a year, was selected for the job. In March 1929 he was appointed Counsel at $15,000 a year and put in charge of all phases of right-of-way work. All right-of-way personnel was transferred under his supervision. Counsel then brought forward his plan of reorganization for the Division, but the Commission would not give its approval. Considerable friction had developed between the Counsel and the Office Engineer, who had been in charge of right-of-way engineering, appraisals and negotiations.

The Commission attempted to resolve the situation by placing the Counsel in charge of only the actual legal and title work involved in right-of-way acquisition; and by putting the Office Engineer in charge of all other right-of-way activities as theretofore, but with enlarged authority, the Office Engineer to be directly responsible to the State Highway Engineer. This plan failed of a majority and before it could be acted upon again, the Highway Engineer resigned. No definite action was taken thereafter until the Abell Commission had aired the entire situation within the Right-of-Way Division in the course of its hearings.[49] It was then recognized that it would be wise

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[47] *New Jersey State Highway Department Annual Report,* 1926, Construction Division, p. 10.

[48] *New Jersey State Highway Department Annual Report,* 1928, Report of the Highway Engineer.

[49] *Minutes of the Abell Commission,* New Jersey State Library, typewritten manuscript. Minutes of March 17 and 24, 1930.

to separate the legal work from the other right-of-way work, as had several times been proposed.

By a resolution dated May 13, 1930 a reorganization of the Right-of-Way Division was effected by dividing it into a so-called "Legal Division" and "Appraisal and Negotiations Division." The former was to include the legal work involved in right-of-way acquisitions, and the work of the Title Bureau in searching and examining titles, preparing title documents and making the final settlements. The "Appraisal and Negotiations Division" was to continue to do the work it had been doing and to cooperate with the Assistant Attorney-General in condemnation work. The heads of both these Bureaus in the Right-of-Way Division were to report directly to the Commission. This definite allocation of duties eliminated the existing friction and the work of the two Divisions went on in a rather efficient manner.

The 1933 Foran reorganization set up a "Division of Real Estate Acquisitions" in charge of a Director. All right-of-way work and personnel, of whatsoever nature—whether legal, title, appraisal or negotiation—was transferred and placed under this Director. Right-of-way engineering and mapping work was transferred to the Survey and Plans Division. There was an Assistant Director to help the Director in charge of right-of-way acquisitions.

State Highway Engineer Bauer, who had proved to be a sound engineer,[50] was replaced by former State Highway Engineer Sloan. The Foran Commission made Colonel H. W. Hudson Assistant State Highway Engineer in place of Edward E. Reed, who had filled that position since December 1917. The latter was made "Supervisor of State Aid Projects,"—work that he had actually handled since 1922. All matters pertaining to Federal aid, theretofore handled by the Projects Division, were transferred to the Construction Division. Hudson served from August 1933 to March 1934 and was replaced by James Logan, present State Highway Engineer.

The 1935 statute creating the office of State Highway Commissioner, who was to be the administrative and executive head of the Department, was a modification of the Princeton Survey recommendation of a Highway Department headed by an engineer as the responsible executive. E. Donald Sterner was the first Commissioner appointed under the act,

[50] Bauer championed the high-level bridge plan for the Pulaski Skyway on Route 25 where his predecessor had sponsored the low-level bridge and tunnel plan. The dual highway design was adopted during Bauer's term.

and by the terms of the new law, was given full power to reorganize the Department. During his term in office, which still continues, he has made relatively few administrative changes. Perhaps the most important was the creation of the Division of Electrical Construction and Maintenance in 1936. The work of this Division had been performed by the Maintenance Division up to that time. The new Division was charged with the responsibility of maintaining and operating the machinery on movable span bridges, and installing, maintaining and operating electrical equipment on the State highways.

The Foran Commission's "Division of Real Estate Acquisitions" was reorganized. Right-of-way engineering and mapping was left where it had been—in the Survey and Plans Division of the Construction Division. The Director and Assistant Director of Real Estate Acquisitions were dropped. Appraisals and negotiations work was left under a Right-of-Way Agent acting for the Assistant State Highway Engineer, who remained in charge of all right-of-way work other than engineering and plans. The Assistant Attorney-General assigned to the Department was in charge of the right-of-way legal work, title searching and settlements, and also reported through the Assistant State Highway Engineer.

In 1938, a bureau was set up under the State Highway Engineer to handle all W. P. A. road projects. The State-Wide Planning Survey was established in the same year with headquarters in Newark, in cooperation with the U. S. Bureau of Public Roads, to gather and tabulate factual information on a comprehensive scale that would present a complete picture of the highway situation in the State.

State Engineer Sloan resigned in 1936. For a time there was a vacancy in that position until Assistant Highway Engineer Logan was appointed to succeed him in July 1937. The office of Assistant Highway Engineer has been allowed to remain vacant.

The position of General Solicitor of the State Highway Department was created in 1939.[51] He was to be appointed by the Commissioner with the approval of the Attorney-General, at a salary to be fixed by the Commissioner. His main duty was to coordinate and centralize the legal work of the various Divisions of the Department. Benjamin C. VanTine, one of the Assistant Attorneys-General assigned to the Department, was appointed its first General Solicitor at a salary of $12,000 a year.

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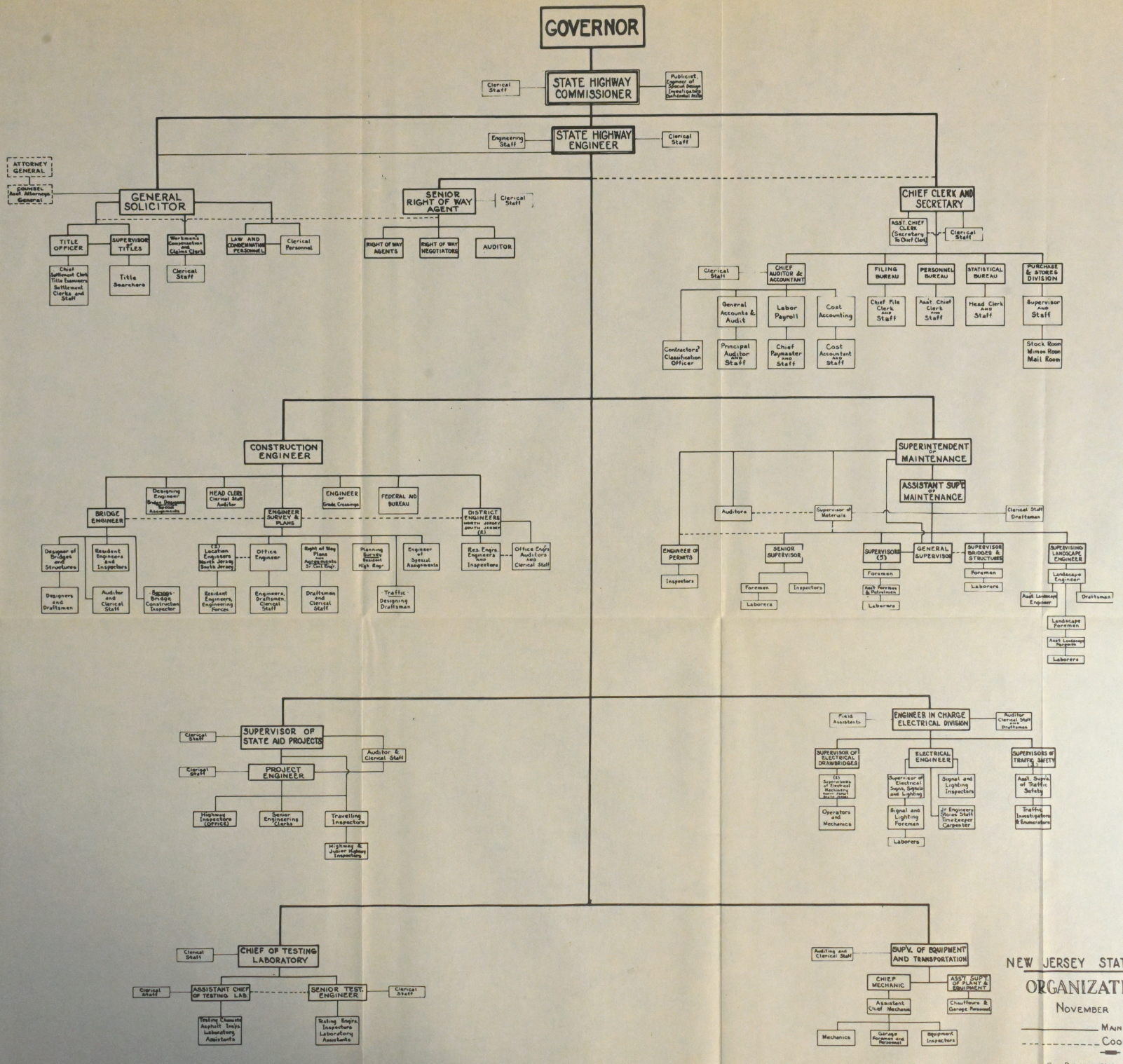
[51] *P. L. 1939, c. 75.* See *post,* p. 57.

CHAPTER II

THE ORGANIZATION OF THE NEW JERSEY STATE HIGHWAY DEPARTMENT



NEW JERSEY STATE HIGHWAY DEP'T.

ORGANIZATION CHART

NOVEMBER 1, 1941.

———— MAIN LINES OF AUTHORITY.

- - - - - - - - - - COORDINATION.

For Detailed Division Organizations See Individual Charts

CHAPTER II

THE ORGANIZATION OF THE NEW JERSEY STATE HIGHWAY DEPARTMENT

The New Jersey State Highway Department was originally quartered in the State House, and then in a Trenton office building until the late Fall in 1928, when the various Divisions began to move into the newly-built State House Annex. The transfer was completed by March 1, 1929.

The Department had contributed $500,000 of highway funds toward the construction of the Annex. It was commonly understood that it would be given sufficient space to accommodate its various Divisions and Bureaus. The Department at first occupied most of the western wing of the Annex except for the main section on the first floor occupied by the State Museum, and half of the fourth floor. Despite increased personnel and program, the Department enjoys less working space today than when it moved into the Annex, the fourth floor space having been assigned to other State functions. In order to accommodate some of the offices of the Department a small building opposite the Annex, known as 148 West State Street, has been rented.

The Equipment and Laboratory Divisions are located on a twenty-two acre tract on the Scotch Road, Ewing Township, just outside of Trenton, known as the Fernwood Service Station of the Department. Fernwood was opened in 1921. The Laboratory occupies a building in one corner of the tract, and the Equipment Division uses over a dozen large buildings and a few small ones, the largest of these structures housing the offices and main shops of the Division. The Equipment Division also has a large modern garage at Newark, completed in 1940, and garages at Vineland, Dover, Merchantville and Toms River, the latter two being leased. It also has storage places that it rents at Cliffwood, Somerville and Woodbridge.

Despite the fact that the Department contributed half a million dollars toward the cost of constructing the Annex, it now pays $20,000 annually as its share of the upkeep of the building. The problem of space has become a serious one. Employees are crowded together in a way which must impair their efficiency. The drafting room and the

Auditing and Accounting Bureau are examples that come readily to mind. The same condition exists in almost every Bureau of the Department. Office accommodations are at a premium.

Some small amount of space might be made available by a rearrangement of a few of the offices. An example is the large conference room adjoining the Commissioner's office on the first floor used mainly for weekly meetings. However, the extra working space gained would not begin to meet the needs of the situation.

Not only is there a lack of adequate working space for departmental forces, but an equally serious condition exists regarding the files and records. The central files long ago overflowed the two rooms assigned them. Despite every attempt to consolidate and make compact these files, space is badly needed. Some of the records of the Auditing and Accounting Bureau have had to be stored in the corridor adjoining the offices of the Bureau. Files of the Title Bureau, which include extremely valuable title searches and other records, have had to be stored in the basement of the Annex. This arrangement is altogether unsatisfactory. One may, if necessary, forego the convenience of having files ready at hand, but one must not overlook the need of keeping such important records in a safe and secure place.

There is another aspect to the problem thus posed. The Department now occupies valuable space in the Annex,—space which might be made available to other State agencies now occupying rented premises in the center of the city, were the Department transferred to other and more satisfactory quarters.

Some thought has been given to this problem by Department officials, but no comprehensive studies have been carried out nor definite decision reached. One solution frequently advanced has been that of moving the Department into new quarters at Fernwood, where two Divisions are already located and plenty of ground is available. The new office building would not have to be as elaborate nor as expensive as the Annex, and could certainly be laid out in a far more efficient functional manner than the present offices.

The suggestion of a new headquarters at Fernwood has several advantages: the cost would be less than for another location because the land is already owned; the new building could be laid out more effici-

ently; all Divisions of the Department would be brought together in one place; and valuable space in the Annex would be released for other State purposes.

It is recommended, therefore, that the Commissioner of Finance be directed to study this entire problem in order to determine whether it is advisable to continue the Highway Department in its present State House Annex quarters or establish it in some new location, such as at the Fernwood Service Station.

The State Highway Commissioner

The 1935 act[52] creating the office of State Highway Commissioner, continued the State Highway Department "as a branch of the executive department of the State government," and placed the Commissioner at its head. The act expressly gave him all the powers and duties of the State Highway Department and the State Highway Commission existing by virtue of any law or laws.

It has already been pointed out that the Commissioner is appointed by the Governor, by and with the advice and consent of the Senate, for a term of six years and until his successor is appointed and qualifies, "unless sooner removed by the Governor." The Governor has the power to remove the Commissioner for cause. The salary of the Commissioner is $15,000 a year, in addition to all necessary expenses incurred in connection with his official duties. He is required to furnish a bond in the amount of $50,000, the premium for which is paid by the State.[53]

The Commissioner is not required to be an engineer, or even to possess engineering knowledge, but he must give full time to the duties of his office.[54] The present Commissioner, E. Donald Sterner, is not an engineer but has for many years been connected with a large business enterprise.

The Commissioner enjoys the broadest powers. He has authority to reorganize the Department and to establish therein such Divisions

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[52] *P. L. 1935, c. 178.*

[53] *P. L. 1935, c. 178, s. 2; R. S. 27:1-3* and *4.*

[54] *P. L. 1935, c. 178, s. 6; R. S. 27:1-7.*

as he may deem necessary and expedient. He has the power to formulate and adopt rules and regulations, and prescribe duties for the efficient conduct of the work of the Department, its officers and employees.[55] He appoints and fixes the salaries of the State Highway Engineer and the Assistant State Highway Engineer and may remove either one for cause after hearing.[56] In addition, he appoints the General Solicitor of the Department, with the approval of the Attorney-General.[57]

He may appoint such heads of Divisions, and clerical, technical and other assistants, as he may deem necessary, fix their compensation and prescribe their duties, subject to the provisions of appropriations and to the Civil Service laws.[58] Further he may terminate the employment of any employee holding a position or employment under unclassified Civil Service and, if he deems it advisable, abolish any such position or employment.[59]

The Commissioner is under a duty to hold not less than twelve stated meetings each year. These, in addition to the minutes taken, are open to the public.[60] He must provide for the proper auditing of all accounts and monies received or expended, of labor performed or materials used in road work, and for the collection and tabulation of such statistics as may be necessary or proper for the use of the Department in carrying out the provisions of the law.[61] He is also required to make a complete financial report to the State Comptroller each December 31 and June 30, showing the available unexpended balances in the several accounts, and all outstanding liabilities under contracts or other financial obligations to counties, municipalities and persons.[62]

The 1927 act setting up a State Highway System gives the Commissioner the following wide powers:[63]

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[55] *P. L. 1935, c. 178, s. 6; R. S. 27:1-8.*

[56] *P. L. 1917, c. 15, s. 3,* as amended by *P. L. 1923, c. 6, s. 2; R. S. 27:1-14* to *16.*

[57] *P. L. 1939, c. 75; R. S. 27:1-21.*

[58] *P. L. 1935, c. 178, s. 6; R. S. 27:1-17.*

[59] *P. L. 1935, c. 178, s. 4; R. S. 27:1-18.*

[60] *P. L. 1917, c. 15, s. 2; R. S. 27:1-7.1.*

[61] *P. L. 1917, c. 15, s. 4; R. S. 27:1-10.*

[62] *P. L. 1927, c. 319, s. 117; R. S. 27:1-11.*

[63] *P. L. 1927, c. 319, s. 111,* as amended by *P. L. 1929, c. 221, s. 1; R. S. 27:7-21.*

a. To determine and adopt rules, regulations and specifications, and enter into contracts covering all matters and things incident to the acquisition, improvement, betterment, construction, reconstruction, maintenance and repair of State highways.

b. To execute and perform as an independent contractor or through contracts made in the name of the State, all work[64] incident to the maintenance and repair of State highways.

c. To establish and maintain, as an independent contractor, a patrol repair system for the proper and efficient maintenance and repair of State Highways.

d. To employ and discharge, subject to the provisions of the Civil Service law, all foremen and laborers, prescribe their qualifications, and furnish all equipment, tools and material necessary for such a patrol repair system.

e. To widen, straighten and regrade State highways.

f. To vacate any State highway or part thereof; and

g. To do whatever may be necessary or desirable to effectuate the purposes of *Title 27 of the Revised Statutes of 1937,* "Highways."

Some idea of the many and varied powers of the State Highway Commissioner may be gained by considering the various statutory provisions that have been brought together under *Title 27 of the Revised Statutes of 1937,* as amended and supplemented. The following list is not a complete one, but includes most of the major powers:

1. *Detour roads.*—He may establish necessary detour roads where a road is being constructed, reconstructed or undergoing extraordinary repairs under his authority and direction, and put them in fit condition for public travel (*R. S. 27:3-1* and *2*); and may contribute to any county for detour road purposes, under such rules and regulations as he may establish, any money that may come to his hands to be used for construction, reconstruction or extraordinary repairs (*R. S. 27:3-5*).

2. *Additional routes.*—He may lay out routes in continuance of, connecting with, and in addition to the legislated routes (*R. S. 27:7-2*).

3. *Taking over routes.*—He may determine whether a route or part thereof shall be taken over as a State highway, after notice served on

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[64] "Work" has been very broadly defined by the Legislature. After setting out all activities included under "work", the definition concludes with: "And all other things and services necessary or convenient for the performance of the duties imposed by this title (*Title 27 of the Revised Statutes,* 'Highways')." See *R. S. 27:7-1.*

the governing body having control of such route, and hearing. Should his determination (made before work on the highway has actually begun) provide that certain sections, not exceeding five miles in length in any particular location, are subject to change of route, then the indicated portions of the highway do not become permanently dedicated as part of the route, but the Commissioner may, within five years from the completion of the entire highway as originally laid out, alter the route and lay out the new part of the route as he may indicate (*R. S. 27:7-5* and *6*).

4. *Construction and maintenance of highways.*—The Commissioner is responsible for all work on State highways, and maintaining the highways in good order (*R. S. 27:7-11*).

5. *Public utility use of bridges and viaducts.*—He may prescribe reasonable terms and regulations under which certain public utilities may install their services in, on, over or under a public viaduct or bridge constituting a part of the State Highway System (*R. S. 27:7-13*).

6. *Improvement of municipal streets as State highways.*—He may enter into contract with a municipality whose streets or routes will form proper connections with a State highway, for work which will place them in a condition in keeping with the nature of the State highways approaching and leaving the municipality (*R. S. 27:7-15*).

7. *Powers over State highways.*—In the improvement, betterment, repair and maintenance of highways forming a part of the State Highway System, the Commissioner possesses and exercises, in addition to those conferred on him by *Title 27 of the Revised Statutes of 1937,* all the rights and powers not incompatible with his functions nor prohibited by law, exercised by Overseers of Roads and Boards of Chosen Freeholders in road construction, repair and maintenance. (However, where a State highway runs through a city of 75,000 or more population, over streets or roads formerly under its jurisdiction, the city retains all its former rights as to the construction and regulation of all water, sewer, gas and other subsoil conduits and structures.) (*R. S. 27:7-18.*)

8. *Cooperation with public bodies in highway work.*—The Commissioner may enter into a written agreement with any public body or person for cooperation in any work, and to assume any portion of the cost thereof (*R. S. 27:7-19*).

9. *Settlement of claims.*—Whenever it appears to the Commissioner that any claim of the State against a county, municipality or corporation arising out of its obligation to contribute toward the laying out, construction, maintenance or repair of a State highway, bridge, or any part thereof, is disputed, either in whole or in part, and that enforcement of

such claim would necessitate litigation, and that it is to the best interest of the State to compromise and settle such claim, he may present the matter to the State House Commission which is authorized to permit him to settle, compromise and adjust any such claim, including any set-off with respect thereto, on such terms as the State House Commission deems reasonable and proper, provided that no payment shall be required from the State. The terms of the settlement agreement must be carried out within eighteen months after delivery of the agreement (*R. S. 27:7-19.1* and *19.2*).

10. *Acquisition of lands for highways.*—The Commissioner may acquire lands or rights therein by gift, devise or purchase, or by condemnation, and enter upon and take property in advance of making compensation therefor where for any reason he cannot acquire the property by agreement with the owner (*R. S. 27:7-22*). And where he finds it necessary to acquire lands owned and used by municipalities for public purposes, the Commissioner may, after holding a hearing, determine whether or not it is a reasonable public necessity to acquire the land in question (*R. S. 27:7-23*).

11. *Settlement of controversies over lands used as highways.*—He may settle and compromise, in such manner and upon such terms as he in his discretion may deem advisable, all controversies respecting the location of a public highway under his jurisdiction, or the width and boundaries of such a highway, and all controversies respecting the right of the State to seize and take possession of, as part of a public highway under his control, lands occupied as private property under a claim of ownership for a long period of time without any right being asserted therein by the State or its predecessors in title. In this connection, the Commissioner may award compensation whenever he deems such award proper, pay for the removal and rebuilding of structures encroaching on the highway, or vacate the whole or any part of the land in controversy (*R. S. 27:7-24*).

12. *Permission for openings in highways.*—He may grant permission, upon such terms as he may prescribe, for openings in a newly constructed or reconstructed State highway before the expiration of the statutory five-year period within which openings are not permitted without the Commissioner's consent (*R. S. 27:7-28*).

13. *Rejection of bids; qualification of contractors.*—The Commissioner may reject any or all bids for work or materials not in accordance with the advertisement of specifications, or for any other irregularity, or if the price is excessively above the estimated cost, "or for any other cause" (*R. S. 27:7-30*). In addition to the certified check which must accompany bids, he may require such additional evidence of a contractor to perform the work as he deems necessary and advisable (*R. S. 27:7-31*).

14. *Location of State highways in county parks.*—He may contract with a County Park Commission regarding the location, laying out, opening, improvement, construction and maintenance of a State highway in, over, under, through or across any park, reservation or parkway owned by or under its control and jurisdiction (*R. S. 27:7-36*). Where the construction of a State highway will affect a comprehensive plan of municipal improvement, the Commissioner may determine to conform as nearly as practicable to that plan and acquire lands outside the uniform width of the highway (*R. S. 27:7-37*).

15. *Construction of sidewalks and curbs.*—He may construct paths or sidewalks and curbing along State highways and other roads and highways under his jurisdiction, and may contract with counties and municipalities to share the cost of such construction, and of the subsequent maintenance and reconstruction thereof (*R. S. 27:7-39*).

16. *Work under $83,000,000 bond issue.*—The Commissioner may enter into contracts for the doing of work authorized by law and financed from the $83,000,000 bond issue authorized in 1930 whenever he certifies to the State House Commission the amount that must be raised by the issuance of bonds for that work, and the State House Commission approves (*R. S. 27:7-40*).

17. *Protection of highways from damage by water.*—In order to prevent damage to a State highway by water, he may enter upon adjacent lands and, with Department forces or by contract, reconstruct such banks and other structures and construct such drains as may be necessary to preserve the highway (*R. S. 27:7-41*).

18. *Highway beautification.*—He may set aside for highway beautification in any calendar year from funds available for State highway construction, a sum not exceeding one per cent. of the amount spent in the preceding calendar year for highway construction. This money is to be spent under the supervision of a competent landscape architect to be employed by the Commissioner for that purpose (*R. S. 27:7-42*).

19. *Contracts for road material deposits.*—He may contract for the acquisition of any necessary lands or easements for gravel pits or other natural deposits of road materials (*R. S. 27:7-43*).

20. *Use of highways by railroads and street railways.*—No consent, grant or franchise affecting any portion of a State highway, or road included in the State Highway System, may be given for the construction of a railroad or street railway thereon, except with the Commissioner's approval and under conditions acceptable to him; nor may anyone construct any works in or upon any State highway except under such conditions and regulations as he may prescribe (*R. S. 27:7-44.1*).

21. *Designation of State highway bridges.*—The Commissioner may designate any bridge connecting at each end with improved roads in the State Highway System as a State highway bridge, whenever in his judgment the cost of its operation or repair is, in view of the traffic it carries, an inequitable charge on the Board of Freeholders charged by law with such costs. Upon making such a designation, the Commissioner prescribes the exact share of the costs of operation or repair assumed by the State (*R. S. 27:7-45* and *46*).

22. *Piers and wharves.*—He may acquire by gift, devise, grant, purchase or condemnation, as part of the State Highway System, land and water rights in any sixth class county, place structures thereon, and erect or purchase piers and wharves for the landing of boats that carry freight, vehicles and passengers (*R. S. 27:7-49* and *50*). He may prescribe charges for the use of the piers and make such rules and regulations governing them as he deems necessary. He may rent or lease piers and wharves for a period not exceeding ten years, with an option to purchase at the expiration of the lease (*R. S. 27:7-52*).

23. *Roads on State property.*—All roads and driveways on State-owned land must be constructed under the supervision of the Commissioner, and all improvements to those already constructed must likewise be made under his supervision (*R. S. 27:7-53*).

24. *Federal aid.*—The Commissioner may apply to and contract with the United States government for aid in road work, and with governing bodies of counties and municipalities for the performance of such work with the aid of the State and Federal governments, the State's share in the latter case not to exceed 50 per cent. of the balance after deducting the amount received as Federal aid (*R. S. 27:8-1* and *3*).

25. *Construction of State highway routes by counties and municipalities.*—The Commissioner may consent to the construction and improvement of the whole or any part of a State highway laid out by him, by the Board of Freeholders of the county in which it lies, the work to be done in accordance with plans and specifications submitted to and approved by him. He must likewise approve of any contract let for such work, and the work must at all times be subject to his inspection. The Commissioner must, within six years after the date that he has approved of the construction contract, if funds be on hand available for that purpose, take over the highway and reimburse the county for the actual cost of the construction, after the State Highway Engineer has certified that the road has been constructed in accordance with the plans and specifications approved by the Commissioner (*R. S. 27:9-1* and *3*). Similar provisions exist as regards State highways within municipalities (*R. S. 27:10-1* and *4*).

26. *County paving of State highways.*—The Commissioner may, where a road taken over by him as a State highway is not yet paved, consent to the county paving the road, and designate the year in which the county will be reimbursed for the work (*R. S. 27:9-5*).

27. *Disposition of property not needed for State highways.*—Whenever the Commissioner determines that real estate or any right or interest therein acquired for State highway purposes, is no longer needed for such use, he may:

a. Sell it at private sale, for not less than the amount paid therefor, to any municipality or public board, for public use only;

b. Sell it at public sale to the highest bidder; or

c. Exchange it for other lands (*R. S. 27:12-1*).

He may also convey and release to the owners of the fee, any slope, drainage or easement rights that he may determine are no longer required for the use of the State highway with which they are connected (*R. S. 27:12-4*). In addition, he may exchange or sell at private sale, on such terms as he deems in the best interest of the State, lands acquired for highway purposes, in order to acquire other lands required for such purposes (*R. S. 27:12-4* and *5*).

28. *Construction and maintenance standards for State Aid Roads.*—The Commissioner may prescribe standards for the construction and maintenance of State Aid county or municipal roads (*R. S. 27:13-1*).

29. *Approval of State Aid annual work programs.*—He must approve the annual work programs filed by counties and municipalities covering the improvement, maintenance or repair of highways and bridges with State Aid funds (*R. S. 27:13-2*). In this connection, the Commissioner may hold hearings with a view to recommending changes in the programs, and may deny State aid to any projects which in his judgment do not properly coordinate with the State Highway System and with county and municipal systems (*R. S. 27:13-3*).

30. *State aid to counties.*—The Commissioner apportions $35,000 annually to each county from State Highway System funds as State aid money for the construction, reconstruction, maintenance and repair of county roads and bridges, pursuant to *R. S. 27:14-1*. When more roads are applied for to the Board of Freeholders than can be constructed in any one year, the Board and the Commissioner may select those to be constructed first (*R. S. 27:14-2*). In this connection, no survey of a county road to be constructed may be commenced until the Commissioner has given his written consent, and he must approve of all plans and specifications after the Freeholders have passed on them (*R. S.*

27:14-3). Further, he must approve of every contract let, together with the contractor's bond (*R. S. 27:14-13*), as well as any supplemental contracts entered into by the Board of Freeholders (*R. S. 27:14-7*). Finally, he must certify to the State Comptroller, from time to time, the amount to be paid any county or municipality as the State's share of the construction cost (*R. S. 27:14-17*). The Commissioner has similar powers where existing roads constructed with State aid are to be widened with State aid funds (*R. S. 27:14-22*). Where an improved public road is in need of extraordinary repairs or reconstruction, the Commissioner may approve the plans and specifications prepared by the public body charged with its care, and certify the amount of State aid funds he will set aside for the work of repairs (*R. S. 27:14-47*).

31. *State aid to municipalities for construction of unimproved roads.*—The Commissioner decides which of the applications made by the municipalities in any county for State aid[65] in the construction of unimproved roads will best serve the interests of the municipalities, county and State, and, after approval, enters into agreements with them regarding necessary plans and surveys, the doing of the actual work, and the inspection thereof (*R. S. 27:15-4*).

32. *State aid to municipalities for maintenance and repair of State Aid roads.*—The Commissioner distributes $525,000 annually among the several counties in such proportions as he may determine, for the purpose of aiding municipalities in the maintenance and repair of roads constructed with State Aid funds (*R. S. 27:15-10*). The municipalities must contribute such sum towards the cost of repair as he or the Board of Freeholders may determine, which shall not be less than ten per cent. (*R. S. 27:15-13* and *14*). The Commissioner must approve of the work done or services rendered before any payment may be made (*R. S. 27:15-15*). In the case of municipalities in first class counties, the Commissioner may permit State Aid maintenance funds for new construction, reconstruction, betterment or improvement of municipal roads and streets (*R. S. 27:15-18*).

Here, then, we have the full sweep of the authority delegated to the State Highway Commissioner. Hand in hand with these extensive powers goes full responsibility.

The powers and duties assigned to the Commissioner also serve to indicate how far reaching the ramifications of the State Highway De-

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[65] $125,000 of State Aid money is available to the municipalities of each county, excepting cities of over 14,000 population. Of this amount, $75,000 is available for construction of unimproved roads and $50,000 for maintenance and repair of such roads. Any portion of the $50,000 not applied for by October 1 of each year is added to the $75,000 available for construction (*R. S. 27:15-1*).

partment are. Its program and activities extend into every section of the State. The influence of the development of the State Highway System on the life of New Jersey is obvious enough. A moment's consideration of the more than nine-million-dollar State Aid program to counties and municipalities, which is anything but self-executing, will reveal just how all-pervading the Department's influence can be, and is.

No estimate can possibly be projected that will indicate the large number of persons and organizations ultimately affected by the operations of the Department. Aside from those actually employed by the Department, and the Federal, State, county and local officials with whom they constantly deal, there are the contractors and their forces; the motorists, of course; those who produce the materials and supplies needed for highway work; the petroleum and automotive industries; citizens interested in highway development, in parkways and roadside beautification. It can readily be appreciated that many of these interested individuals and groups try to bring their problems and propositions to the Commissioner's attention. Not a few succeed. In the measure that they manage to take up his time with correspondence and interviews, they reduce the time required for administering the day-by-day affairs of the Department itself.

The State Highway Department consists of the Commissioner and all the officers and employees continued in offices or employments or appointed under the provisions of the 1935 act establishing the office of State Highway Commissioner, and all the powers of the Department reside in the Commissioner as the administrative head thereof.[66] The Department, as presently constituted under the Commissioner, consists of the following Divisions:

1. Administration Division, headed by the Chief Clerk and Secretary, which includes the Auditing and Accounting, Filing, Personnel, Purchase and Stores, and Statistical Bureaus.

2. Legal Division, in charge of the General Solicitor.

3. Real Estate Division (Negotiations), headed by the Senior Right-of-Way Agent.

4. Construction Division, which includes the Survey and Plans Bureau, Bridge Bureau, Construction Districts, Engineer of Grade Crossings, and Federal Aid Bureau, all in charge of the Construction Engineer.

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[66] *P. L. 1935, c. 178, ss. 1, 8; R. S. 27:1-2.*

5. Maintenance Division, headed by the Superintendent of Maintenance.

6. State Aid Projects Division, in charge of the Supervisor of State Aid Projects.

7. Electrical Division, headed by the Engineer in Charge.

8. Equipment Division, headed by the Supervisor of Equipment and Transportation.

9. Laboratory Division, in charge of the Chief of Testing Laboratory.

The Chief Clerk and Secretary, and the General Solicitor are directly responsible to the State Highway Commissioner for the work of their Divisions. The heads of all other Divisions are directly responsible to the State Highway Engineer, who, in turn, is directly responsible to the Commissioner.

The chief aides of the Commissioner are the State Highway Engineer, the General Solicitor, and the Chief Clerk and Secretary. Respectively they handle the engineering problems, legal matters, and administrative details of the Department.

The Commissioner has a staff consisting of a personal secretary, a reception clerk, five Investigators, an Engineer of Special Design, and a part-time publicity man. The Engineer of Special Design, whose salary is $3,600 a year, is in charge of the educational program of the Department, including the preparation and showing of films, pictures and other exhibits relating to the work of the Department, lecturing on various aspects of the Department program, and publicizing highway activities, particularly the safety program carried out in recent years. He is also in charge of preparing photographs for departmental use, as well as models and drawings of proposed construction for engineering and public relations purposes. He has one full-time assistant and a part-time assistant when needed.

The Investigators are responsible for investigating and reporting directly to the Commissioner on all complaints and anonymous communications. They also keep constant check on the employees in the field in order to maintain the efficiency of the Department. Each Investigator has about four counties as his territory. The present Commissioner established the system of Investigators working directly out of the head office.

The Commissioner is entitled to two assistants who need not be in the classified Civil Service.[67] His personal secretary is one; a Confidential Assistant, at a salary of $4,800 a year, was the other until very recently when he joined the armed forces.

The State Highway Engineer

The State Highway Engineer, as has already been noted, is appointed by the Commissioner for a term of four years, and may be removed by him for cause after hearing.[68] He must be "a qualified and competent engineer who has had actual experience in road and bridge construction and maintenance." He must devote his entire time and attention to the duties of his office. His salary is fixed by the Commissioner, and he also receives reimbursement for his necessary expenses. The Highway Engineer is required to furnish a bond to the State in the sum of $10,000 conditioned upon the faithful performance of his duties.

The statutes make similar provision[69] for an Assistant State Highway Engineer, but this office has remained vacant since 1937 when the incumbent, James Logan, was promoted to his present position as Highway Engineer. His salary as Assistant Highway Engineer was $10,000. At the time he became Highway Engineer in July 1937, the Commissioner fixed his salary at $12,000; in 1939, this was raised to $14,000.

The Highway Engineer has general supervision over all Divisions of the Department except the Administration and Legal Divisions. There is a direct connection with the latter Division, however, where its work touches upon the acquisition of property. The Highway Engineer is, of course, directly responsible to the Commissioner.

The staff of the Highway Engineer includes an "Assistant to the Chief Clerk" (at $3,000 a year) who acts as secretary to the Engineer, handling his correspondence and reports, helping with the annual report, obtaining required data and information for him from the

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[67] *R. S. 11:4-4 (m).*

[68] *P. L. 1917, c. 15, s. 3,* as amended by *P. L. 1923, c. 6, s. 2; R. S. 27:1-14* and *16.* The term of the present Highway Engineer, James Logan, expires June 30, 1945.

[69] *R. S. 27:1-15.*

various Departments, and otherwise serving in the capacity of an administrative assistant. He, in turn, is assisted by a Senior Clerk-Stenographer. Reporting directly to the Highway Engineer are the Special Engineer;[70] an Investigator,[71] whose salary is $4,800 a year and who investigates complaints for the Highway Engineer; and a Technical Engineer, who was brought into the Department to handle engineering details on Public Works Administration projects such as the Edison bridge and similar permanent structures. He is presently cleaning up the final details on these projects and handling special engineering assignments for the Highway Engineer. His salary is $6,000 a year, and he is assisted by a Clerk-Stenographer.

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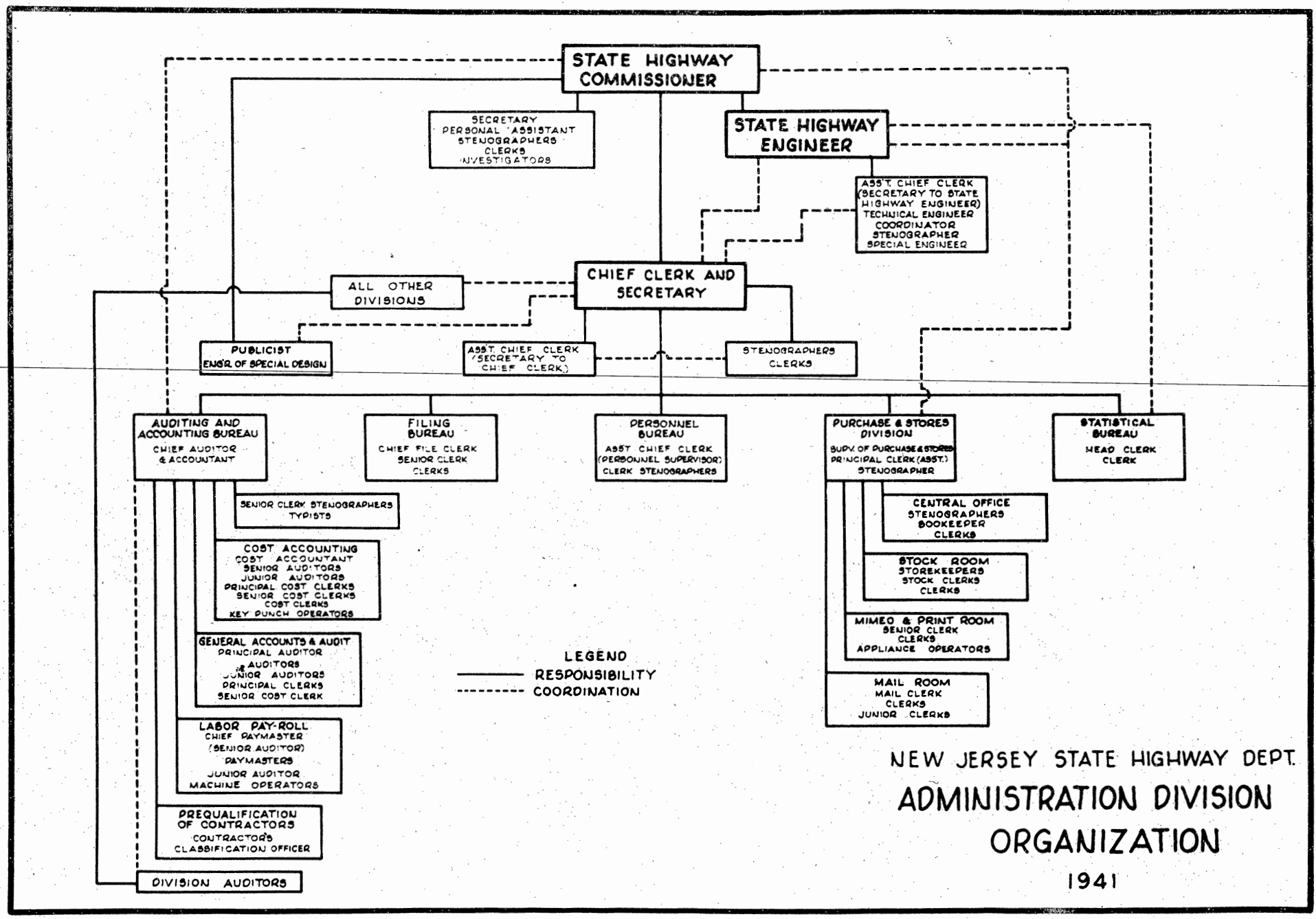
[70] This position is discussed in the section dealing with the organization of the Real Estate Division, *post,* at p. 65.

[71] Civil Service title, "W. P. A. Field Coordinator."



NEW JERSEY STATE HIGHWAY DEPT.

ADMINISTRATION DIVISION ORGANIZATION

1941

ADMINISTRATION DIVISION

The Administration Division of the State Highway Department is headed by the Chief Clerk who is in general charge of the Auditing and Accounting Bureau, Purchase and Stores Bureau, personnel matters, statistical research, the labor payroll fund, the central files, the mail room and the office boys.

The Chief Clerk is also Secretary to the Department, having been continued in that position by designation of the Highway Commissioner when the latter took office in 1935. He likewise was continued as Approval Officer of the Department, and in that capacity provides the responsible signature which the State Comptroller requires on Department bills before payment.[72] In addition, the Chief Clerk is Custodian of the Labor Payroll Fund.[73]

Duties of the Principal Division Personnel

Chief Clerk and Secretary:

He is directly responsible to the State Highway Commissioner, but the very nature of his office requires that he be in constant contact with the several Divisions of the Department.

As Secretary, he prepares the schedule of business for the meetings of the Commissioner; certifies the official action taken by the Commissioner; prepares and distributes directly after the meeting an indexed summary of official action taken; draws up the formal minutes of the meetings which are indexed and bound; notifies all Department officials and outside parties of any action taken by the Commissioner affecting them; handles all records, instruments and other material that are to go before the Commissioner for action or are called for by him; keeps a file of orders promulgated by the Commissioner; and, as Secretary of the Department, signs official correspondence.

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[72] See *R. S. 52:18-28.*

[73] See *R. S. 27:11-3.*

By virtue of his designation as Approval Officer for the Department, the Chief Clerk approves all bills presented to the department for payment.

In connection with the letting of contracts, the Chief Clerk prepares the advertisements for bids and forwards them to a general mailing list and to newspapers for publication; he provides bidders with sets of construction plans upon payment of a deposit; he opens the bids in the Commissioner's presence and tabulates them; and he supervises the preparation and execution of contracts let by the Department. Through the Chief Auditor and Accountant, the Chief Clerk is generally responsible for all auditing and accounting work. He has general charge of statistical research and of purchases and stores, and direct charge of the personnel work of the Department. He is generally responsible for the Department's files and records, and for the mail and mailroom, and has general supervision of the office boys.

As Custodian of the Payroll Fund, the Chief Clerk handles the revolving labor payroll account and signs checks drawn on it. The $100,000 fidelity bond of the Custodian of the Payroll Fund is furnished in accordance with the provisions of the statute.

The salary of the Chief Clerk is $6,600 a year. Assisting him are the Chief Auditor and Accountant, two Assistants, the Supervisor of Purchase and Stores, a Chief File Clerk, a Head Clerk doing statistical work, and a small clerical staff. The latter consists of two Senior Clerk-Stenographers, one acting as secretary to the Chief Clerk and the other preparing the office copy of the minutes and the index thereto as well as doing secretarial work for the Chief Clerk and his Assistant (salaries $1800 and $1620, respectively); a Principal Clerk-Stenographer (at $2160) who handles routine correspondence and, with a Clerk as assistant, assembles plans and specifications, records contractors' deposits therefor, and carries out general office work; and two Clerk-Stenographers.

Assistants to the Chief Clerk:

An Assistant to the Chief Clerk serves as his executive secretary and assists in carrying out many of the details of the great volume of work which clears his office. His duties touch upon all phases of the work of the Chief Clerk except those which require the latter's signature.

Another Assistant to the Chief Clerk is in complete charge of all matters relating to personnel, including the filling of vacancies and new positions; the laying off, fine, demotion suspension, removal, promotion or resignation of employees; leaves of absence and salary changes, all of which matters require official action by the Commissioner. He clears all personnel matters with the Civil Service Commission. He maintains a complete and detailed card file for all salaried personnel, as well as a folder for each salaried employee containing all records relating to him. He prepares the payroll of the salaried personnel semi-monthly. He is also in charge of all matters relating to the State Employees' Retirement System. He is assisted by a clerical staff of two.

The salary of each Assistant is $3,300 a year.

Chief Auditor and Accountant:

As head of the Auditing and Accounting Bureau, he is responsible for all auditing, accounting records and financial reports of the State Highway Department. He is in general charge of planning and installing auditing and accounting systems and forms for the purpose of insuring proper audits and of maintaining the financial and cost records of the Department. He supervises and directs all auditing, accounting and cost accounting procedures and personnel.

The Chief Auditor and Accountant prepares the annual budget of the Department before October 15, after conferring with the Highway Commissioner and the Highway Engineer. He also prepares and submits monthly, quarterly and annual financial reports, as well as such special reports and analyses as may be requested of him by the Commissioner. He handles all claims against contractors and such correspondence as the Commissioner may refer to him for reply. He also certifies the availability of funds on various projects.

In addition, the Chief Auditor and Accountant supervises the preliminary work connected with the classification of contractors under the prequalification requirements of the Department.[74] Along with the Highway Engineer, Construction Engineer and General Solicitor, he sits as a member of the Prequalification Committee which recommends to the Commissioner the classifications and ratings to be given to contractors who wish to qualify as prospective bidders on highway contract work.

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[74] See *R. S. 52:35-1 et seq.* in this connection.

His salary is $5,260 a year. He is assisted by Division Auditors, Auditors, the Cost Accountant and his staff, those in charge of general accounts and the labor payroll, and a Contractors' Classification Officer.

Division Auditors:

Auditing work is done in the first instance by Division Auditors[75] located in the various divisional offices of the Department. There are fifteen Division Auditors, and they are, in effect, the representatives of the Chief Auditor and Accountant in their respective Divisions. After they have checked the bills, reimbursement statements, estimates for payments, etc., these records pass on to the central office.

Auditors:

There are five Auditors[76] directly responsible to the Chief Auditor and Accountant. One, working out of the central office and assigned to the field, does work similar to that of the Division Auditors in connection with construction projects carried out by the Maintenance Division. The other four, located in the central office proper, are responsible for making the final audits. One handles all items relating to salaries and ordinary expenses (items of general administration) for all Divisions; a second, contract construction items originating in the Construction Division; the third is in charge of right-of-way and special service items; and the fourth, items relating to State Aid work (aid to counties and municipalities).

Cost Accountant:

The cost accounting work of the Bureau is in charge of a Cost Accountant, who acts as the chief assistant to the Chief Auditor and Accountant. His salary is $3,960 and he is assisted by a staff of twenty-three, headed by an Auditor.[77] The complex and detailed work of

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[75] These are discussed in connection with the organization of each Division, *post.* Their salaries vary.

[76] Civil Service classifications: "Auditor" (2)—salary $2,700; "Principal Clerk" (1)—salary $2,400; and "Junior Auditor" (2)—salaries $1,980 and $2,280.

[77] Civil Service classifications: "Auditor" (1) at $2,700; "Principal Cost Clerk" (1) and "Principal Clerk" (1) at $2,400; "Senior Cost Clerk" (8) at $1,500 to $2,040; "Junior Auditor" (2) at $1,860; "Cost Clerk" (3) at $1,080; and "Key Punch Operator" (7) at $1,080 to $1,680.

breaking down the actual expenditures of the several Divisions and distributing them to the various operations and jobs, is made possible through the use of tabulating machines handling punched cards.

The many items which pass across the desks of the Division Auditors in the Maintenance, Electrical and Equipment Divisions, and in the Purchase and Stores Bureau, are analyzed by the cost accounting staff. One of the staff is in charge of checking all items for such matters as code numbers and calculations; a second person maintains cost control on all costs relating to maintenance (including labor, materials and supplies); engineering costs is the responsibility of a third member, and equipment costs the responsibility of a fourth.

This cost accounting system is complete and very efficiently managed. It makes possible the prompt determination of unit costs, the current total expenditure on a particular operation, accurate inventory control, and a host of other matters that one would expect of a modern and comprehensive cost accounting system.

The Cost Accountant is also responsible for maintaining a perpetual inventory record and of taking an inventory of maintenance materials, supplies and equipment, and of stores kept by the Purchase and Stores Bureau. Such inventory is made at least once a year, and there are interim spot checks.

General Accounts:

The general accounts are kept by a staff of four,[78] assisted on occasion by the Contractors' Classification Officer. One handles the general ledger, two are assigned to the journals, and one is in charge of the bill ledger.

Labor Payroll:

A Senior Auditor heads the staff of eight which handles the labor payroll.[79] Checks are prepared after the payrolls have been checked against the tabulated time records kept by the Cost Accountant and

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[78] Civil Service classifications: "Principal Auditor" (1) at $3,000; "Senior Cost Clerk" (1) and "Junior Auditor" (2) at $1,740.

[79] Civil Service classifications: "Senior Auditor" (1) at $3,000; "Junior Auditor" (1) at $2,160; "Paymaster" (4) at $1,680 to $2,400; "Bookkeeping Machine Operator" (1) at $1,200; and "Office Boy" (1) at $480.

after they have cleared the Civil Service Commission and the Commissioner of Finance.[80] Four of these eight serve as paymasters in distributing the checks to the men in the field.

Contractors' Classification Officer:

He reviews and analyzes questionnaires submitted by prospective contractors on highway work, under the provisions of *R. S. 52:35,* to see that they meet the prequalification provisions. After the Highway Commissioner has approved the classifications and ratings recommended by the Prequalification Committee, the Contractors' Classification Officer notifies the contractors of their status. He handles all notices in connection with submitting new prequalification questionnaires before the expiration of any classification and rating.

He also maintains a card file of all contractors, with their classifications and ratings; analyzes the revised statement which each contractor must file at the time he submits a bid for highway work to ascertain that his condition has not changed for the worse since he was classified and rated, and reports the results of his analysis to the Construction Engineer; keeps a file of all statements submitted; and whenever necessary revises the regulations and forms relating to prequalification. He also assists in the general accounting work of the Chief Auditor and Accountant when needed. His salary is $2,700.

Supervisor of Purchase and Stores:

He reviews all order requests for materials made by the various Divisions to determine whether the items are to be bought by the State Purchasing Department or directly by him. If the item requested is such as he may buy, he makes the purchase direct. Otherwise, he prepares a detailed application and sets of mimeographed specifications for the State Purchasing Department. He tabulates bids received by that Department for maintenance materials and conveys to the State Purchase Commissioner the recommendation of the Highway Commissioner as to the award of the contract. He prepares authorizations to furnish contract materials as they are needed by the Maintenance Department and notifies the State Purchasing Department of any short-

[80] Payrolls require the approval of the Commissioner of Finance under Executive Order No. 1, dated June 24, 1941.

age, rejection or condition of goods not in accordance with the requirements. In short, he is responsible for all details and records connected with purchases (including emergency purchase orders) except those handled by the State Purchasing Department.

Assisting the Supervisor of Purchase and Stores is an office staff of five. A Principal Clerk-Bookkeeper acts as Division Auditor (salary—$2,520) and audits all accounts before they pass on to the Auditing and Accounting Bureau. Two Senior Clerks, who receive $1,560 and $1,920 respectively, assist in the detail work of the Bureau, along with an Office Appliance Clerk (at $1,260) who is also in charge of the stationery and office supply stockroom maintained by the Bureau in the basement of the State House Annex. A Clerk-Stenographer acts as secretary to the Supervisor and does work for the Division Auditor.

The Supervisor is in charge of departmental stores, except those kept independently by the Electrical Division, and by the Equipment Division at its Newark garage. The storeroom is located at the Fernwood headquarters of the Highway Department and is in charge of a Storekeeper assisted by a staff of six.[81] Withdrawals from stores are made on requisitions. The Supervisor maintains an inventory control through a comprehensive and detailed system of records.

The Supervisor of Purchase and Stores also arranges for the sale of surplus materials under annual agreements, and is in charge of the disposition of obsolescent material.

The mail room, distribution of the mails, and records relating to letters received and answered, are likewise the responsibility of the Supervisor of Purchase and Stores. He is in charge of the six office boys who do inter-office work for the entire Department. He is also in charge of the mimeograph and printing room where four employees prepare most of the forms used by the Department and do extensive mimeographing jobs, including publicity material, minutes of Commissioner's meetings, sections of the annual report, and similar items.

The Supervisor of Purchase and Stores is directly responsible to the Chief Clerk and Secretary, and all purchase forms are executed by him in the latter's name. He reports to the State Highway Engineer in connection with stores. His salary is $3,600 a year.

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[81] The Storekeeper's salary is $2,940. His assistants are a Senior Clerk ($1,920), Senior Stock Clerk ($1,680), three stock Clerks ($1,380) and a Road Equipment Operator ($1,020) who handles deliveries.

Chief File Clerk:

The central files are in charge of the Chief File Clerk who has four assistants.[82] He is responsible for filing all correspondence, records, bills and expense accounts, minutes of meetings, maps, plans, and blueprints sent to the central files by the various divisions. He maintains a card index for correspondence; subject files of all material sent him; bound copies of correspondence in chronological sequence; bound volumes of bills; a complete file of departmental publicity releases and an index thereto; bound volumes of records transferred from the active files; subject files relating to Motor Vehicle Aid and Township and Borough Aid, and a file of minutes of meetings. He is also in charge of the vaults on the second floor and in the basement of the State House Annex where bound records and transfer files are kept. The Chief File Clerk receives $1,920 a year.

Head Clerk:

A Head Clerk is responsible for the preparation of various statistical studies requested by the Highway Engineer, road mileage compilations, and the Department's monthly report on the condition of the roads. He assists in making up the annual report. His salary is $3,000 a year and he is assisted by a Clerk.

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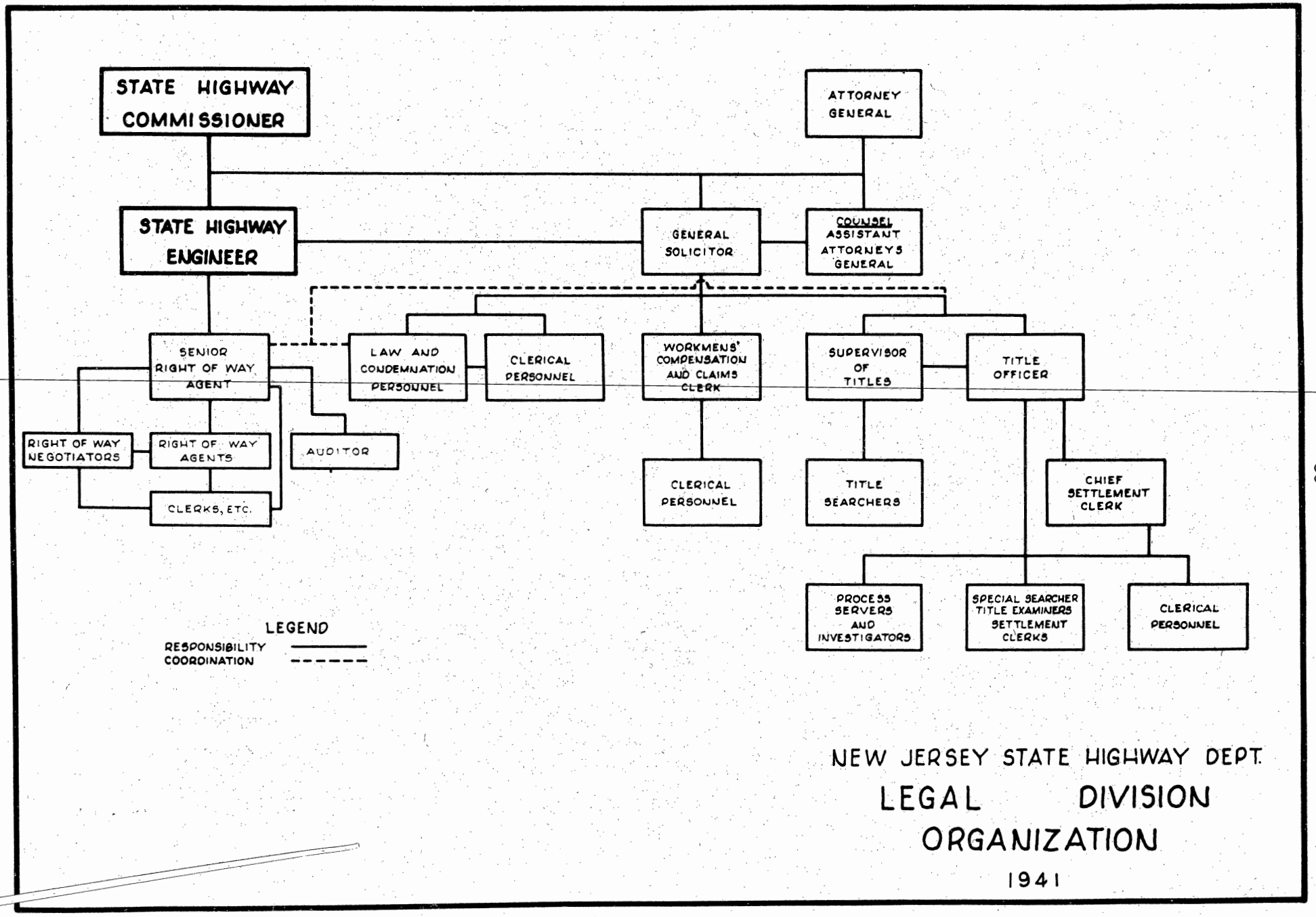
[82] His Civil Service title is "Senior Clerk"; his assistants are a Clerk-Typist, Junior Clerk and two File Clerks.



NEW JERSEY STATE HIGHWAY DEPT.

LEGAL DIVISION ORGANIZATION

1941

LEGAL DIVISION

The legal work of the State Highway Department is in charge of the General Solicitor, appointed by the Highway Commissioner with the approval of the Attorney-General, pursuant to provisions of the special statute passed in 1939 creating the office of General Solicitor (*P. L. 1939, c. 75; R. S. 27:1-21*). He is also special Assistant Attorney-General, by designation of, and serving at the will of the Attorney-General.

He cannot be removed from office except for good cause shown, after a fair and impartial trial. He holds his position during good behavior, and cannot be removed for political reasons. Under the statute, the General Solicitor must devote his entire time and attention to the duties of his office and may not engage in the private practice of the law at any time during his incumbency. His salary, fixed by the Commissioner, is presently $12,000 a year, and he also receives reimbursement for his necessary expenses.

The General Solicitor is assisted by a staff of six counsel, appointed by the Attorney-General pursuant to *R. S. 52:17-9,* who hold office at the latter's pleasure. As chief legal officer of the Department he is in charge of the law and condemnation personnel, the Supervisor of Titles, the Title Officer, and the Workmen's Compensation and Claims Clerk.

General Solicitor:

It is the duty of the General Solicitor to coordinate and centralize the legal work of the various Divisions of the State Highway Department; to advise the Commissioner and employees of the Department when matters should be referred to the Attorney-General; to prepare reports for opinions from the Attorney-General; to assist counsel appointed pursuant to *R. S. 52:17-9, supra,* in the preparation and conduct of matters referred to the Attorney-General, and in general to maintain close contact with the various activities of the Department insofar as such activities involve legal problems. In addition to his prescribed duties, as special Assistant Attorney-General he acts for and

in behalf of, and in the name of the Attorney-General, without additional compensation.[83]

Among other duties, the General Solicitor attends the award of contracts; approves all Department agreements as to form; handles any mail touching upon legal matters; and reviews claims made against the Department. His signature is required on all 60-year-search title certificates relating to right-of-way acquisitions, before payment is approved by the State Comptroller. Together with the Highway Engineer, Construction Engineer, and Chief Auditor and Accountant, he sits on the Prequalification Committee and recommends to the Commissioner the classifications and ratings to be given contractors. He advises the Commissioner and Highway Engineer on all legal matters. On occasion, after consulting with them, he presents to the Legislature the Department's views on proposed legislation.

His legal assistants, appointed by the Attorney-General,[84] are:

(1) *Special Counsel,* at $6,000 a year, responsible for the moving and conduct of cases, who sits with other counsel in more important litigation.

(2) *Counsel,* at $5,000 a year, handling all types of litigation before the courts.

(3) *Counsel,* at $5,000 a year, responsible for condemnation cases in the southern part of the State.

(4) *Assistant Counsel,* at $5,000 a year, responsible for condemnation cases in the northern part of the State.

(5) *Assistant Counsel,* at $4,000 a year, handling miscellaneous matters, such as trespasses on highways, lighting agreements, etc.

(6) *Legal Assistant,* at $5,000 a year, in charge of some of the compensation and small claims cases.

All six assistants are on a part-time basis. They are carried on the payroll of the Real Estate Division.

A staff of seven makes up the law and condemnation personnel who perform the clerical work of the General Solicitor's office.

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[83] *P. L. 1939, c. 75; R. S. 27:1-21.*

[84] Pursuant to *R. S. 52:17-9.*

Workmen's Compensation and Claims Clerk:

He arranges for medical examinations of all laborers seeking employment with the Department, and advises Division heads whether the applicants are acceptable. He maintains a permanent card index of all such examinations, whether the men are hired or not. He also maintains a separate card file for each laborer, showing injuries suffered, medical attention received, compensation paid, etc. He investigates all compensation claims and checks on the claimants' progress during the compensation period. He reviews all bills presented for medical treatment and hospital care. He is responsible for all records connected with compensation claims and arranges for and represents the Department in all compensation hearings, whether formal or informal.

The Compensation and Claims Clerk also has charge of all claims for damage done to Department equipment or structures, and of prosecuting suits for their collection.

In addition, he handles a variety of matters such as prosecuting hearings of employees brought up on charges; drafting surety bond forms; checking Department insurance policies as to form; getting title searches in connection with gravel and sand pits and storage places used by the Maintenance Division; and attending to injunction and specific performance suits.

He is also responsible for providing first aid kits for every Department truck and garage, keeps a file of reports of first aid rendered and supplies used, and sees to it that the kits are replenished when necessary.

Although formerly assisted by a Medical Director (from 1937, when compensation work was first put on a scientific basis, until 1940), today the Compensation and Claims Clerk has only two clerical assistants. His salary of $2,940 a year is charged to the Maintenance Division.

Supervisor of Titles:

He is in charge of all title search work in connection with the acquisition of right-of-way, and is assisted by a staff of 18 men in the field (16 Title Searchers and 2 Abstract Clerks), one of whom acts as a coordina-

tor in picking up completed searches, leaving new work and supplies, and checking on the progress of the other 17. All work clears through one man in the central office, whose Civil Service title is Right-of-Way Negotiator. He keeps a record of work in progress, and is responsible for preparing all deeds as well as releases and other instruments for the Title Officer (*infra*) necessary for clearing the title. Title Searchers receive $1,800 to $2,520 a year, and the Abstract Clerks $1,860 and $1,920 respectively.

The Supervisor of Titles reports to the Highway Engineer and General Solicitor weekly on the work of his office. His salary of $4,260 a year, like the salaries of his assistants, is charged to the Real Estate Division.

Title Officer:

He supervises the reading of all title searches in order to insure that the State gets a clear title; and sees to it that all encumbrances (except for certain public utility easements) are cleared before title closing. His signature is required on all title certificates before the State Comptroller will authorize payment. The Title Officer also supervises all details connected with settlements. Where the title is clear and the owner refuses to convey the property in accordance with his written agreement, the Title Officer recommends to the General Solicitor that specific performance proceedings be instituted. He is responsible for the safekeeping of all title records and is in charge of the title files in the basement of the State House Annex.

The Title Officer is assisted by a corps of 23, including four Title Readers and Settlement Clerks[85] located in the central office, one of whom acts as Chief Settlement Clerk, the other three sometimes being sent out in the field to make a settlement; five Title Examiners,[86] two Special Searchers[87] (one is responsible for Chancery searches, and the other for State Supreme Court searches; Federal Court searches are furnished by a searching company); two Process Servers and Investiga-

[85] Civil Service classifications: "Title Reader and Settlement Clerk" (2) at $2,640; and "Title Searcher" (2) at $2,400 and $2,460.

[86] Civil Service classifications: "Title Reader and Settlement Clerk" (1) at $2,640; "Legal Aid Investigator" (1) at $2,040; and "Title Searcher" (3) at $1,980, $2,400 and $2,460.

[87] Civil Service classifications: "Senior Clerk" (1) at $1,680, and "Title Searcher" (1) at $2,400.

tors,[88] an Assistant Civil Engineer,[89] searchers and a clerical staff. The Title Officer receives $4,260 a year, this salary, like those of his assistants, being carried on the Real Estate Division payroll.

The Title Officer is directly responsible to the General Solicitor and reports each week to him and the Highway Engineer on the work of his office.

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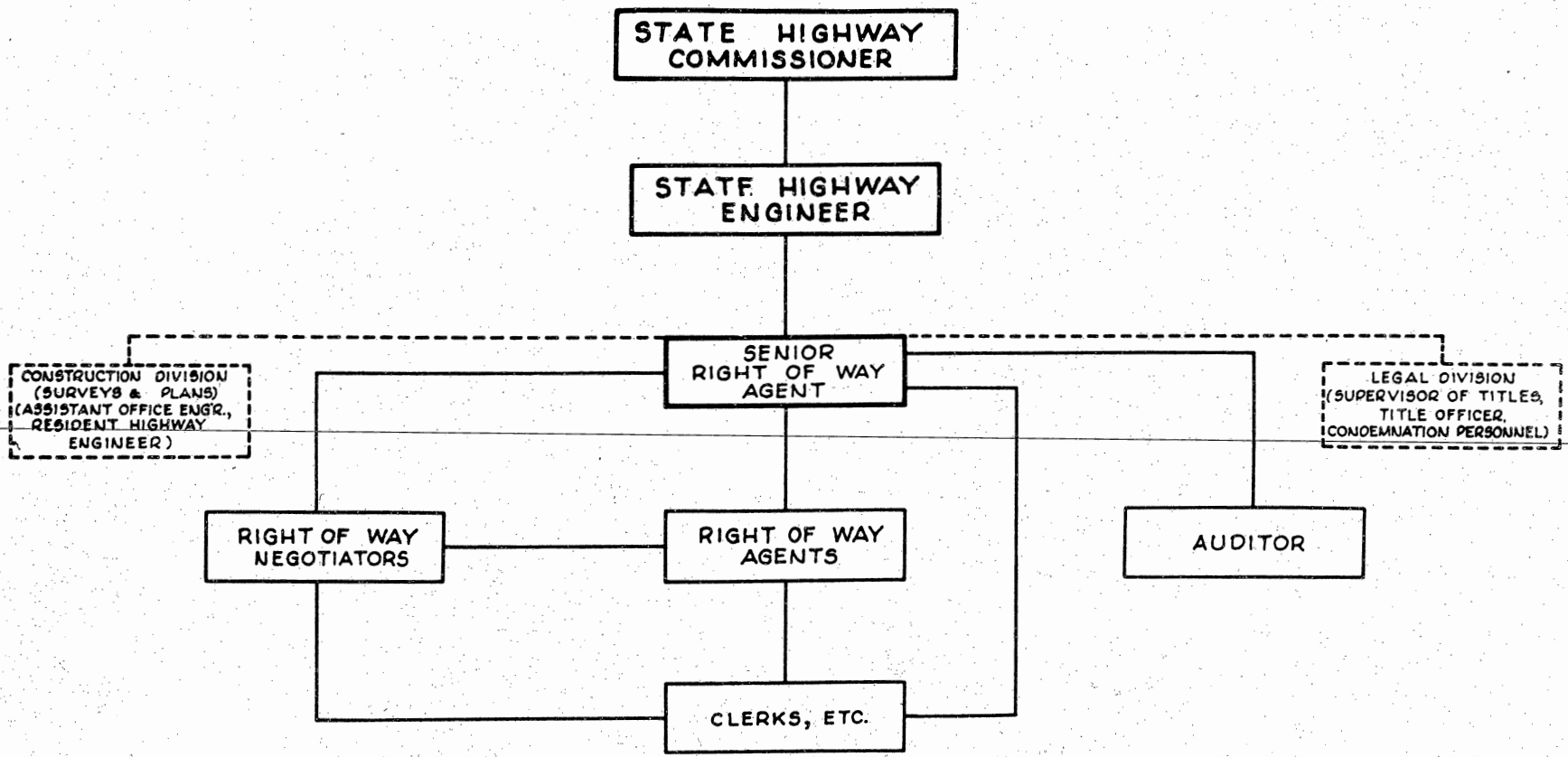
[88] Civil Service classifications: "Process Server" (1) at $1,860, and "Title Searcher" (1) at $1,800.

[89] Salary—$2,160.



NEW JERSEY STATE HIGHWAY DEPT.

REAL ESTATE DIVISION (NEGOTIATIONS) ORGANIZATION

1941

REAL ESTATE DIVISION

The Real Estate Division was set up in the 1933 reorganization of the Highway Department, by consolidating part of the former Right-of-Way General Division, the Right-of-Way Legal Division (search and title work), and the legal personnel assisting in right-of-way matters.[90]

The Real Estate Division is concerned with all matters relating to the acquisition of rights-of-way for highway purposes, and ostensibly consists of the Negotiating Bureau, Title Bureau and Legal Bureau. (In his annual report to the Highway Engineer, the Senior Right-of-Way Agent, who heads the so-called Negotiating Bureau, reports on the work of the "Title Bureau" and "Legal Bureau".[91]) As a matter of organization fact, however, there is no such Division. The Supervisor of Titles, Title Officer, and counsel assisting in right-of-way legal work, are all under the direction of the General Solicitor, although their salaries, as has already been noted, are charged to the "Real Estate Division". The right-of-way negotiating staff, on the other hand, is under the supervision of the Highway Engineer.[91a]

The Real Estate Division is in charge of a Senior Right-of-Way Agent, assisted by four Right-of-Way Agents (one position is presently vacant), three Right-of-Way Negotiators, a Right-of-Way Investigator, an Engineering Clerk, a Principal Cost Clerk, and a clerical staff of five. The Senior Right-of-Way Agent does not have the independence and executive discretion of a Division head; rather, he is the Highway Engineer's assistant in right-of-way work. It should be noted that some of the draughtsmen and engineers in the Survey and Plans Division are carried on the Real Estate Division payroll. They were part of the latter Division before 1933, engaged in preparing right-of-way descriptions, plans of the individual parcels required by the Department, blueprints, and similar work.

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[90] *New Jersey State Highway Department Annual Report,* 1933; Report of Director of Real Estate Acquisitions.

[91] *New Jersey State Highway Department Annual Report,* 1940; Report of the Real Estate Division.

[91a] Appraisals, negotiations and other work connected with right-of-way acquisitions were placed under the present Highway Engineer in 1935, with Counsel to the Commissioner (now known as the General Solicitor) in charge of condemnations and operations of the Title Bureau, working under the direction of the Highway Engineer. See, *Minutes of Meetings of the State Highway Commissioner,* minutes of December 10, 1935. This was one of a series of orders which resulted in stripping the Supervising Right-of-Way Engineer, in charge of appraisals and negotiations, of his powers and duties, in defiance of a Supreme Court ruling. See *p. 65, post.*

Senior Right-of-Way Agent:

He is in charge of all right-of-way negotiations and prepares all matters requiring the Commissioner's approval (including general property key maps, agreements to convey, and requests for authority to make official offers to owners) for presentation to the Commissioner for official action. He also arranges for property appraisals by the Department's own Right-of-Way Agents and, where necessary, by outside appraisers; supervises negotiations with owners, and obtains from the Survey and Plans Bureau all maps, blueprints, property descriptions and forms of agreement required in connection with this work. He arranges for the making of official offers to owners for their property, and where no agreement to convey is reached, recommends the institution of condemnation proceedings. The Real Estate Division assists Department counsel in condemnation work.

The Senior Right-of-Way Agent is also in charge of all records concerning right-of-way acquisitions and handles all correspondence relating thereto. He assists the Survey and Plans Bureau in preliminary appraisal work on proposed routes. His salary is $3,960 a year.

Right-of-Way Agents:

They negotiate with owners for the acquisition of right-of-way required by the Department, under the general direction of the Senior Right-of-Way Agent; make appraisals of all such property (when necessary, they make preliminary appraisals for the Survey and Plans Bureau along alternate lines of a proposed route); and assist Department counsel in right-of-way condemnation cases. Each receives $3,000 a year.

Right-of-Way Negotiators:

They assist the Right-of-Way Agents on their respective particular projects, usually handling negotiations on less important parcels. Two of the three negotiators are, in fact but not in name, Right-of-Way Agents. One of these acts as administrative assistant to the Senior Right-of-Way Agent, and though he occasionally goes out into the field, most of his time is spent in the office where he handles much of the office routine and keeps a record of right-of-way accounts. Negotiators receive a salary of $2,640 a year.

Right-of-Way Investigator:

The title of this position goes back prior to 1933, when the Investigators used to go into the field to check on ownership, deeds, tenants, buildings, and similar details in connection with the preparation of property ownership reports by the then Right-of-Way General Division. The title is not appropriate to the present duties of the Investigator, which are to keep the general property key maps and the records of property acquisitions up-to-date. He is in charge of the Real Estate Division's files, handles some of the office detail, and secures information from the files needed on correspondence requests. He also checks with the field engineers for removal certificates showing that buildings and other structures have been removed from the required right-of-way, according to agreement. His salary is $2,040 a year.

Engineering Clerk:

In general, he assists the Investigators, checks appraisals, gets out most of the information requested by correspondents, handles much of the paper work, and assists in filing. His salary is $1,620 a year.

Special Engineer:

The Special Engineer is carried on the payroll of the Real Estate Division at a salary of $5,100 a year. He has been with the Department since 1917, acting successively as Chief of Survey Party, Assistant Civil Engineer, Assistant Division Engineer, Survey Engineer, Resident Engineer, Office Engineer and Supervising Right-of-Way Engineer, in which latter capacity he was in charge of all appraisal and negotiation work relating to right-of-way acquisition from 1930 to 1933. He was dismissed in the Department reorganization of 1933; reinstated as "Engineer in the Real Estate Division," which action he successfully appealed to the Supreme Court on the ground that it was improper;[92] appointed "Office Engineer" when the position of Supervising Right-of-Way Engineer was abolished by action of the Commissioner on December 10, 1935,[93] which action he contested; and finally appointed Special Engineer by a compromise order made by the Commissioner on November 17, 1936.[94]

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[92] *Newmark* v. *Civil Service Commission, 13 N. J. Mis. Rep. 716; 180 Atl. Rep. 617.*

[93] *Minutes of State Highway Commissioner's Meeting,* December 10, 1935.

[94] *Minutes of State Highway Commissioner's Meeting,* November 17, 1936.

By the terms of the latter order, he is under the direction of the Highway Engineer who at first assigned him the work of "consolidation of real estate files", which included the files of the Real Estate Division, Supervisor of Titles, Title Officer, and Legal Division, to be sorted and arranged by a group of W. P. A. workers and then indexed and bound. This work was discontinued by the Highway Engineer who then directed the Special Engineer to carry out a "consolidation of real estate plans," which consists of collecting for each road contract, blueprints of the construction key plan, the construction plan-profile sheets, and the general right-of-way key map. These are arranged consecutively for each route and bound. The work has limited value; the blueprints are sometimes referred to for information.

On occasion, special inquiries are referred to the Special Engineer for attention. He has no office, telephone or assistants, but has been assigned a desk in the first floor hall of a building at 148 West State Street, Trenton, used by the Highway Department. Little or no use has been made of his extensive experience in right-of-way and engineering work.

As a matter of fact, some of the Resident Engineers of the Department, and most of the Right-of-Way Agents and Negotiators, as well as many of the men in the Survey and Plans Bureau, received their training under the Special Engineer during the period from 1917 to 1933. He is responsible for a large body of the principles, methods, forms and plans used in the acquisition of right-of-way today. His contributions to the planning, location and design of New Jersey highways in his time, are commonly recognized.[95]

Principal Cost Clerk:

The Principal Cost Clerk is carried on the payroll of the Real Estate Division, but his salary of $2,160 is equally divided between the Real Estate Division (Negotiations), the Title Bureau in the Legal Division, and the remainder of the Legal Division. He handles the payrolls of these three groups, audits all expense accounts and bills, and in general, acts as representative of the Auditing and Accounting Bureau for the Real Estate and Legal Divisions.

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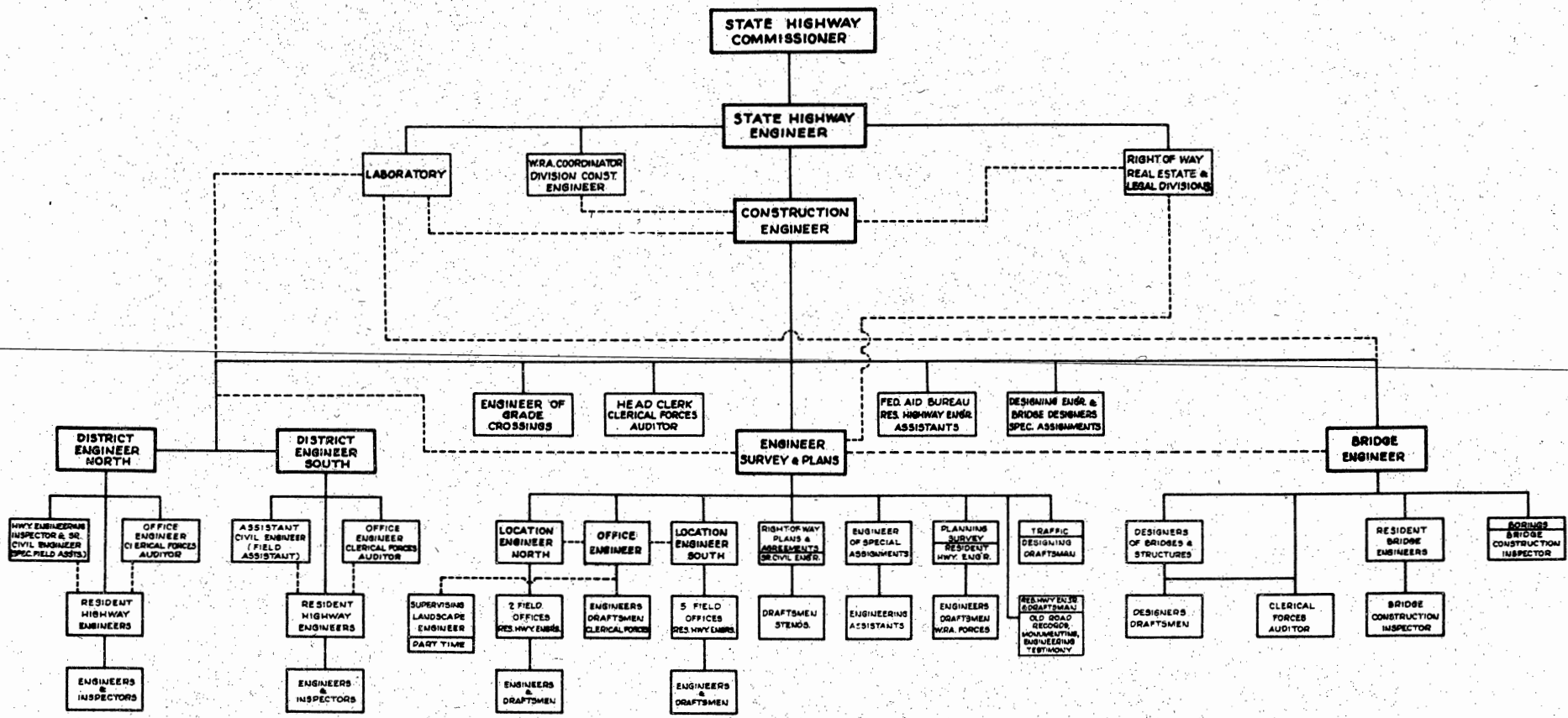
[95] *Newmark* v. *Civil Service Commission,* New Jersey Supreme Court, 1935, State of the Case.



LEGEND

——— RESPONSIBILITY

--------- COORDINATION

NEW JERSEY STATE HIGHWAY DEPT.

CONSTRUCTION DIVISION ORGANIZATION

1941

CONSTRUCTION DIVISION

The Construction Division is by its very nature the heart of a State highway department. It is this Division that supervises the actual construction of the State highway system. In many respects, therefore, the Construction Engineer is one of the key officials in the Department.

The Construction Division is responsible for all matters relating to the building of the State highway system, with the exception of acquiring rights-of-way. The Division is involved in every step of road construction, from the time the legislation authorizing the road is passed until the road is completed and turned over for maintenance. When this latter event occurs the Division is relieved of responsibility except in the case of subsequent construction of a permanent pavement to replace one that was temporarily put down.

Organization for purposes of construction is largely determined by geography. In very large States, such as California and New York, a decentralized system is used for administering this work. New Jersey being a small State, however, it is possible to direct the construction program from the central office in Trenton, with the use of but two district offices.[96]

The Construction Division is supervised by the Construction Engineer who, though theoretically responsible directly to the State Highway Commissioner, actually reports through the State Highway Engineer.[97] The Construction Engineer is assisted in the discharge of his duties by a clerical and auditing staff, the Engineer of Grade Crossings, the Federal Aid Engineer, and a Designing Engineer; the Engineer of Survey and Plans; the two District Engineers in charge of road construction; the Bridge Engineer, and a W. P. A. Coordinator. All bureaus of the Construction Division are located in Trenton except for the North Jersey Construction District office which is at the Newark garage.

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[96] At one time four district offices were in operation. These were reduced to three, raised again to five, and then finally reduced in the 1933 reorganization of the Department to two districts.

[97] The Construction Engineer formerly presented Division matters directly to the Commissioner. (Order of the Commissioner, *State Highway Commissioner's Minutes,* June 30, 1936). This order was rescinded; since then all Division matters have been presented to the Highway Engineer for transmittal to the Commissioner (*Idem,* April 5, 1938).

Duties of the Principal Division Personnel

Administration Forces

Construction Engineer:

The Construction Engineer is in general charge of all new construction, as well as the reconstruction and extraordinary repair of roads and bridges on the State highway system; construction work off the State highway system financed by Federal funds (grade crossing elimination and secondary road construction), and the coordination of construction projects with the State W. P. A. office. He is also in responsible charge of all surveys, plans and designs related to this construction work. He attends all meetings of the Highway Commissioner, along with the Highway Engineer. The administration and inspection of contract construction work and the supervision of the District Engineers is his major concern. His salary is $12,000 a year.

Head Clerk:

A Head Clerk acts as secretary and administrative assistant to the Construction Engineer. He handles practically all correspondence, interviews callers, and reviews the weekly reports that come in from the field to determine any lags in construction and the reason therefor. His principal duty is to expedite the work of the Division. His salary is $3,000 a year and he is assisted by a Principal Clerk receiving $2,460 annually.

Auditor:[98]

He acts as Division Auditor for the Auditing and Accounting Bureau insofar as administration and so-called "general" accounts are concerned. He handles all cost accounting in connection with the administration of the Construction Division and the work of the Survey and Plans forces, all time cards and work records, and prepares the Division payroll. He audits all expense accounts submitted by the Division personnel, and bills for supplies and office equipment. His salary is $2,200 a year. A Cost Clerk and a Senior Clerk-Bookkeeper assist him in his work.

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[98] Civil service title, "Junior Auditor".

Designing Engineer:

A Designing Engineer is attached to the Construction Division and handles special assignments. Theoretically, he is supposed to report directly to the Construction Engineer; whether he does or not depends on the nature of his work at the moment. An outstanding specialist in bridge design, he was responsible for designing the famous Pulaski Skyway across the Jersey meadows from Newark to Jersey City. Upon the completion of this work he was retained on the payroll of the Survey and Plans Bureau of the Construction Division. He perfected the method for separating concrete highway lanes through the use of air pressure to allow of the construction of a center island; recently completed a revision of the Department standards and specifications, working under the direction of the Highway Engineer and Construction Engineer; and is now handling the preparation of plans for widening the Newark viaduct. From this it will be seen that the Designing Engineer is not a part of the administrative organization of the Division, although the organization chart would seem to indicate so. His salary is $5,700 a year. Two Bridge Designers, each receiving $3,000 a year, assist him.

Grade Crossing Engineer:

He handles all negotiations and agreements with railroad companies relating to grade crossings and grade separations. In this connection, he is responsible for making a survey of all crossings and giving them a priority rating on each rail system as well as among themselves, in the order of their importance. He is further responsible for formulating a crossings program in collaboration with the railroad companies, within the funds made available by the Public Roads Administration; this program must be approved by the Commissioner and by Washington. He expedites the work of preparing the surveys, plans and estimates for the projects on this program in order to get them into construction as quickly as possible, and to this end necessarily keeps in touch with the various bureaus of the Construction Division and the railroads, as well as with other public utility companies whose installations and structures may be involved. In this, as in other aspects of his work, the Grade Crossing Engineer handles all details coming within the jurisdiction of the Public Utility Commission. He also acts on behalf of the Real Estate Division in acquiring rights-of-way for State highways owned by public utility companies.

In general, therefore, the Grade Crossing Engineer is the one who deals with matters involving public utilities wherever the State highway program or grade crossing program touches upon them and their operations. His salary is $4,560 a year. He is assisted by a Senior Clerk-Stenographer who acts as his secretary and attends to clerical matters, and who also does occasional clerical work for the Construction Engineer.

Federal Aid Engineer:[99]

He is the liaison officer between the State Highway Department and the Public Roads Administration in the administration of the Federal Aid program for New Jersey highway purposes.[100] The Federal Aid Engineer is responsible for formulating a program of Federal Aid projects for the Highway Commissioner's approval. In this connection, he prepares the required "project statements" and sends the approved projects, together with the accompanying estimates, plans and specifications (prepared by the Survey and Plans Bureau) to the local Public Works Administration representative for checking and transmittal to the Federal district office at Albany.[101] He also clears all changes of plans through the local Federal office. The Federal Aid Engineer keeps a card index record showing all important details for each project, a complete file on each project, and a record of the status of Federal Aid funds. He prepares the necessary vouchers on all Federal Aid projects to obtain reimbursement from the Government, handles all correspondence, and makes regular monthly (as well as any other reports) required by the Public Roads Administration relating to the Federal Aid program.

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[99] Civil Service classification,—"Resident Highway Engineer".

[100] Three types of Federal Aid have been available since the Federal act of June 16, 1936: (1) regular Federal Aid, of the type in existence for many years before 1936; (2) Federal Aid on secondary and feeder roads; and (3) Federal Aid for grade crossing work. The first two types require equal matching of funds by the State; the third is 100% financed by Federal funds. The Public Roads Administration maintains an office in the Trenton Postoffice in charge of an Engineer who serves as coordinator between the State and Federal governments. All Federal Aid projects clear through him to the Albany district office which forwards them to Washington, after review, for final approval. The local Federal representative assists the State Highway Department officials in preparing Federal Aid projects that meet Federal requirements.

[101] Although the Grade Crossing Engineer is in charge of the details of the Federal Aid grade crossing program, the projects are transmitted through the Federal Aid Engineer who also prepares all other forms and vouchers.

The Federal Aid Engineer receives $3,800 a year. A Designing Draftsman (salary—$3,300) and Highway Inspector (salary—$1,860) constitute his staff. The former assists in the details of the status of contracts and of Federal Aid funds; the latter prepares maps which must accompany project statements, goes out on field trips, and assists in preparing vouchers.

Survey and Plans Bureau

Before 1933 the District Engineers in charge of highway construction also supervised the personnel in their respective districts engaged in the preparation of surveys and plans. When the Construction Division was reorganized in that year, all survey and plans personnel and work was centralized in a single bureau headed by the Engineer of Survey and Plans. He is assisted by an Office Engineer, Assistant Office Engineer and two Location Engineers. An Engineer of Special Assignments, Traffic Engineer and a Resident Highway Engineer for condemnation cases serve directly under the Engineer of Survey and Plans. Finally, the Manager of the State-Wide Highway Planning Survey, a Federal Aid project, is also responsible to him.

Engineer of Survey and Plans:

He is in responsible charge of the Survey and Plans Bureau and supervises the personnel assigned to the unit. Generally speaking, his primary duty is to plan for the location of highway routes and to design highways for construction purposes. Accordingly, he supervises all surveys, plans and designing work on new State highways up to the letting of the contract, including the preparation of the contract and contract plans; the staking out of the road after the contract is awarded, and the making of nearly all contract measurements (quantities); surveys required in connection with Maintenance Division work; the preparation of plans and contracts required for right-of-way acquisitions, as well as special plans required in condemnation proceedings; the checking of contracts and contract plans in Federal Aid secondary road projects and grade crossing elimination projects; and the preparation of surveys and data required by the Bridge Bureau before it designs a bridge (except for borings). His salary is $6,260 a year. A

Senior Clerk-Stenographer acts as his secretary, does some work on typing up Federal Aid forms for the Federal Aid Engineer, and is available to the Location Engineers for some of their work.

Office Engineer:

The main duty of the Office Engineer is to review the plans prepared by the field forces for new highway construction and to make certain refinements in the details, such as coordinating the plans with the bridge plans prepared by the Bridge Bureau, arrangements with public utilities concerning their installations and structures, etc. Furthermore, he supervises the checking of the quantities of materials to be used, as estimated by the field forces. He is responsible for drawing up any supplementary specifications required to meet the particular needs of the project, as well as the proposal form for bidding. After the road has been built, he supervises the checking of all quantities of materials used in its construction, in connection with final payment under the contract. He also checks the plans and specifications prepared by the Landscape Engineer, as well as the quantities, on any landscape work to be done on new construction.

In addition, the Office Engineer checks the plans, prepares the estimates and supplementary specifications, and checks the quantities on the roads as finally built, on regular Federal Aid highway projects, whether on or off the State system. In this connection, he supplies the Federal government with such additional estimates and data, reports on critical defense materials required, and other information, as it may request.

In cooperation with the head of the Projects Division, he is responsible for formulating a program of Federal Aid secondary road projects. He reviews applications received from counties and municipalities for such projects, and, after they are approved, supervises the designs and checks the plans prepared by the local engineers and sees that their funds are set up[102] and project agreements in proper order. He prepares the specifications for these projects and checks the quantities of materials used in the "as built" roads.

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[102] Counties and municipalities must match Federal Aid secondary funds and to that end may use State Aid funds that have been allotted them.

He is also responsible for reviewing and checking plans for Federal Aid grade crossing elimination projects, insofar as road approaches are concerned. (The Bridge Bureau checks the bridge plans.)[103] After the work is completed, he checks the "as built" plan for quantities used.

The Office Engineer is also in charge of miscellaneous map and drafting work for other Divisions, and the preparation of data for the Legislature in connection with routes under consideration to be legislated. His salary is $4,660 a year.

He is assisted by a staff of four Designing Draftsmen (salaries—$2,700 to $3,180), two Senior Draftsmen (salaries—$1,980 and $2,280) and two Assistant Civil Engineers (salaries—$2,400 and $2,760). A Senior Clerk-Stenographer does filing work, stenciling of construction contracts, typing of supplemental specifications and other routine clerical duties.

Assistant Office Engineer:

The Assistant Office Engineer[104] is in charge of plans required in connection with right-of-way acquisitions. He is responsible for checking the so-called general property key maps[105] prepared by the field forces against the construction plans for such matters as required slope rights, drainage rights and other easements, in addition to the right-of-way proper. He also checks in a general way the so-called general entire tract map[105] prepared in the field. The Assistant Office Engineer prepares agreements to be signed by the owners of the required right-of-way and, after these agreements have been checked against the key map, sends the map and agreements to the Real Estate Division. In addition, he prepares special maps for this Division in cases that go to condemnation (these maps are checked against actual conditions in the field), as well as the maps and applications required when a grant of riparian rights is sought by the Department before the Board of Commerce and Navigation. The Assistant Office Engineer also pre-

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[103] The railroad company prepares the plans on all crossings off the main highway, and those on the main highway where the highway passes under the railroad. Where it passes over the railroad, the Bridge Bureau designs the structure.

[104] Civil Service classification—"Senior Civil Engineer".

[105] The general property key map shows the tracts or parts of tracts required for right-of-way. The general entire tract maps show the whole tracts, as traversed by the proposed right-of-way.

pares the final tracings that are filed in the several County Clerks' offices throughout the State by the Title Officer, these tracings being checked against the "as built" plan of the completed road.

His salary is $2,800 a year. He is assisted by a Resident Highway Engineer (salary—$3,000), Assistant Civil Engineer (salary—$2,760), two Map Draftsmen (salaries—$2,280 and $2,460), three Senior Draftsmen (salaries—$1,980, $2,220 and $2,280), two Engineer Draftsmen (salaries—$1,500 and $1,740), and two Clerk-Stenographers who handle the clerical work of the office.

Location Engineers:

Two Location Engineers are the chief field assistants of the Engineer of Surveys and Plans, and are respectively in charge of two field offices in North Jersey and five field offices in Central and South Jersey. The Location Engineers supervise the reconnaisance, preliminary and final surveys required for determining the line of a proposed route, and direct the preparation of the construction plans by the field staff. After the construction contract is awarded, they are responsible for setting the stakes and making measurements for the contractors. They are also in charge of surveys for the Bridge Bureau and the staking out of bridge projects; surveys and plans required for Maintenance Division projects; and plans needed by the Real Estate Division for right-of-way acquisitions. They are in regular conference with the Engineer of Survey and Plans regarding the work of the field forces and in constant contact with the Office Engineer concerning planning problems. Two-thirds of their time is spent in the field. Their salaries are $4,060 and $4,360, respectively.

Engineers in Charge of Field Offices:

At the present time, the Survey and Plans Bureau maintains seven field offices at Newark and Montclair (under one Location Engineer), and Flemington, Cranbury, South Amboy, Pleasantville, and Wood-Lynne (under the second Location Engineer). These are not permanent locations, however; an office can, if necessary, be shifted to a point more central to the work to be done.

Those in charge of the field offices have various Civil Service titles:—Resident Highway Engineer (4), Designing Draftsman (2),

and Resident Engineer (1); their salaries run from $3,000 to $3,900 a year, and each man is assigned a car. These men directly supervise the personnel and the survey and plans work of their respective field offices. A field office has 14 to 44 men,[106] and personnel may be shifted when the increased volume of work in a particular district requires that additional help be assigned.

The head of each field office supervises several survey corps, each in charge of a chief of party who may be a Senior, Assistant or Junior Civil Engineer. A corps consists of 3 to 5 men with a car, and usually comprises a Junior Engineer, Rodmen and Chainmen. Each field office has an office staff; the typical organization consists of a Designing Draftsman, Senior Draftsman, Map Draftsman and Engineering Draftsmen. If necessary, the office personnel may be sent into the field to relieve the pressure of a sudden volume of work.

Engineer of Special Assignments:

This Engineer operates apart from the rest of the Bureau staff and reports directly to the Engineer of Survey and Plans. He is in charge of research work on various structural problems related to the efficiency and durability of highway pavements, such as joints, subgrades, reflecting curbs, concrete construction, etc. He works in limited and inadequate quarters assigned to him in a corner of one of the buildings at Fernwood Station. He is responsible for supervising the installation of new devices resulting from his research, like the steel bar joint now used in State highway construction, until the men have mastered the technique, and of following up the work with periodic checks to determine the effectiveness of the installation as well as the fundamental worth of the device.

The Engineer of Special Assignments receives $3,600 a year. His staff consists of an Assistant Civil Engineer (salary—$1,980) who works directly under him, carrying out and supervising assignments; a Highway Inspector (salary—$1,860) who makes measurements and pavement surveys; and a Machinist and two laborers assigned to him from the Equipment Division.

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[106] The Newark field office, which was the largest at the time of this study, consisted of the Resident Engineer in charge, assisted by 2 Resident Highway Engineers, a Resident Bridge Engineer, 4 Senior Civil Engineers, 8 Assistant Civil Engineers, 7 Junior Civil Engineers, 3 Rodmen, an Engineer Inspector, 2 Highway Inspectors, 2 Chainmen, 3 Designing Draftsmen, 5 Senior Draftsmen, 4 Draftsmen and a Clerk—a total of 44 men. The Pleasantville office—the smallest—had 14 men.

Traffic Engineer:

The Traffic Engineer[107] is assigned to study traffic and traffic behavior in its relation to highway design. He carries on this work independently, spending most of his time on the highways in direct observation of existing conditions, making traffic counts, accident investigations, time loss studies on congested routes, studies of traffic movement on circles, etc. This research serves as a basis for improved design on new roads. A laborer, assigned by the Electrical Division, assists in setting up traffic counting machines at various points. The Traffic Engineer receives $2,700 a year. He reports directly to the Engineer of Survey and Plans.

Resident Highway Engineer:

A third engineer, whose Civil Service title is Resident Highway Engineer, likewise reports directly to the Engineer of Survey and Plans. He is responsible for contacting the Bureau's field offices to secure the appearance of engineering witnesses in condemnation cases involving right-of-way in the respective districts. He is also in charge of old road records, and of the W. P. A. highway monumenting projects. He carries out such other special assignments as the Engineer of Survey and Plans may give him. His salary is $3,240, and he is assisted in the old road records work by a Senior Draftsman whose salary is $2,580.

State-wide Highway Planning Survey:

The Highway Department is conducting this Planning Survey in cooperation with the United States Public Roads Administration under an agreement entered into April 19, 1938.[108] The office of the unit is located at Newark. A departmental Resident Engineer, who reports

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[107] Civil Service classification—"Designing Draftsman".

[108] The Hayden-Cartwright Act of 1934 provides that with the approval of the Secretary of Agriculture a maximum of 1½% of the Federal Aid funds apportioned to a State in any year may be used for surveys, plans and engineering investigations of projects for future construction in that State, either on the Federal aid highway system and extensions thereof or on secondary or feeder roads (*48 Stat. 993, s. 11*). Similar provision was made for "surveys, plans, engineering and economic investigations" under the Act of June 16, 1936 (*49 Stat. 1519, s. 9*); and the Acts of June 8, 1938 (*52 Stat. 633, s. 10*) and July 19, 1939 extend the use of the 1½% fund to studies in connection with grade crossing eliminations.

directly to the Engineer of Survey and Plans, has been designated State Manager of the project. His salary is $4,600 a year and he is in charge of (a) making a complete road inventory of the State and the preparation of detailed county maps; (b) of carrying out a comprehensive financial survey, which includes a fiscal study of governmental agencies, a road life study to determine future reconstruction and current maintenance costs, a motor vehicle allocation study to determine distribution of vehicle ownership and the revenue derived from registration fees and gas tax in the several governmental units, and a road use study; and, finally, (c) of making a traffic survey, covering traffic density on the various roads and a loadometer study of commercial vehicles to determine their weights, dimensions, capacities, etc.

The State Manager works in close cooperation with a bureau manager appointed by the Public Roads Administration and whose office adjoins his. By agreement entered into between the Department and the W. P. A., the latter furnishes all clerical and other personnel, such as traffic enumerators and recorders, to work under the supervision and direction of Department employees. The departmental forces number 28, all but 9 of whom are temporary employees taken from the Civil Service rolls or the Employment Bureau of the Unemployment Compensation Commission.

Departmental employees head the survey parties doing the field work connected with the road inventory survey. A Senior Draftsman (salary-$2,760) and eight other draftsmen handle the county mapping work. The fiscal study of governmental agencies that is a part of the financial survey was handled almost entirely by Department employees. Other departmental personnel assist the State Manager in the traffic density survey which is based on counts made at 7,000 stations all over the State; and three employees headed the loadometer study parties. W. P. A. personnel are used on field parties and in connection with the remainder of the Planning Survey.

Supervising Landscape Engineer:

Although the Supervising Landscape Engineer is carried on the payroll of the Survey and Plans Bureaus, he is directly responsible to the Superintendent of Maintenance inasmuch as most of his work is done

for the Maintenance Division.[109] As occasion requires, he supervises the preparation of planting surveys for construction projects, as well as estimates, specifications and plans connected with such landscaping work, and these are reviewed by the Office Engineer. His salary is $3,000.

Construction Districts

Two Construction District Engineers, one for Northern and the other for Southern New Jersey, are the main field representatives of the Construction Engineer and report directly to him. They are responsible for the proper administration and inspection of road construction contract work in their respective districts.

The line separating the Northern from the Southern Construction District is generally thought of as running south of Warren, Morris and Union Counties, from Phillipsburg across the State to Rahway. However, this line is not a hard and fast one. Sometimes there is a lapping over of work into the other district, depending on the size of the construction program, or the route under construction. The Southern Construction District covers a greater area, but the Northern has the more costly and involved construction projects. Headquarters for the Southern District are located at the main office in Trenton; those of the Northern are in the new Newark garage of the Equipment Division.

The office and field organizations of the two districts differ but slightly, so that only deviations need be noted.

Construction District Engineers:[110]

Each District Engineer is in responsible charge of his district office and its operations. He supervises the administration and inspection of all road construction contract work on the State highway system as well as Federal Aid projects off the system (secondary roads and approaches to grade crossing eliminations) in his area. Occasionally he acts as consultant to the Survey and Plans Bureau on a particular problem, or makes special inspections for the Maintenance Division. Approximately two-thirds of a District Engineer's time is spent in the field inspecting

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[109] See *post*, at *p. 96.*

[110] Civil Service classification—"Division Highway Construction Engineers".

projects, contacting Resident Engineers, and discussing problems with the field personnel at the scene of operations. He makes weekly reports of his work and, on occasion, such special reports as may be requested. He also helps in making up the Construction Engineer's annual report by rendering a complete summary report of the work of his district.

A District Engineer receives $5,100 a year. A Senior Clerk-Stenographer acts as his secretary and maintains a diary record of his activities, handles filing and personnel records, and does typing for the Auditor whenever not otherwise occupied.

The Construction District office staff also includes the following:

Office Engineer:

The Office Engineer is in charge of the district office in the absence of the District Engineer. He reviews the daily reports sent in from the field offices and prepares the weekly report for the district; handles all cement records to check the quantity used against the estimate for the job; checks the laboratory reports on strength of concrete, as well as those on other materials; arranges with the laboratory for required tests of materials; handles all supplies, and checks Federal Aid project payrolls. On occasion he is required to go into the field to make a report on a complaint or some special problem. He takes care of all inquiries made by contractors or the public. The Office Engineers in the Northern and Southern Construction Districts receive $3,840 and $3,480 respectively, and are assigned a car and driver by the Equipment Division.

Auditor:

He audits all estimates for payment to contractors for work completed during the month or half-month; audits all changes of plans, supplemental agreements, extra work and reduction orders, and handles all district personnel records, including the auditing of expense accounts. A Senior Clerk-Stenographer assists the Auditor, doing all necessary typing. The Northern and Southern District Auditors receive $2,700 and $2,400 respectively.

A Telephone Operator-Clerk completes the office staff of the Northern Construction District. She handles the central switchboard at the

Newark garage, her time being charged to the various Divisions quartered there.

The Southern Construction District office staff includes an Assistant Civil Engineer who is a field assistant and expert on concrete construction. His salary is $2,740.

The district field staff consists of engineers in charge of construction,[111] assisted by Assistant Civil Engineers, Highway Inspectors, Junior Engineers and Junior Highway Inspectors.

Engineer in Charge of Construction:

The Resident Engineer (or other engineer in charge of construction) is the District Engineer's chief aide in supervising the administration and inspection of construction work in the field. He is usually in charge of two or three construction jobs, the number depending on the size of the jobs and his own ability and experience. The Resident Engineer operates from a temporary field office or offices (according to the number of projects he is supervising), provided by the contractor under the construction contract. He makes daily reports of his work and is usually assisted in the office by a Junior Highway Inspector who keeps job records, checks payrolls and does other clerical work.

Engineers in charge of construction receive varying salaries:—regular Resident Engineers, $3,000 to $3,900 a year; a Field Engineer who was in charge of the former Metropolitan Division, $4,800 a year; others from $2,220 (Senior Draftsman) to $3,000 (Senior Civil Engineer).

Highway Inspectors:

Highway Inspectors, and in some cases Assistant Civil Engineers, are in charge of a particular project or portion of a project under the direction of the Resident Engineer to handle drainage and fills, inspect sub-base materials and check the consistency, workmanship and finish of pavements. A Highway Inspector, assisted by a Junior Highway

[111] In most cases they have the Civil Service title of "Resident Engineer". However, a "Field Engineer," "Senior Civil Engineer," "Assistant Civil Engineer," "Highway Engineering Inspector," "Senior Draftsman," or "Designing Draftsman" may be in charge of construction.

Inspector, is stationed at the concrete mixer at all times when the pavement is being laid; the Junior Inspector keeps a record of all the batches of sand, stone and cement used and the amount of mix going into each slab. Either one may check the time of the mixing and inspect the setting of the joints. During the winter months some of these Highway Inspectors, like the Junior Inspectors, assist in the field offices of the Survey and Plans Bureau; others are laid off. Assistant Civil Engineers receive from $1,980 to $2,340; Highway Inspectors $1,860 to $2,460; and a few Senior Civil Engineers who assist Resident Engineers on projects, $3,000 a year.

Junior Highway Inspectors:

Junior Highway Inspectors and a few Junior Engineers are assigned to the same general type of work that Highway Inspectors do, but perform the minor duties. They also act as clerks in the construction field offices. Junior Inspectors receive from $1,500 to $1,980, and Junior Engineers from $1,500 to $1,740 a year.

Special Field Assistants:

In the Northern Construction District, a Highway Engineering Inspector (salary—$2,580) supervises the work of two Highway Inspectors (salaries—$1,860 and $2,100) who are stationed at plants in the district producing pre-cast reflecting curbs. These men make certain that the proper manufacturing process is followed and inspect the curbing before it leaves the plants. The Highway Engineering Inspector visits the plants once a day, coordinates shipments to the various jobs, and inspects the curbing when in place. In addition, he makes special inspections for the District Engineer.

In the Southern Construction District one Highway Inspector (salary—$1,860) is assigned to the single plant in that area to inspect pre-cast curbing, the District Engineer discharging the functions of the Highway Engineering Inspector of the Northern District. When not needed at the plant, the Highway Inspector is used on construction projects.

A Senior Civil Engineer (salary—$2,940) serves as special field assistant on W. P. A. work in the Northern District. The District Engineer assigns him to resolving any labor difficulties on construction

projects utilizing W. P. A. labor. He is attached to the State Highway W. P. A. office and spends approximately two-thirds of his time on assignments made by the head of that bureau. Administratively, however, his work is supervised by the District Engineer and he reports daily to his office. There is no similar W. P. A. liaison engineer in the Southern Construction District; the District Engineer there uses his regular engineers to handle the W. P. A. contacts.[112]

Bridge Bureau

The Bridge Bureau is a complete unit within the framework of the Construction Division, and is in charge of the Bridge Engineer. The Bureau is responsible for the proper design and construction of bridges and structures.[113] The location of bridges, however, is the concern of the Survey and Plans Bureau, in consultation with the Bridge Engineer, for a bridge is considered a detail in the highway.

Bridge Engineer:

The Bridge Engineer is in responsible charge of the design of all bridges on the State highway system; the checking and approval of designs prepared by railroad companies for grade crossing eliminations on the State Highway System as well as those off the system that are financed by Federal Aid funds; and the review and approval of designs prepared by county engineers for bridges to be built with State Aid funds. He is in general charge of the construction of all bridges included in these categories. Major problems arising in connection with the maintenance of bridges are referred to him. Where bridges cross navigable waters, he is responsible for the preparation of all papers and attends the hearings held by the War Department and the State Board of Commerce and Navigation in order to obtain the approval of these agencies.

Although the Bridge Engineer is directly responsible to the Construction Engineer, the latter concerns himself principally with road

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[112] At the time this survey was being made there was only one W. P. A. project in operation in this district.

[113] Any structure of less than five-foot span is considered a culvert and the responsibility of the road construction forces.

construction, leaving the responsibility for bridge design and construction almost entirely to the Bridge Engineer. The Bridge Engineer accepts the location of a bridge decided upon by the Engineer of Survey and Plans in his plan for the highway, but in an extraordinary case the question of location may be taken up by these two bureau heads with the Construction Engineer. On certain problems the Bridge Engineer consults with the State Highway Engineer, and sometimes with the Highway Commissioner.

The Bridge Engineer is assisted by an office staff consisting of an Auditor, a Designer of Bridges and Structures and his staff, a clerical force of three, and by a field staff of five Resident Engineers in charge of a group of Bridge Construction Inspectors. His salary is $7,500 a year.

Auditor:

The Auditor is in charge of all statistical and financial records, prepares all change orders and estimates, and maintains all records pertaining to personnel. As Division Auditor, he coordinates the auditing and accounting work of the Bridge Bureau with the work of the Auditing and Accounting Bureau. His salary is $2,700 a year.

Clerical Staff:

A Principal Clerk-Stenographer (salary—$2,160) receives and examines all reports coming from the field, prepares progress charts based thereon, and distributes reports on tests of bridge materials made by the Laboratory Division or outside laboratories to the interested parties. He is in general charge of office work other than the Auditor's. A Clerk-Stenographer assists with filing, typing for the Auditor, stenciling specifications and routine clerical duties. Another acts as secretary to the Bridge Engineer and prepares a weekly progress report on all bridges, whether in the designing or construction stage.

Designer of Bridges and Structures:

He is the chief assistant to the Bridge Engineer in the designing of bridges and structures and is in constant consultation with him from the time the plans are received from the Survey and Plans Bureau showing the location of the road. He also confers with all bodies that might have

an interest in the structure, such as the War Department, railroad companies, the Board of Commerce and Navigation, and public utilities, before deciding on the bridge design. He has been placed in direct charge of the drafting room work and personnel, and makes all assignments. His salary is $4,960 and he is assisted by three Senior Bridge Designers (salaries—$3,980 to $4,500) who are responsible for the major and more difficult design problems; nine Bridge Designers (salaries—$2,940 to $3,360) who handle lesser problems of bridge design; and three Structural Draftsmen (salaries—$2,760 to $2,880), four Bridge Detailers (salaries—$1,980 and $2,640) and two Bridge Construction Inspectors (salaries—$2,580 and $2,760) who prepare the details and tracings after the bridge has been designed.

The engineering staff of the Bridge Bureau is located all over the State at bridge construction sites. There are five field offices, each in charge of a Resident Bridge Engineer.

Resident Bridge Engineers:

Each Resident Bridge Engineer[114] is directly responsible for supervising the construction of bridges and structures in the area assigned to him. He receives from $2,760 to $3,600 a year and is assisted by three to ten Bridge Construction Inspectors (salaries—$2,220 to $2,760) who work at specified construction jobs in the district and make daily and weekly reports to the main office of progress and any difficulties encountered. Before actual construction begins, the Resident Engineer and the Inspectors lay out the elevations, center line of bridge, stakes, etc., for the contractor.

Supervisor of Borings:

A Bridge Construction Inspector has been designated "Supervisor of Borings" and is in charge of a skilled labor gang that makes test borings at the proposed location of the bridge after the designing staff has made a preliminary layout of the structure and before the bridge is finally designed. These laborers are carried on the payroll of the Equipment Division. The salary of the Supervisor is $2,340.

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[114] Civil Service classifications: "Resident Engineer, Road Construction" (1), "Resident Engineer, Bridge Construction" (3), and "Bridge Construction Inspector" (1).

W. P. A.—State Highway Bureau

A special bureau was set up in 1938 under the supervision of a former Construction Division Engineer who was designated as W. P. A. Coordinator, for the purpose of effectuating a W. P. A. highway program that would secure the maximum possible benefits to the State and local governmental units. This Bureau acts as a coordinating agency between the Works Progress Administration and the State Highway Department and its several Divisions. Through this administrative channel flow project applications and other required data and material. The bureau is located in the basement of the State House Annex, adjacent to the State W. P. A. offices. This arrangement expedites the approval of projects and facilitates work generally. The relationship between the two offices has been rather well-defined so that delay and friction may be kept at a minimum.[115]

W. P. A. Coordinator:[116]

The W. P. A. Coordinator is responsible for promoting and coordinating W. P. A. highway projects on, as well as off, the State highway system. Although he and his staff are carried on the payroll of the Construction Division, actually the W. P. A. Coordinator reports directly to the Highway Engineer.

The Coordinator serves as liaison officer between the Highway Department and its Division heads,[117] and the State W. P. A. organization, and makes numerous visits to county and municipal officials to stimulate sponsorship of local W. P. A. highway projects.[118]

The W. P. A. Coordinator receives $5,100 a year. He is assisted by a small staff consisting of an Assistant W. P. A. Coordinator, three Field Coordinators and four Clerk-Stenographers.

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[115] See the pamphlet prepared by the State W. P. A. office, *Procedure Covering the W. P. A.—State Highway Program* (1939).

[116] Civil Service classification—"Division Construction Engineer".

[117] Contacts are with the Construction Engineer for so-called W. P. A. "Primary" projects (new construction on the State highway system); with the Superintendent of Maintenance for "Betterment" projects (on the State system) and "Institutional" projects (construction or reconstruction on State institutional roads); and with the Supervisor of State Aid Projects for "County," "Municipal" and "Dirt Road" projects.

[118] Counties and municipalities usually meet their sponsor's share out of State Aid funds.

Assistant W. P. A. Coordinator:[119]

He acts as office manager and is responsible for interpreting and clarifying W. P. A. rules and regulations for the officials of the Highway Department. His salary is $3,000.

Field Coordinator:[120]

Three Field Coordinators, each assigned to a definite district of the State, serve as an engineering supervisory staff. They take care of any difficulties arising in the field on W. P. A. road projects and watch the progress of each job in order that there may be no interruption of work due to lack of funds. In cases where funds run low, they make up an estimate of the amount required to complete the project under a revised program. The Field Coordinators make regular reports to the Trenton office.

Clerical Staff:

Four Clerk-Stenographers perform the routine work of the office and such matters as the preparation and handling of W. P. A. forms and records, time and expense accounts, progress charts for each project, a graph showing W. P. A. operating quotas, men employed, operating funds, etc., and the preparation of a daily and semi-monthly report of workers on the various projects. One acts as secretary to the Coordinator and another as secretary to the Assistant Coordinator.

Construction Division Districts

The operations of the Construction Division, as presently constituted, are extensive and complicated so that each bureau has created a field organization to fit its own needs.

As has already been noted, the State has been divided into Northern and Southern Construction Districts in connection with the building of highways, headquarters being at Newark and Trenton, respectively,

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[119] Civil Service classification—"Resident Engineer, Highway Construction".

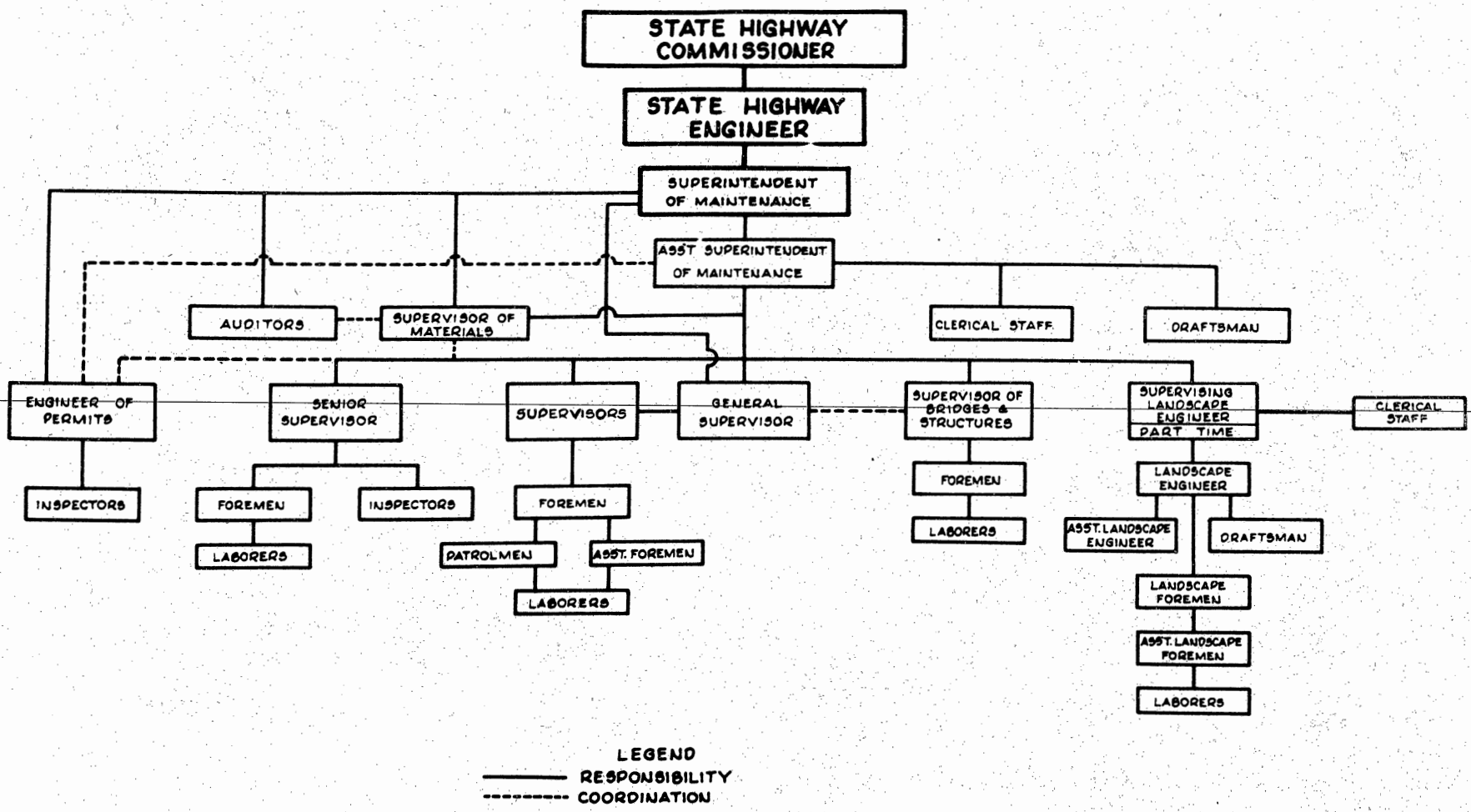
[120] Civil Service classifications: "Senior Civil Engineer" (at $2,940), "Senior Draftsman" (at $2,400) and "Highway Inspector" (at $2,340).

and in charge of District Engineers. The work of each District is carried out through Resident Engineers with temporary field offices at the project sites.

Survey and Plans Bureau field work is similarly divided between two Location Engineers, one responsible for two field offices in Newark and Montclair, and the other for five field offices located at Pleasantville, Flemington, Cranbury, Wood-Lynne and South Amboy. Each field office serves a roughly-defined area, the work being divided among field parties under the direction of chiefs of party.

The State-Wide Planning Survey, with headquarters in Newark, operates throughout the State, no precise field service organization having yet been developed. The Bridge Bureau has five districts for the supervision of bridge construction, each in charge of a Resident Bridge Engineer. Bridge projects determine the location of field offices within the district. The Supervisor of Borings and his crew operate throughout the State.

The W. P. A.—State Highway Bureau has three roughly-defined districts, with a Field Coordinator assigned to each.



NEW JERSEY STATE HIGHWAY DEPT.

MAINTENANCE DIVISION ORGANIZATION

1941

MAINTENANCE DIVISION

The Maintenance Division is the largest (in point of personnel) and one of the most responsible units of the Highway Department. In general, it is entrusted with the care and supervision of the State Highway System as constructed, having the broad duties of maintenance and repair (both ordinary and extraordinary) of State highways, the maintenance and repair of bridges on the State system, operation of all but electrically operated bridges, and the construction, maintenance and repair of roads located on State institutional grounds. It is also responsible for the important program of snow removal.[121]

The administrative head of the Division is the Superintendent of Maintenance, an engineering school graduate and civil engineer who has been in the Division since the Highway Department was established in 1917, and at its head since 1920. He is directly responsible to the Highway Engineer and is assisted in the discharge of his duties by an Assistant Superintendent of Maintenance, Supervisor of Materials, General Supervisor, Senior Supervisor of Highway Maintenance, Supervisors of Highway Maintenance, a Supervisor of Bridges and Structures, a Supervisor in charge of institutional roads, a Superintendent in charge of heavy construction, a Supervising Landscape Engineer, an Engineer of Permits, Auditors, a Draughtsman and a clerical force located in the main office.

Duties of the Principal Division Personnel

Superintendent of Maintenance:

Under the direction of the Highway Engineer, the Superintendent of Maintenance is in general charge of the work of the Maintenance Division. He prepares the annual budget of the Division as well as the annual report, carries out the annual maintenance program of the Department, and handles such other duties as may be assigned either by the Commissioner or the Highway Engineer. His salary is $7,000 a year.

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[121] See, *post*, at p. 102.

Assistant Maintenance Superintendent:

He is the chief administrative assistant of the Superintendent of Maintenance and supervises the work of the Division in his absence. He is in charge of the assignment of maintenance equipment for use in the field; reviews the annual estimates with the various Supervisors who prepared them; and coordinates the setting up and carrying out of the so-called "Betterment" and "Institutional" W. P. A. projects handled by the Maintenance Division. (This program, which began in 1938 and was rather heavy for several years, is now relatively small.) He helps prepare the Division's annual report and the budget. He is almost solely responsible for organizing the snow removal program annually in all its phases. He checks and approves all requests for maintenance materials as well as requisitions for tools and supplies. He also checks and analyzes the monthly cost statements provided by the Chief Auditor and Accountant showing the status of maintenance costs on every maintenance job. The Assistant Superintendent interviews salesmen and other callers, takes care of general correspondence; makes up special work orders at the request of the Superintendent; handles requests for information, and clears all complaints received by the Division. His salary is $4,800 a year.

Supervisor of Materials:

Together with the Assistant Superintendent of Maintenance, he reviews the estimates submitted annually by the various Supervisors. He is responsible for computing the actual material requirements from these estimates, as finally approved, and compiling this information into a "Route Book", by routes and jobs. He cooperates with the State Purchasing Department by assisting in the preparation of the bid forms for maintenance material requirements, tabulating the bids and determining the successful bidders. He handles all requests for materials made by Supervisors and prepares order requests covering such materials for use in the field; issues work orders authorizing work for which material has been ordered, as well as annual routine maintenance work; regulates and tries to facilitate shipments of materials; keeps the Department laboratory informed of any material being shipped that will require prior inspection; and schedules and regulates the shipment and application of all bituminous materials.

The Supervisor of Materials also keeps records of the receipt of all material shipped by truck or railroad, of the receipt of all liquid bitumens applied on the roads, and of all hot and cold patch work performed by contractors, and approves invoices as to the quantities so received or used (or disapproves payment where the laboratory has rejected the material in question, after analysis). He also maintains a file of railroad freight rates and checks all railroad charges as to the correctness of weights and rates. He handles all correspondence relating to the receipt of maintenance materials.

Where the Division does construction work for the Construction Division, he estimates the materials required and prepares the necessary order requests and work orders. Other duties include obtaining quotations on materials needed for emergency work and the preparation of reports of materials received. He is on 24-hour call for office duty during snow removal operations. He receives $2,640 a year, and has an assistant.

General Supervisor:

The General Supervisor (Civil Service classification—"Supervisor, Highway Maintenance") is the chief assistant to the Superintendent of Maintenance in the field. Possessing a wide experience in maintenance problems, he handles many special assignments, particularly investigations of complaints regarding alleged faulty construction or maintenance. He serves generally as a "trouble shooter" and maintenance consultant. His main duty is to coordinate the work of the other Supervisors in charge of highway maintenance. He substitutes for any Supervisor in case of illness or vacation, assists in investigations of permit applications when required, and supervises snow removal work during the winter. He works out of the Trenton office and spends almost all of his time in the field. His salary is $3,600 a year.

Senior Supervisor:

The Senior Supervisor of Highway Maintenance is responsible for the inspection of maintenance work done under contract for the Division—which includes the putting "in place" of hot bituminous material (plant mix), and the "in place" application of liquid bitumens—and for the scheduling of this work. He annually estimates the materials required for road patching. Occasionally he inspects work done under

highway opening permits where a large section of pavement is involved. He supervises all traffic line painting, and is in charge of the erection and maintenance of all highway signs, determining their location, size and type. He also handles all detour sign work. His salary is $3,600 a year.

The Senior Supervisor is assisted by six Inspectors.[122] Generally, three are assigned to patching work and three to bituminous application ("oiling") jobs. They are responsible for inspecting the "in place" work done by the contractors, and make daily reports showing, in the case of patch work, the distribution of the material, temperature and condition of mixture, square yards of pavement cut out and laid, and the condition of the pavement; and in the case of bituminous applications, among other things, the grade of material, source of supply, location of each load, guaging of the container and the temperature of the material at the time, square yards covered and gallons applied. Inspectors also send in samples to the Laboratory from the job for checking. During the winter they do work on traffic signs and snow removal assignments.

Ten Foremen[123] assist the Senior Supervisor in traffic line painting and the erection and maintenance of signs. During the winter they supervise the replacing of guard rails. The laborers engaged in this work are for the most part unskilled; two are skilled sign painters. There is a sign repair and paint shop at Fernwood headquarters.

Supervisors of Highway Maintenance:

There are six Supervisors of Highway Maintenance, each in charge of a district.[124] They are responsible for planning and executing the maintenance work laid out in the annual program of the Division, and also handle any emergency work in their districts. They inspect the State highways "as built" before they are accepted by the Division for maintenance; prepare the annual estimates of maintenance work to be

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[122] Civil Service classifications: "Maintenance Inspector" (3), "Foreman, Highway Maintenance" (2), "Material Inspector" (1).

[123] Civil Service classifications: "Foreman, Highway Maintenance" (1); "Foreman, Highway Marking" (hourly basis—2); "Laborer (Assistant Foreman)" (hourly basis—5); "Junior Highway Inspector" (1); "Truck Driver (Acting Foreman)" (hourly basis—1).

[124] See discussion of maintenance districts, *post,* at p. 101.

done in their districts and review them with the Assistant Superintendent of Maintenance and the Supervisor of Materials; and make an annual inventory of material and equipment on hand, to be used in connection with these estimates. The Supervisors are responsible for requisitioning maintenance materials, tools and supplies. They supervise the setting up of snow fences and the snow removal work in their districts.

The Supervisors of Highway Maintenance are assisted by Foremen,[125] Assistant Foremen,[126] and Patrolmen.[127] The number of Foremen, Assistant Foremen and Patrolmen, as well as the number of laborers under them, varies according to the size of the Supervisor's district and the size of the various road maintenance jobs in those districts.

There are an additional group of twelve Foremen[128] in charge of labor crews assigned to mudjacking (a special operation for raising concrete slabs that have settled), drainage and miscellaneous construction. Most of these laborers are on W.P.A. projects. The Foremen, like the others mentioned above, are under the supervision of the Supervisors of Highway Maintenance in their districts.

The Supervisors' salaries range from $2,640 to $3,600 a year.

Supervisor (Heavy Construction Work):

This Supervisor (Civil Service classification, "Superintendent, Heavy Construction") has been in charge of heavy construction projects during the past few years, particularly the moving of concrete road slabs in connection with dualization of highways (*e. g.*, on Route 26). He is assisted by eight Foremen[129] who are in charge of gangs of laborers.

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[125] Civil Service classifications: "Foreman, Highway Maintenance"; "Foreman, Highway Maintenance" (hourly basis); "Highway Inspector"; "Temporary Foreman" (hourly basis); "Laborer (Acting Foreman on W. P. A. Projects)" (hourly basis); "Laborer (Acting Foreman)" (hourly basis).

[126] Civil Service classifications: "Assistant Foreman, Highway Maintenance" (hourly basis); "Laborer (Assistant Foreman)" (hourly basis).

[127] Civil Service classifications: "Laborer, Highway Maintenance Patrolman"; "Laborer, Highway Maintenance Patrolman" (hourly basis); "Laborer (Timekeeper)". Some of the Patrolmen are designated by the Division as Chief Patrolmen.

[128] Civil Service classifications: "Foreman, Highway Maintenance" (hourly basis—9); "Laborer (Timekeeper)" (hourly basis—3).

[129] Civil Service classifications: "Foreman, Highway Maintenance" (hourly basis—3); "Temporary Foreman" (hourly basis—3); "Timekeeper" (hourly basis—1); "Laborer (Timekeeper)" (hourly basis—1).

Supervisor (Institutional Roads):

This Supervisor (Civil Service classification, "Maintenance Engineer Investigator") is in charge of the construction, maintenance and repair of roads approaching and within the grounds of State institutions, as well as the occasional construction of small bridges on such roads. This position was created in 1935.[130] He is assisted by ten Foremen[131] and four Assistant Foremen,[132] in charge of gangs of laborers.

Supervisor of Bridges and Structures:

The Supervisor of Bridges and Structures is responsible for the maintenance of bridges and structures, but not for the operating machinery on any movable bridge.[133] He inspects bridges as constructed before they are taken over by the Division for maintenance. He supervises the construction of small bridges and temporary bridges in cases of emergency (*e. g.*, floods). He receives $2,640 a year.

He is assisted by three Foremen experienced in bridge work who supervise semi-skilled and skilled general utility men, and by a Painter Foreman in charge of painting operations during favorable weather.

Supervising Landscape Engineer:

A Landscape Engineer was employed by the Department in 1930 to take charge of planting and landscape operations, but his services were discontinued in 1933. Because of the increasing need for such work, however, a full-time engineer was employed in 1937.[134]

The Supervising Landscape Engineer performs work for both the Construction and Maintenance Divisions, but is considered a part of the lat-

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[130] *New Jersey State Highway Department Annual Report,* 1935, Maintenance Division.

[131] Civil Service classifications: "Foremen, Highway Maintenance" (hourly basis—6); "Laborer (Temporary Foreman)" (hourly basis—1); "Temporary Foreman" (hourly basis—3).

[132] Civil Service classifications: "Assistant Foreman, Highway Maintenance" (hourly basis—3); "Laborer (Timekeeper)" (hourly basis—1).

[133] When the Electrical Division was created in March 1936, the maintenance of operating machinery on movable span bridges and the maintenance and operation of electrical equipment were transferred to it from the Maintenance Division. *New Jersey State Highway Department Annual Report,* 1936; Maintenance Division.

[134] *New Jersey State Highway Department Annual Reports,* 1930, 1933, 1937; Maintenance Division.

ter Division and is under the direction of the Superintendent of Maintenance. His salary of $3,000 is carried on the Construction Division payroll; those of his assistants appear on the Maintenance Division payroll.

His contact with the Construction Division is in connection with roadside improvements on Federal Aid projects. (These projects are administered by the Public Roads Administration, Washington, through district and local engineers). The Supervising Landscape Engineer supervises the preliminary planting surveys for these projects, determines the location and quantity of materials to be used, prepares the project proposals, confers with the Public Roads Administration district and local engineers, and prepares the project plans which are submitted to the Construction Division for blueprinting and forwarding to the Public Roads Administration.

Under the direction of the Superintendent of Maintenance, he supervises all planting and landscaping along State highways. He also supervises all mowing operations, revisions of plantings, the cultivation of all planting areas, and tree trimming, removal and replacements. He handles all office correspondence, appraises nurseries for the Real Estate Division and, like his chief assistants, gives lectures on the work of his bureau. There is a small nursery at Fernwood.

For a time (1939-1941) the Department engaged a consulting landscape engineer in connection with the beautification of the Rockefeller Memorial Highway (Route 40).[135]

The Supervising Landscape Engineer is assisted by the following:

(a) *Landscape Engineer.* He designs roadside improvement projects (Federal Aid) and directs the preparation of plans, cost estimates, specifications and reports in connection therewith. He inspects plant materials purchased, supervises and inspects roadside landscape maintenance, and generally assists on all landscape work, particularly in connection with W.P.A. projects. His salary is $2,580 a year.

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[135] *Minutes of State Highway Commissioner's Meetings,* May 10, 1939 and October 15, 1940. The 1939-40 compensation paid was $1000, plus $40 per day for an assistant, and certain additional compensation for a draftsman and supplies. The 1940-41 arrangement was $5,000 for the consultant, plus $100 per day and expenses for each day over 30 days' service; $50 per day plus expenses for an assistant, and additional compensation for other assistants. This contract expired August 31, 1941.

(b) *Acting Assistant Landscape Engineer.* He does a certain amount of inside work,—designing and drafting planting lay-outs, and making estimates for beautification projects and general landscape maintenance. Most of his time, however, is spent in the field supervising foremen, selecting planting sites and nurseries, staking trees and doing general inspection work. His salary is $1,860 a year.

(c) *Senior Draftsman (Landscape).*[136] In addition to his general landscape drafting duties, he assists in inspection work, marking plant material, planting in the field, laying out of projects and the investigation of complaints. He receives $1,980 a year.

(d) *Clerk-Typist.*

The field forces engaged in landscape work consist of eight Foremen[137] and eight Assistant Foremen[138] supervising 183 laborers. The Foremen are especially qualified to do landscape work and are skilled in the handling, care and treatment of plant materials. One is a tree specialist. The Assistant Foremen possess a fairly adequate knowledge of landscape work. The laborers generally have gardening or nursery experience; much of their summer work is the operation of mechanical equipment. Two or three laborers take care of the Fernwood nursery and tend the grounds at that place.

Engineer of Permits:

This position was created in 1930 on the recommendation of the Superintendent of Maintenance, who pointed out the need of such an engineer to handle the ever increasing volume of permit applications.[139]

The Engineer of Permits is directly responsible to the Superintendent and is in general charge of the investigation of applications for permits for non-departmental construction on the State Highway System, and of the preparation of such permits for the approval and

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[136] Temporary classification.

[137] Civil Service classifications: "Foreman, Landscape" (3), and "Foreman, Landscape" (hourly basis—5).

[138] Civil Service classifications: "Assistant Foreman, Landscape" (hourly basis—4); "Laborer (Assistant Foreman)" (hourly basis—3); "Laborer (Timekeeper)" (hourly basis—1).

[139] *New Jersey State Highway Department Annual Reports,* 1929, 1930; Maintenance Division.

signature of the Superintendent of Maintenance. The permits include those for utility and municipal road openings, utility pole construction, construction of entrances from the highway on to private property, removal of trees, tree trimming, removal of guard rail, tree planting and landscape work, installation of pipes and culverts, installation of fill, attachment to storm drains, removal of embankment, construction of curb and sidewalk, utility attachments to bridges, storage of construction material, movement of buildings and heavy machinery on the State highways, etc. He supervises the inspection on replacement of pavements that have been opened and on permits for entrance constructions. He is in charge of the control and elimination of unauthorized encroaching structures and advertising signs. In case of permits involving engineering difficulties or special problems, he goes out in the field to assist his inspectors. He is responsible for keeping the so-called "Job Number Book" (or "Route Book") up to date; this book contains a complete list of maintenance jobs, consecutively code-numbered by routes, with a brief description of each section, and serves as a basis for maintenance cost accounting as well as for determining the length of the system under maintenance. He supervises the posting and distribution of required legal notices prior to the construction of new sections of highways, indicating that no openings will be permitted for a period of five years. He is in charge of one of the three shifts directing snow removal work from the central office in Trenton. His salary is $3,600 a year.

Four Inspectors[140] work under the direction of the Engineer of Permits. One is responsible for checking applications for permits to construct entrances from the highway, as well as inspecting replacements after openings have been made in the highway, in the southern part of the State; a second handles entrance permits in the north Jersey area; and the remaining two are responsible for pavement replacement inspections in the central and northern sections of the State. If necessary, the Inspectors may be used interchangeably on any assignment in any area. The Inspectors handling entrance permits check on the construction work done by the permittee. In the case of openings in the highway, they supervise the work where there is any chance of damage to underground highway structures.

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[140] Civil Service classifications: "Maintenance Inspectors" (2) at $1,740 and $1,860; "Highway Inspectors" (2) at $2,100.

Maintenance Auditors:

A Principal Auditor, assisted by a Senior Auditor, handles the necessary auditing work of the Division, in accordance with the requirements of the Auditing and Accounting Bureau. In general, they audit all invoices originating in the Maintenance Division, including those covering road and bridge materials; team, truck and equipment rentals; storage rentals; personal expense accounts; freight and transportation charges; and workmen's compensation bills and payments. Furthermore, they prepare all necessary agreements for the rental of equipment (truck rental agreements are standard) and the rental of storage space. They are also responsible for preparing such special instructions and forms for the field men as may be necessary from time to time to meet changed conditions in the Division's work.

They also handle collections for damages to State highway property, and the details (reports, filing of forms, preparation of payrolls, etc.) in connection with the workmen's compensation cases arising in the Maintenance Division. In this latter function, they are assisted by the Workmen's Compensation and Claims Officer;[141] the Principal Auditor usually attends the informal compensation hearings. They make a proper audit of all charges arising from contract work on snow removal. Finally, they handle all correspondence in connection with the above matters. In general, the Senior Auditor handles auditing work in connection with the payment of rentals for outside equipment, personal expense accounts, and materials used by the Division. The Principal Auditor receives $3,000 a year and the Senior Auditor $2,700.

Clerical Staff:

The Superintendent of Maintenance is assisted by a clerical staff of eleven, among them a Head Clerk who handles his correspondence in addition to other duties; a Principal Clerk Bookkeeper who acts as an office manager and who directs the preparation of the semi-monthly payrolls, keeps a record of and distributes incoming mail and assembles outgoing mail, receives callers, handles the preparation of forms, specifications, large stencil jobs, etc., and who generally directs the clerical staff; and a Junior Auditor who handles statistical work and the sick leave and vacation records of hourly-basis personnel.

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[141] See Legal Division, *supra*, at p. 59.

Maintenance Districts

Highways: For road maintenance purposes, the State has been divided into four major sections, known as Northern, Western, Central and Southern, each in charge of a Supervisor. Actually, however, there are six divisions; the Central section has been subdivided and the Supervisor is responsible for the work of two other Supervisors, each in charge of a subdivision. The Supervisors work out of their homes and communicate daily with the central office. Some of them come in to the Trenton office weekly, others as occasion requires.

As has been noted, each Supervisor is assisted by a number of Foremen, Assistant Foremen and Patrolmen. Roads are maintained either by a large gang under a Foreman or a designated "Chief" ("Boss") Patrolman, or by a small patrol group of three men or so handling a small section of highway. In connection with the latter patrol system, there is a "floating" gang covering a much greater area and handling the more important jobs. The small patrol system is used in the southern part of the State, and gangs elsewhere. Patrol methods are moulded to the particular needs of the area. In case of emergency, or a large job, three or four gangs may be merged to complete the work quickly.

The Supervisor in charge of institutional roads has the whole State as his area of operations. The same is true for the Supervisor in charge of heavy construction work.

Bridges and Structures: The three Foremen under the Supervisor of Bridges and Structures are in charge of three rather roughly defined districts that may be described as the Northern, Atlantic Coast, and Delaware Shore-Southern districts. The Painter-Foreman and his force work in all parts of the State. The Supervisor of Bridges and Structures comes in to the Trenton office at least once a week and keeps in daily touch with it at other times.

Permits: The division of the State into the Northern, Central and Southern districts, and the work done by the four Inspectors in these areas, has already been described.

Landscaping: Landscape work has been divided into eight districts: Northeast, North-Central, Northwest, Central, Shore, Camden, Rockefeller Memorial Highway (Route 40) and Southern, each in charge of a Foreman.

Senior Supervisor: The inspectors of maintenance work done "in place" by contractors ("oiling" and patch work) operate throughout the State. Sign erection work is done out of Trenton. The men assigned to traffic line painting work in all parts of the State; there are no definite districts. The forces doing sign maintenance work, however, are assigned to four roughly drawn districts, one group working out of Newark, another out of Merchantville, and two out of Trenton.

It should be noted that all Foremen are responsible for sending daily reports to the Trenton office, on specified forms, of laborers' time, equipment used and materials received, and the distribution of these items on various operations. They must also report any accidents, damage to State property, injuries suffered by workers, building operations noted along the road, and encroachments on the right-of-way, the latter two reports going to the Engineer of Permits.

In addition to their road maintenance work, the Foremen are charged with protecting traffic by putting cinders or sand on slippery pavement, removing light snowfall, and, in some sections, of handling heavier snowfall. Foremen are generally the Department representatives on snow removal jobs handled by outside contractors, and must make complete reports on such work.

Organization for Snow Removal

The Maintenance Division has the major responsibility of removing snow and ice from the roads and bridges on the State Highway System as quickly as possible under any and all conditions. This requires a high degree of planning and coordination with the Equipment Division, as well as real personal sacrifice on the part of the Maintenance Division personnel.

The regular maintenance forces under the Supervisors of Highway Maintenance, as part of their routine work, set up snow drift fences at

appropriate points in the Fall. They also spread sand and cinders on slippery road surfaces in their sections, and handle light snowfalls. On occasion, these men take over the entire snow removal job. The Supervisors usually turn in their snow fence estimates in the Spring, and those for sand, cinders and other items used in connection with snow work, by the latter part of August each year.

State institutions are charged with the responsibility of removing snow and ice from institutional roads. Bridge tenders are responsible for removing snow from movable span bridges, but on fixed structures this work is handled by the regular snow removal forces working the district.

The Assistant Superintendent of Maintenance is in charge of organizing the annual snow removal program. The State is presently divided into 138 districts for snow removal work; the number and size of these districts are determined each year in accordance with changes in the State Highway System. About 100 snow removal districts are handled under private contract; the balance, mostly along the South Jersey shore, are the responsibility of the Department forces. Division Foremen usually serve as representatives of the Department where an outside contractor is involved, and make complete reports on snow removal operations under their jurisdiction.

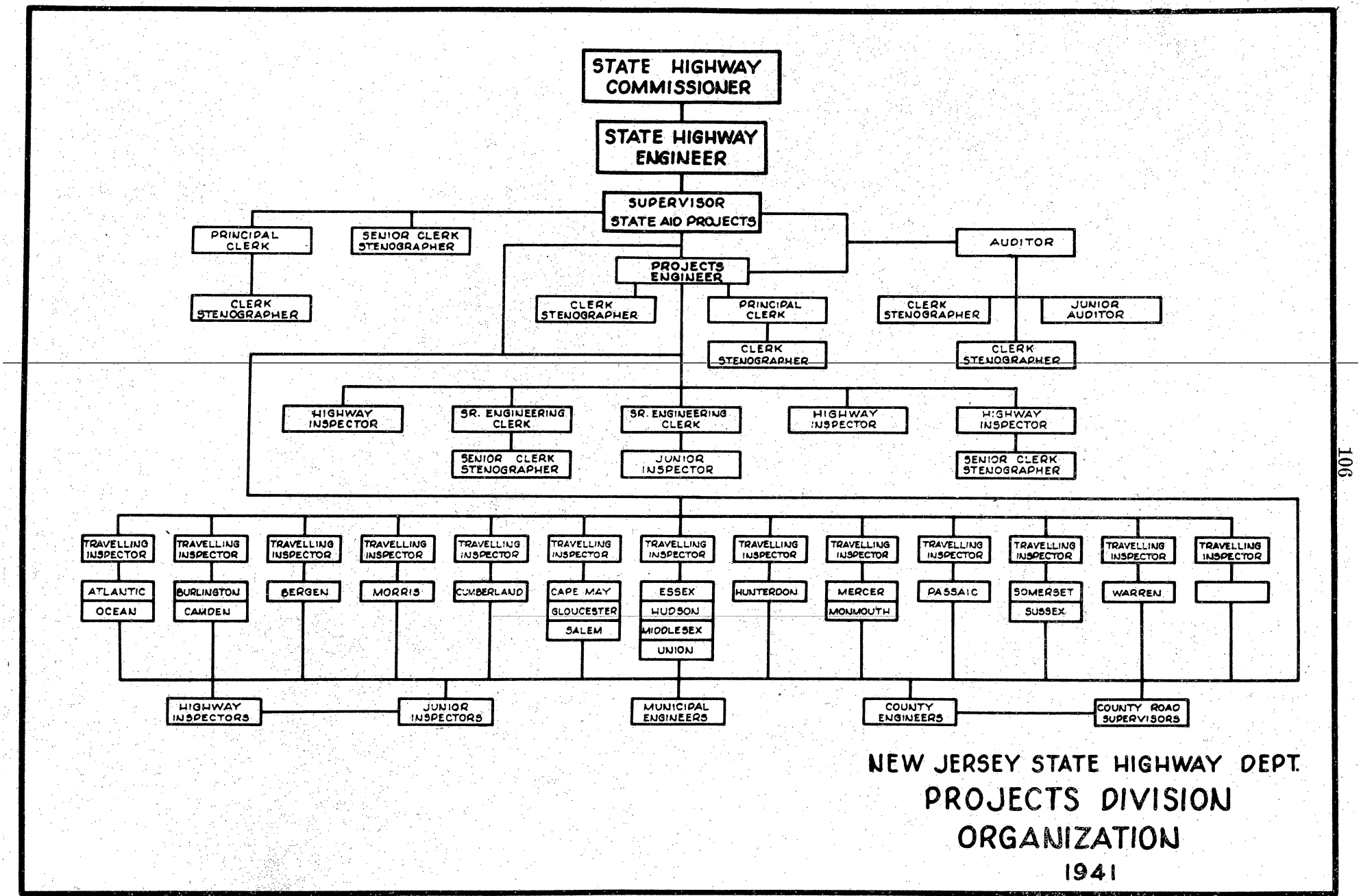
After agreements have been entered into with private contractors for snow removal work, Department personnel and equipment assigned to the various snow districts, extra equipment hired, storage space for equipment rented, and all the other details of the snow removal program completed, the Assistant Superintendent of Maintenance prepares a detailed snow organization chart. This chart shows, for each district, whether a contractor or Department forces are to do the work, whether the equipment to be used is the Department's or the contractor's; the name, address and telephone of the contractor as well as the Department Supervisor; the kind of equipment available and its location; the Equipment Division Mechanic assigned; the Maintenance Division representative assigned; relief personnel, and the location of special equipment.

In case of a snowfall, the general direction and control of the removal work is handled by a headquarters staff in Trenton consisting of three shifts in charge of the Superintendent of Maintenance, the

Assistant Superintendent of Maintenance and the Engineer of Permits, respectively. Practically every office employee and a great many of the field force, particularly the Supervisors of Highway Maintenance and their Foremen, assist in the snow removal job. During the winter the headquarters staff keeps careful check on the weather and at the first indication of the approach of snow, the entire organization is on the alert and ready to move.

The Equipment Division coordinates closely with the Maintenance Division in the preparation and carrying out of the snow removal program. The Chief Mechanic and the Assistant Chief Mechanic, under the supervision of the Superintendent of Equipment and Transportation, are responsible for the snow removal duties of this Division. They assign the Department's own equipment to the sections designated by the Maintenance Division, ship snow plows to private contractors to be attached to their trucks after it has been determined that the trucks are acceptable, and sometimes install these plows for contractors new to the Department; and arrange for suitable storage space for the Department's own equipment where it is being used by the contractor.

In addition, the Chief Mechanic and the Assistant Chief Mechanic assign the Division mechanics and operators who are to look after and operate the State equipment used on snow work. These assignments are forwarded to the Maintenance Division before the final snow organization chart is completed. The Mechanics work only on Department equipment, whether used by the Department personnel or by a contractor; there is a Mechanic to every three trucks, the usual number used on a snow section. Division operators handle the large, specialized snow equipment, which is always operated by Department personnel. This special equipment is located at strategic points throughout the State.



NEW JERSEY STATE HIGHWAY DEPT.

PROJECTS DIVISION ORGANIZATION

1941

STATE AID PROJECTS DIVISION

The State Aid Projects Division is responsible for the administration of the entire program of State aid to counties and municipalities for road and bridge purposes. The Division is headed by the Supervisor of State Aid Projects, who is directly responsible to the State Highway Engineer.

Under the present laws, $9,885,000 is distributed annually by the State Highway Department to counties and municipalities. The source of these funds is the receipts from motor vehicle fees, fines, etc. which are dedicated to highway purposes. State aid to counties is designated as Motor Vehicle Aid (MVA),[142] and that granted to municipalities is known as Township and Borough Aid (T & BA).[143]

The Supervisor of State Aid Projects is assisted by a Projects Engineer, two Senior Engineering Clerks, twelve Travelling Inspectors, a large group of Highway Inspectors, an Auditor and a clerical staff.

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[142] $6,000,000 is distributed among the 21 counties on the basis of the ratio of their respective areas, populations and county road mileages to the total area, population and county road mileage of all the counties. These funds are used for the construction, reconstruction, maintenance and repair, operation, policing and lighting of county roads and bridges, and for the payment of principal and interest of obligations heretofore incurred by the county for any of such purposes (*R. S. 52:22-20 d-2*). In addition, each county receives $35,000 for construction, reconstruction, repair and maintenance of county roads and bridges (*R. S. 27:14-1*). Counties are not required to match any part of these funds.

[143] $125,000 is available for municipalities in each county as State aid for townships, boroughs, towns, villages, and any city with a population of 14,000 or less. Of this $125,000, up to $50,000 may be applied for by these municipalities through the county officials, for the *maintenance and repair of unimproved roads.* This is the so-called Dirt Road Fund. The remaining $75,000 of the sum so reserved for each county, together with any part of the $50,000 not applied for by the municipalities for maintenance and repair of dirt roads, is available for the *construction of unimproved roads,* and applications for these construction funds are made by the municipalities direct to the State Highway Commissioner. (*R. S. 27:15-1* and *4*). State aid for the maintenance and repair of any unimproved road cannot exceed 90% of the total cost (*R. S. 27:15-3*), and a similar limit exists for the State's share of the total cost of construction of an unimproved road (*R. S. 27:15-6*).

In addition to this $2,625,000 of T & BA funds, an additional $525,000—or $25,000 for the municipalities in each county—is available for the maintenance of those roads which have been constructed with State aid. Applications for these funds are made through the county officials to the State Highway Commissioner, the State share being limited to 90% of the cost (*R. S. 27:15-10 to 13*). (By virtue of *P. L. 1940, c.218, p.887,* $525,000 was made available from the net receipts of the Motor Vehicle Fund instead of the $210,000 formerly set aside.)

Duties of the Principal Division Personnel

Supervisor of State Aid Projects:

The Supervisor is in direct charge of the entire State Aid program. He looks after the administration of the MVA and T & BA funds; advises and consults with county and municipal officials; reviews State Aid programs, applications and agreements submitted by counties and municipalities before recommending them to the State Highway Engineer and Commissioner for approval; checks the plans and specifications to see that they comply with State requirements; checks contracts awarded on State Aid projects before recommending their approval by the Highway Engineer and Commissioner; approves applications for change of plan or extension of time on State Aid construction projects; sees to it that work done is according to State standards before recommending payment therefor from MVA or T & BA funds; makes periodic reports to the Highway Engineer on the status of MVA and T & BA projects; and, generally, supervises the setting up and carrying out of the State Aid program in all its phases.

The Supervisor of State Aid Projects has been engaged in State highway work since 1909, when he served as assistant to the Supervisor of Public Roads. He was Assistant State Highway Engineer from 1917 to 1933, and in charge of State Aid projects for almost all of that time. He is occasionally authorized to sign papers in the absence of the Highway Engineer. His salary is $8,200 a year.

He has an office clerical staff of three: a Senior Clerk-Stenographer who is his secretary and acts as receptionist; a Principal Clerk who handles details concerning the Division personnel, expense accounts, office equipment, requisitions for equipment and supplies, etc.; and a Clerk-Stenographer who helps the latter.

Projects Engineer:[144]

The Projects Engineer is the principal assistant to the Supervisor and is charged with the responsibility of checking all plans and specifications submitted in connection with MVA and T & BA programs; super-

[144] Civil Service classification: "Resident Engineer, Highway Construction."

vising all T & BA construction and maintenance projects; reviewing T & BA applications with the Supervisor of State Aid Projects and making recommendations thereon; and making field inspection trips on MVA and T & BA projects, principally the latter. His salary is $3,900 a year.

The Projects Engineer is assisted by a clerical staff of three: two Clerk-Stenographers, one of whom is his secretary, and a Principal Clerk who handles all papers relating to the so-called Dirt Road Fund,[145] advises counties and municipalities of the amounts of MVA and T & BA funds allotted to them by the Commissioner, makes up the forms, known as "Commissioner's slips," for the Supervisor of State Aid Projects, recommending approval of MVA and T & BA plans and specifications and sees that these plans and specifications are returned to the source after approval has been given; and sends out regular notices to contractors listing MVA and T & BA projects on which bids are about to be let by counties and municipalities. He is assisted in this work by one of the Project Engineer's Clerk-Stenographers, and by others in the Division when necessary.

Auditor:

The Auditor, like those in other Divisions, is the divisional representative of the Chief Auditor and Accountant. He audits all statements that come into the Division, and maintains a current record of the financial status of all MVA projects so that the Supervisor may at all times know the balances available. His salary is $1,920 a year. He is assisted by a Junior Auditor, who helps in the checking of statements, and two Clerk-Stenographers, both of whom do typing and stenographic work, one assisting in checking all W. P. A. reports that come in relative to State Aid projects.

Senior Engineering Clerks:

There are two Senior Engineering Clerks who are the chief assistants of the Projects Engineer. The first examines schedules submitted by municipalities in connection with T & BA maintenance work, has the Commissioner's slips prepared therefor, and keeps a card record on these maintenance jobs. He also examines specifications and contracts sub-

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[145] See note 143 on page 107, *supra.*

mitted on MVA maintenance and repair projects, and keeps a card record relating thereto. He assigns job inspectors[146] to MVA and T & BA construction projects, as well as inspectors on MVA maintenance jobs. He keeps a record of bids that are about to be advertised for by municipalities and counties for maintenance materials, and gives this information to the Principal Clerk assisting the Projects Engineer so that he may send this information to his contractors' mailing list. This Senior Engineering Clerk also takes "before-and-after" pictures on MVA and T & BA jobs, and keeps a current record of balances remaining in T & BA maintenance accounts for the Supervisor's information.

The second Senior Engineering Clerk handles the plans and specifications on MVA and T & BA construction projects, whether done by contract or force account, and assigns them for checking by a Highway Inspector who assists him in this work. He also looks after the preparation of the Commissioner's slips for approval of State Aid construction projects and has the contracts on these projects checked; and keeps a record of balances on T & BA construction jobs for the Supervisor's information. The Highway Inspector who assists this Senior Engineering Clerk also does any drafting work required in connection with his duties. A second Highway Inspector, who used to do work similar to that done by this man, now handles the details in connection with W. P. A. construction projects on the State Aid program. A Senior Clerk-Stenographer serves as clerical assistant to these two Highway Inspectors.

The first of the two Senior Engineering Clerks is assisted by a Senior Clerk-Stenographer who also helps the clerical staff of the Projects Engineer in certain matters. The second Senior Engineering Clerk has a Junior Inspector as an assistant. He checks bids received on State Aid jobs for calculations, and all MVA and T & BA construction contracts to see that they are in proper form and properly executed.

Besides the two Highway Inspectors just mentioned, there is a third Highway Inspector, formerly in the field and now assigned to checking laboratory reports to see that the materials to be used on State Aid projects comply with the specifications. He also checks field re-

[146] Civil Service classifications: "Highway Inspectors" and "Junior Inspectors."

ports sent in by job inspectors as to the application of bituminous materials, and goes over questionnaires that must be filed by contractors as to the source of the materials they intend to use on their jobs.

The Senior Engineering Clerks each receive $2,940 a year. Each of the three Highway Inspectors is paid $1,860 a year. They are all directly responsible to the Projects Engineer.

Travelling Inspectors:[147]

Twelve Travelling Inspectors head the fairly large field staff required for inspection of State Aid projects. The Travelling Inspectors are administratively responsible to the Supervisor of State Aid Projects and the Projects Engineer under him; for the most part, however, their contact in the central office is with the Senior Engineering Clerk who assigns the Highway Inspectors and Junior Inspectors to the various jobs.

Travelling Inspectors receive from $1,860 to $3,300 a year. One to four counties are assigned to each one, depending on the volume of work and the area to be covered. These assignments are made by the Supervisor of State Aid Projects with the approval of the Highway Engineer and Commissioner.

The Travelling Inspectors are the Division's chief field representatives and are in constant contact with county officials, engineers, and road supervisors, and with municipal officials and engineers. They are in general charge of inspection of all construction and maintenance work done under State Aid auspices. Each man works from his home and is assigned a State car. They keep in touch with the central office by phone daily, and from time to time are called together for conferences.

Travelling Inspectors must recommend approval of all force account price agreements on MVA and T & BA construction projects, as well as of all payments, whether partial or final, on State Aid work. They make field inspections of proposed T & BA construction projects before

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[147] Civil Service classifications: "Highway Inspector" (5); "Senior Draftsman" (3); "Assistant Civil Engineer" (2); "Senior Civil Engineer" (1); "Highway Engineer Inspector" (1); "Resident Engineer, Highway Construction" (1). One of these was, at the time of the study of the Division, on sick leave.

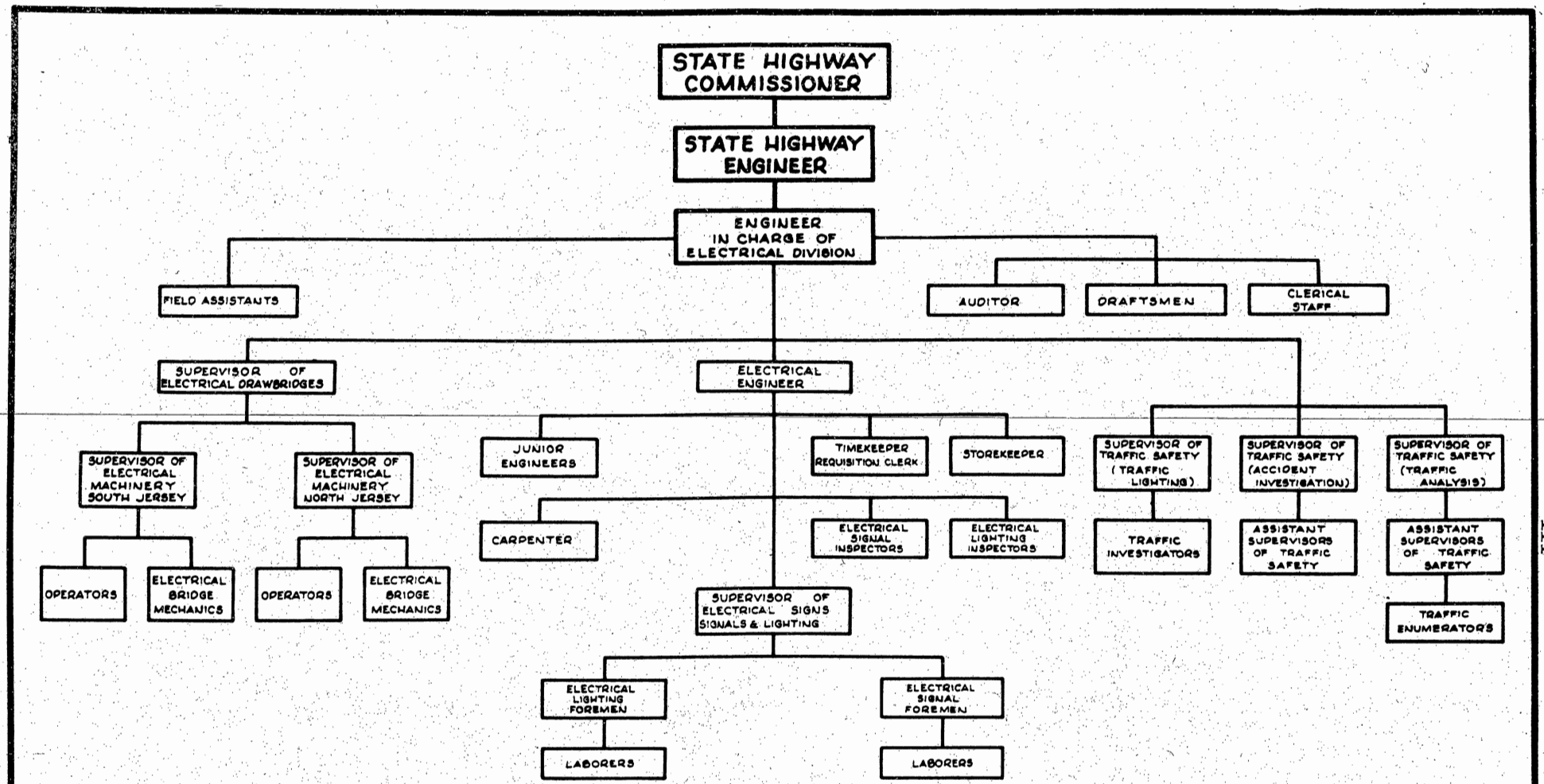
the municipal application therefor is approved; recommend that applications for change of plan on State Aid construction programs be approved; and request final inspection by the Projects Engineer or Supervisor of State Aid work. They file weekly and special reports of their work, as well as monthly time reports.

The Travelling Inspectors are directly in charge of 56 Highway Inspectors (salary—$1,860 to $2,340 a year) and 35 Junior Inspectors (salary—$1,500 to $1,980 a year). These men are assigned to the various jobs by the Senior Engineering Clerk, and make a daily report of their inspection. They also make daily reports of bituminous applications. The Travelling Inspectors visit these men on the jobs at frequent intervals. Generally, Junior Inspectors are assigned to less difficult projects.

Some inspection work is also done by a Right-of-Way Inspector who is a veteran in the Department and has been assigned to the Projects Division. Another veteran in the service, who carries the temporary Civil Service title of "Soil Stabilization Inspector", inspects projects involving soil stabilization work (tar and dirt).

Division Districts

The counties of the State have been grouped into 12 districts, comprising one to four counties, with a Traveling Inspector assigned to each district. These areas are not permanently established, but are shifted as the volume of work requires. The present districting of counties is as follows: (1) Atlantic and Ocean; (2) Burlington and Camden; (3) Bergen; (4) Morris; (5) Cumberland; (6) Cape May, Gloucester, and Salem; (7) Essex, Hudson, Middlesex and Union; (8) Hunterdon; (9) Mercer and Monmouth; (10) Passaic; (11) Somerset and Sussex, and (12) Warren.



NEW JERSEY STATE HIGHWAY DEPT.

ELECTRICAL DIVISION ORGANIZATION

1941

THE ELECTRICAL DIVISION

The Electrical Division comes directly under the supervision of the State Highway Engineer and was established by an order of the Commissioner effective March 1, 1936,[148] thus creating a full-fledged Division out of what had previously been a function of the Maintenance Division. The duties of the Division have steadily expanded until today it is responsible for the design, installation, maintenance, repair and operation of all highway safety lighting systems, traffic signals, electric directionary and cautionary signs, navigation and aviation lights; the maintenance, repair and operation of all electrical bridge operating machinery, and the operation of 33 movable span bridges,[149] coming under the jurisdiction of the State Highway Department; as well as traffic accident investigations and traffic analysis. These functions are carried out by three principal Bureaus: Electrical Construction and Maintenance, Bridge, and Traffic.

The Division is headed by an Engineer in Charge,[150] who has a personal staff of two Field Assistants. Others assisting him include a Supervisor of Electrical Drawbridges; three Supervisors of Traffic Safety, respectively in charge of traffic lighting, accident investigation, and traffic analysis; and an Electrical Engineer. In addition, there is a central office staff that includes an Auditor, Draftsmen and clerical personnel.

The central office of the Division is located at 148 West State Street, Trenton. A large building at Fernwood houses the operating department, Division equipment and storeroom, the latter being under the supervision of the Division and not under the Supervisor of Purchase and Supplies. There is a branch office at Belmar (rented) out of which operate some of the men who investigate accidents and check traffic.

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[148] *State Highway Commissioner's Minutes of Meeting,* March 3, 1936. Order dated February 27, 1936.

[149] Of these, 24 are operated by electricity, 5 by gasoline motor, 4 by hand.

[150] Civil Service classification (as of July 1, 1940),—"Engineer in Charge, Electrical Bureau."

Note: Because of a series of Civil Service examinations scheduled during the course of the Governor's Highway Investigation, there will be extensive revisions of titles and positions presently held by members of the Division. The titles used in the text are those proposed for the organization as finally set up under Civil Service.

Duties of the Principal Division Personnel

Engineer in Charge—Electrical Division:

The Engineer in Charge is the chief administrative officer of the Division. In addition to his regular duties in planning and carrying out the program of his Division, he consults with and advises the Survey and Plans Bureau and Bridge Bureau of the Construction Division on all electrical installations on road and bridge construction projects. He also lectures on highway safety lighting and prepares articles and reports on this and other subjects relating to his Division. His salary is $4,800 a year.

Field Assistants:[151]

They are the Engineer's representatives in the field, reporting directly to him on special assignments given them. Principally, they supervise and inspect the work of the various Bureaus in the field.

Auditor:

The Auditor is the Division representative of the Chief Auditor and Accountant. He checks all bills and audits them for payment, issues all requisitions for materials and supplies, handles the personnel records, and attends to the collection of all claims for damage done to electrical equipment of the Department. He acts as office manager in the absence of the Division head. He receives $1,980 a year. He is assisted by two clerks;[152] in addition to other work, one handles time and cost reports on traffic enumerators and electricians, and the other records of materials received and meter reading reports.

Draftsmen:

Two draftsmen,[153] who are considered part of the central office staff, work in the Division building at Fernwood because of lack of space. They perform all drafting needed for electrical installations.

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[151] Civil Service classifications: "Laborer—Electrician" (hourly basis), and "Laborer-Electrical Supervisor" (hourly basis).

[152] Civil Service classifications: "Laborer—Traffic Checker" (hourly basis).

[153] Civil Service classifications: "Bridge Detailer" at $1,980, and "Laborer" (hourly basis).

Supervisor of Electrical Drawbridges:

The Supervisor is in general charge of the work of the Bridge Bureau, which includes the preparation of plans and specifications for electrical installations on bridge construction projects for the Bridge Bureau of the Construction Division (lighting, wiring, signals, aviation and navigation lights, but not the design of bridge machinery); supervision and inspection of these installations (including machinery) while they are being made, and running the final operating tests before they are accepted; the maintenance and operation of all the operating machinery, lighting and signal systems on these structures, and their periodic inspection and repair; and, finally, the supervision and training of all bridge operators and attendants. The Supervisor of Electrical Drawbridges handles all complaints concerning bridge operations, makes tours of inspection, and supervises the personnel of his Bureau. His salary is $3,000 a year.

He is assisted by two Supervisors of Electrical Machinery,[154] one in charge of the North Jersey area and the other South Jersey. Each has a truck and a crew of three Electrical Bridge Mechanics.[155] They have regular tours of inspection of the bridges in their respective areas and do necessary servicing and repairs on the spot with their mechanics. They are directly responsible for training Bridge Operators and Attendants,[156] and make test openings of bridges. They must file reports on inspections, test openings, and meter readings of electrical current consumed. Bridge Operators keep log books which are filed annually, and make monthly reports of bridge openings.

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[154] Civil Service classifications: "Laborer, Drawbridge Mechanic" and "Laborer, Supervisor of Machinery (Drawbridge)" (both hourly basis).

[155] Civil Service classifications: "Laborer" and "Laborer, Drawbridge Mechanic" (both hourly basis).

[156] In the metropolitan districts they are designated as "Operators (or Attendants), Electrical Drawbridge, Metropolitan Division," and receive a higher monthly rate of pay. There are "Chief Operators" and "Assistant Chief Operators" on important bridges, who generally receive an even higher rate. In the summertime, "Bridge Gate Tenders" are temporarily employed to reduce possible accidents because of bridge openings.

Supervisors of Traffic Safety:[157]

The Traffic Bureau of the Electrical Division has been divided into three sections—traffic lighting, accident investigation, and traffic analysis—each in charge of a Supervisor of Traffic Safety reporting directly to the Engineer in Charge. There are six Assistant Supervisors of Traffic Safety[158] under the Supervisor in charge of traffic analysis, two being assigned to each of the North, Central and South Jersey areas (one in charge of each shift in these areas). These six Assistant Supervisors are in charge of a large number of Traffic Enumerators.[158] Three Assistant Supervisors of Traffic Safety are under the Supervisor in charge of accident investigation, one being assigned to each of the districts. Five Traffic Investigators[158] assist the Supervisor in charge of traffic lighting, one being assigned to each of the districts and two to the central office. These Traffic Investigators are assisted by Traffic Enumerators as need arises.

The Supervisor in charge of traffic lighting is responsible for the collection and analysis of data (particularly traffic and accident reports) where an installation is under consideration, the preparation of satisfactory electrical lay-outs to correct the situation, and the making of recommendations to the Engineer in Charge for a decision as to the placement of lighting. The Engineer then makes his recommendation to the State Highway Engineer, and if the Commissioner approves, the installation is made. This Supervisor also attends various meetings of county and municipal officials to explain the Department's policies respecting safety lighting and traffic signals, and, in approved cases, to bring about an agreement with the county or municipality for sharing in the cost of installing and operating such lighting or signals.[159]

A second Supervisor is required to make a continual and progressive study of accidents occurring on State highways,[160] and to make

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[157] Those who filled these positions before the Civil Service examinations referred to in the note on page 115, *supra,* were classified as "Supervisor of Labor", "Laborer, Supervisor of Checkers" and "Laborer, Lighting Investigator" (all hourly rate).

[158] The Civil Service classification of the Assistant Supervisors of Traffic Safety, Traffic Enumerators, and Traffic Investigators, before the Civil Service examinations already referred to, was "Laborer" (hourly basis) doing accident investigation and traffic analysis work.

[159] The State policy of sharing the cost of installation and operation of safety lighting and traffic signals with counties and municipalities, is discussed *post.* See *p. 537 ff.*

[160] All accidents of a fatal character or involving over $50 damage, are investigated. Local and State police records and those of the Motor Vehicle Department are utilized, in addition to direct on-the-spot investigations.

similar investigations on Federal routes where the Federal government so requests, or on a route off the State system at the request of the Construction Division when it is considering the possibility of taking over such a route. Accident reports form the basis for the recommendation of safety lighting and signal installations made by the Supervisor in charge of lighting. When a new safety feature, such as a reflecting curb, center island, or a new type of light, is installed, he maintains a 24-hour patrol to spot and check every accident. The reports of this patrol are made available to the Survey and Plans Bureau of the Construction Division for reference in designing future roads. Accident investigators report the results of their work daily to the Supervisor who collates the information. This Supervisor, like the Supervisor in charge of traffic lighting, attends meetings of county and municipal officials to explain the Department's policies respecting safety lighting and traffic signals with the view toward bringing about an agreement for sharing with the State in the cost of installing and operating such lighting or signals.

A third Supervisor is in charge of traffic analysis. He is responsible for collecting data concerning traffic flow, including traffic volume, turns at intersections, origin and destination of traffic, volume of cars, buses and trucks, number of New Jersey, Pennsylvania, New York, and other State cars, etc. Before any traffic signal is installed, he makes a three-day traffic count (a week-day, Saturday and Sunday) to determine flow, turning movements, and the relation of side road to main road traffic. He is also in charge of such special counts as may be required by the Federal government (Public Roads Administration), the Motor Vehicle Department, or the Survey and Plans Bureau of the Construction Division. From the 14 permanent key stations and the 60-70 temporary summer stations, the Traffic Enumerators[161] make daily reports to the Supervisor. From these he prepares monthly, semi-annual and annual reports, special reports and analyses.

Electrical Engineer:[162]

The Electrical Engineer is in charge of the work done by the Electrical Construction and Maintenance Bureau of the Division, quartered

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[161] Their number varies from 100 to 250, according to the season of the year.

[162] Civil Service classification: "Laborer, Lighting Foreman" (hourly basis).

in the Division building at Fernwood. He is responsible to the Engineer in Charge for the proper installation and maintenance of electrical equipment. He schedules the work of the personnel in his charge, prepares estimates on special jobs (*e. g.,* when a signal has been damaged in an accident), draws up specifications for traffic light and submarine cable, cooperates with utility companies in establishing electric service for lighting circuits, and supervises the running of lighting tests and experiments. A Junior Engineer[163] assists him, writing specifications, supervising special construction jobs, checking installations, etc. A Timekeeper and Requisition Clerk, assisted by a Clerk-Typist, and a Storekeeper, comprise the Fernwood office staff.[164]

Three Electrical Signal Inspectors[164] are under the direct supervision of the Electrical Engineer, operating over three well-defined routes through North, Central and South Jersey. Each has a truck and equipment. They inspect all signals before they are thrown into service; periodically inspect and repair controller and flasher mechanisms in their respective areas; and send regular inspection reports into headquarters.

Three so-called Ladder Men (or Electrical Lighting Inspectors),[165] covering the same areas, patrol the highways in their respective districts, inspecting all lights, electric signs and signals maintained by the Division. They replace all broken glass and burnt-out bulbs, clean reflectors, and inspect lighting and signal standards for broken chains, wires, castings, etc. They, too, make daily reports of their work to the Electrical Engineer.

A Carpenter[166] builds all forms for concrete work and wooden signs for Electrical Division projects and patrols the roads to see that the latter are in good condition.

A Supervisor of Electrical Signs, Signals and Lighting[167] is the chief field assistant of the Electrical Engineer and is in direct charge of

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[163] Civil Service classification, "Assistant Engineer" at $1,980.

[164] All are in one of the Civil Service "Laborer" classifications and are paid at an hourly rate.

[165] All are in one of the Civil Service "Laborer" classifications and are paid at an hourly rate.

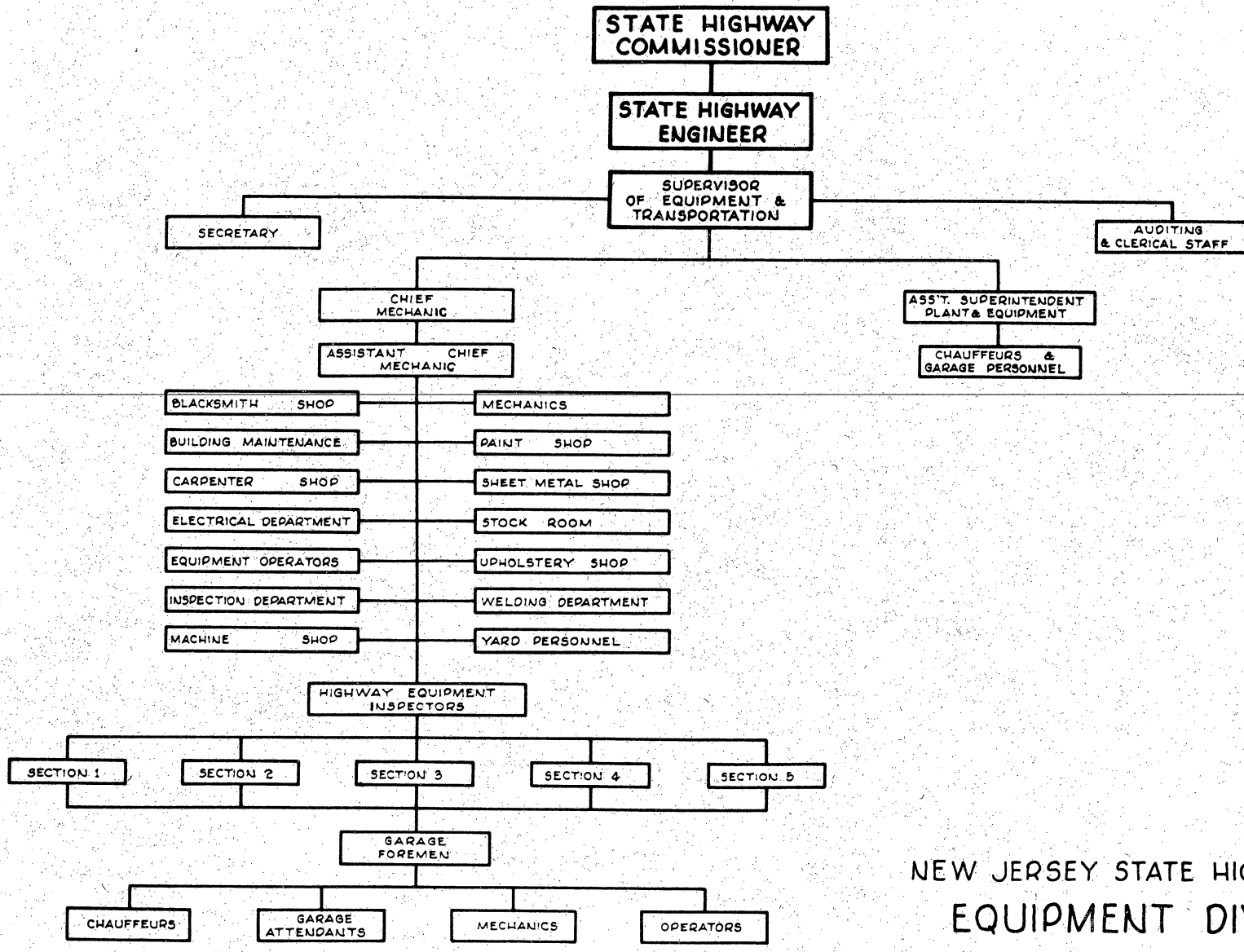
[166] Civil Service classification, "Laborer-Electrician" (hourly basis).

[167] Civil Service classification, "Laborer-Foreman" (hourly basis).

seven gangs. Generally, four do installation and maintenance work on electric lighting and signs, and three similar work on electric signals and flashers. Each is supplied with a fully equipped truck and headed by a foreman, assisted by three to four men in lighting work and as many as six men in signal work. The Supervisor schedules the work of the gangs; he checks their jobs and reports daily on his inspections. The Foremen make daily reports of work done and the distribution of time on the jobs, they also report inspections of time clocks on electrical directionary signs.

Electrical Division Districts

From the above, it will be noted that the State has been divided into three districts—North, Central and South—for some operations, such as traffic analysis, accident investigation, safety lighting, and the work of the Electrical Signal and Electrical Lighting Inspectors in the Electrical Construction and Maintenance Bureau of the Division. The Bridge Bureau, however, has divided the State into two districts—North and South. The gangs doing installation and maintenance work on electric signs, signals, flashers and lighting, operate on a State-wide basis.



NEW JERSEY STATE HIGHWAY DEPT.

EQUIPMENT DIVISION ORGANIZATION

1941

EQUIPMENT AND TRANSPORTATION DIVISION

The Equipment and Transportation Division, under the supervision of the State Highway Engineer, is headed by the Supervisor of Equipment and Transportation. The Division is responsible for the maintenance, repair and operation, as well as the disposal of Department equipment,[168] and the maintenance of all garages and buildings assigned to the Division.[169] The central office of the Division is at Fernwood garage.

The Supervisor is assisted in the discharge of his duties by an Assistant Superintendent of Plant and Equipment, a Chief Mechanic, Assistant Chief Mechanic, Equipment Inspectors, Auditors, a secretary and clerical staff. Administratively, there are two principal subdivisions: one is concerned with the operation of the centralized passenger car service, and the other is responsible for the maintenance and repair of all highway equipment.

The Division is, in fact, a rental agency for equipment required by the other Divisions. The largest user of equipment by far is the Maintenance Division, with the Electrical Division requirements showing a steady increase. There is a fixed charge for each piece of equipment, and this is allocated to the using Division by the Auditing and Accounting Bureau.

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[168] As of July 1, 1941, this equipment consisted of 330 automobiles and station wagons; 332 trucks (mostly 1½ to 5½ tons); and 1,419 pieces of highway equipment, including graders, tractors, rollers, pumps, sand spreaders, mowing machines, mixers, snow plows, snow loaders and miscellaneous equipment. Total—2,081.

[169] These include the main building (housing the offices, stock room and main repair shop), three large garages, several smaller buildings for repair work, servicing and washing, a gasoline station and gate-keeper's house, located at the Fernwood headquarters of the Division at West Trenton; a building used by other Divisions at 148 West State Street, Trenton; Division garages at Newark, Vineland, Dover, Merchantville and Toms River (the latter two are leased), and storage garages at Cliffwood, Somerville and Woodbridge (all these are rented). Two garage attendants are assigned as custodians of 148 West State Street.

Duties of the Principal Division Personnel

Supervisor of Equipment and Transportation:

He is responsible for the proper upkeep of the garages and buildings assigned to the Division, and makes periodic inspections of the divisional garages; supervises all personnel; and is responsible for recommending the purchase of new equipment and the disposal of obsolete units. He prepares the annual estimates of equipment needed after consultation with the heads of the using Divisions, particularly Maintenance. He is responsible for checking all new equipment purchased to see that it is in proper working order, and for the servicing, maintenance, repair and operation thereof once it is put in use. His salary is $4,500 a year. A Principal Clerk-Stenographer (salary—$2,400) acts as his secretary.

Assistant Superintendent of Plant and Equipment:

He is in charge of the central pool of all administration cars used by Department and Division heads, officials, engineers or any other employee to whom a car has been assigned. He is responsible for the assignment of these cars and the chauffeurs who drive them, as well as for servicing the cars except for repairs. He is in charge of the chauffeurs and garage attendants assigned to his jurisdiction, including the chauffeurs permanently assigned to drive certain Department and other officials. He receives $3,900 a year.

Chief Mechanic:

The Chief Mechanic is in charge of checking all new equipment, and of the maintenance and repair of all highway equipment in use. He supervises the work of the Equipment Inspectors, Garage Foremen, and the men who look after the buildings, including those in charge of the Fernwood gasoline and oil station. He is in direct charge of the various shops at Fernwood headquarters. However, the personnel and management of the equipment stockroom at Fernwood are in charge of the Supervisor of Purchase and Stores; the Chief Mechanic straightens out any disputes that arise between the stockroom personnel and the Equipment Division employees. The Chief Mechanic and his assistant

cooperate with the Maintenance Division in preparing and carrying out the snow removal program, as has already been described in the discussion of snow removal organization.[170] The Chief Mechanic's salary is $4,500 a year.

Assistant Chief Mechanic:

He acts as general assistant to the Chief Mechanic, but his primary responsibility is the maintenance of all snow removal equipment and the assignment of work to the various Mechanics under the direction of the Chief Mechanic. His salary is $2,400 a year.

Auditing and Clerical Staff:

The two Division Auditors who are responsible to the Chief Auditor and Accountant for the proper auditing of all bills and accounts carry the Civil Service classification of Principal Clerk-Bookkeeper (salary—$2040) and Junior Auditor (salary—$2100). The former audits all bills and expense accounts and is assisted by two Clerks in checking bills, particularly the heavy volume of gasoline and oil bills. The Junior Auditor keeps the time records of the Division personnel, makes up the payroll, receives and distributes pay checks, and makes out job cards. He handles all applicants for positions and arranges vacation schedules after consulting the Chief Mechanic. He is assisted in payroll work by a Clerk who also handles insurance claims.

These two Division Auditors are assisted by the following: (a) an Auditor (at $2040), who is in charge of checking gasoline and oil slips and the operating records for all equipment, as well as the time records of assigned chauffeurs and operators; (b) a Clerk (at $1380), who keeps a record of all car mileages and the assignment of cars; (c) a Principal Clerk-Stenographer (at $2160), who keeps a card file showing the description, price, date received, etc., for each piece of equipment; secures licenses for all equipment and keeps the insurer informed of any sale or purchase of equipment; (d) a Cost Clerk (at $1680), charged with making out reports for all specially assigned cars, and who also handles all tire and tube records, sales of scrap metal

[170] See page 102, *supra*.

and rubber, and traffic orders (signed by the Chief Mechanic or his assistant or the yard foreman) for all cars leaving Fernwood except those permanently assigned.

A Rental Clerk (at $2100) negotiates all leases for garage and storage space for equipment, especially snow removal machinery, throughout the State after viewing the premises for fitness; gathers data for annual and special reports, and handles any special assignment given him by the Division Supervisor.

Equipment Division Districts

The Division has divided the State into five definite sections[171] for the purpose of carrying out its duties. Section headquarters are located at the divisional garages in the respective sections.[172] The men in charge of these sections are responsible for the maintenance, servicing and minor mechanical repair (major repairs are made at Fernwood garage) of all equipment, and the supervision of the Mechanics, Garage Attendants, Chauffeurs and Equipment Operators in their respective areas. Each of the section garages is equipped for minor repairs and servicing, and has a small supply of stores which is stocked weekly from the Fernwood storeroom. (These stores are under the supervision of the Supervisor of Equipment and Transportation). The section heads are in daily touch with Fernwood by telephone and are called into Trenton periodically for conferences.

Equipment Inspectors make regular inspections of all equipment on the road and render weekly reports of its condition. Minor repairs may be made on the road or, if necessary, at the garage.

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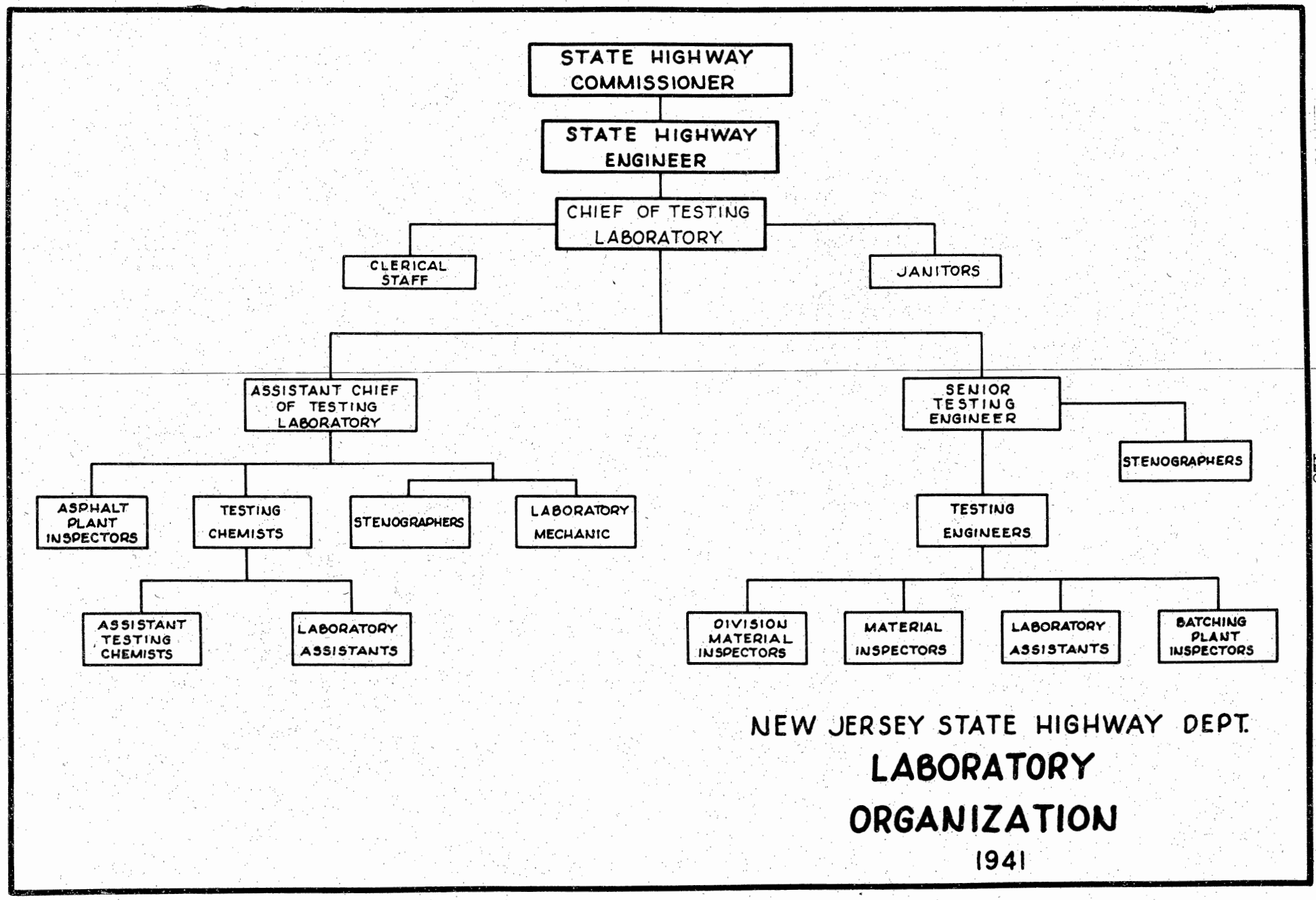
[171] *Section No. 1*—all that portion of the State north of a line starting at Phillipsburg on the west, thence easterly on a line to Chester, Bedminster, and terminating at the Staten Island Bridge at Elizabeth. *Section No. 2*—lies just south of Section No. 1, extending south to a line beginning at Bordentown on the west, thence easterly and parallel with (but not including) Route 33; also south on Route 35 to Brielle Circle. *Section No. 3*—the area south of and including Route 33 (also Route 25 north as far as Deans), continuing to and including Route 43 (White Horse Pike) with the exception of the Camden area and Route 35 north of Brielle Circle. *Section No. 4*—the area south of (but not including) Route 43, and including the area in and about Atlantic City. *Section No. 5*—the area in and about Camden, bounded approximately by Route 44 on the west, Route 41 on the east and Route 44 south to Bridgeport.

[172] The Newark garage in charge of a "Garage Supervisor" who also supervises the Dover garage, is the headquarters for Section No. 1. Section No. 2 headquarters is at Fernwood Station, Trenton, and the "Road Equipment Operator" responsible for this section works out of that place and covers the rented garages at Somerville, Cliffwood and Woodbridge. The Toms River (rented), Vineland (State-owned) and Merchantville (rented) garages, in charge of Equipment Inspectors, are headquarters for Sections Nos. 3, 4 and 5, respectively.


STATE HIGHWAY COMMISSIONER
STATE HIGHWAY ENGINEER
CHIEF OF TESTING LABORATORY
CLERICAL STAFF
JANITORS
ASSISTANT CHIEF OF TESTING LABORATORY
SENIOR TESTING ENGINEER
STENOGRAPHERS
ASPHALT PLANT INSPECTORS
TESTING CHEMISTS
STENOGRAPHERS
LABORATORY MECHANIC
TESTING ENGINEERS
ASSISTANT TESTING CHEMISTS
LABORATORY ASSISTANTS
DIVISION MATERIAL INSPECTORS
MATERIAL INSPECTORS
LABORATORY ASSISTANTS
BATCHING PLANT INSPECTORS
NEW JERSEY STATE HIGHWAY DEPT.
LABORATORY ORGANIZATION
1941

LABORATORY DIVISION

The Laboratory Division is responsible for testing all materials used in the construction and maintenance of the State Highway System and in the construction of State Aid roads and bridges. It also controls the composition of concrete and bituminous mixes, supervises the calibration of certain equipment used in transporting bituminous materials and in the preparation of concrete, and tests the quality of roads during and after construction.

The Division is in charge of the Chief of the Testing Laboratory, who reports directly to the State Highway Engineer. In addition to the work done for the Highway Department, the Laboratory also does testing for the Motor Fuel Division of the State Tax Department.

The Laboratory is located at the Fernwood headquarters of the Department. This is a two-story building with a bituminous and chemical laboratory on the second floor and a concrete laboratory and testing room on the first.

The Chief of the Testing Laboratory is assisted by the Assistant Chief of the Testing Laboratory who heads the bituminous section, and a Senior Testing Engineer who heads the so-called engineering section; as well as by a small clerical staff.

Duties of the Principal Division Personnel

Chief of the Testing Laboratory:

The Chief of the Testing Laboratory supervises the work of the laboratory and field staff personnel. His is the ultimate responsibility of passing on the quality of materials used in the construction and maintenance of the State Highway System and in construction of State Aid roads and bridges, to see that they meet the specified standards. He is in general charge of investigations into methods of establishing improved compositions of concrete mixtures and bituminous material, and of building stronger and better roads; and he is responsible for testing the strength of roads built. Until eight years ago he was in charge of preparing State Highway Department specifications for all types of road material.[173]

[173] The new 1941 specifications, as well as the 1935 edition which they replace, were prepared by the Designing Engineer in the Survey and Plans Bureau of the Construction Division.

The Chief of the Testing Laboratory has been in the State service since 1905 and in charge of Department testing since the first laboratory was built in 1917. He has served on many committees of national technical societies engaged in the standardizing and testing of materials. As Division head, he has devoted his time to the technical problems of his office, and delegated administrative responsibility, for the most part, to the two men in charge of the bituminous and engineering sections of the Division. The salary of the Chief of the Testing Bureau is $5,700 a year.

He is assisted by a Clerk-Stenographer and a Principal Clerk. The Clerk-Stenographer acts as his secretary and prepares the weekly reports on core drills taken from concrete pavements under construction, the final core drill reports for these roads when completed, and also the work reports for the entire laboratory which form the basis for the payroll. The Principal Clerk serves as Division Auditor. He audits all expense accounts and invoices, makes up the payroll, and handles requisitions for supplies. In addition, he is in charge of all personnel matters and records, collates the daily work reports, has custody of the Division files, and is responsible for all first aid work in the Division. He is assisted by two File Clerks who also handle the Division mail.

Also directly responsible to the Chief of the Testing Laboratory is a Telephone Operator who was assigned to the Division and who assists with the mail; and a janitorial staff of two.

Assistant Chief of the Testing Laboratory:

The Assistant Chief, who heads the bituminous section, supervises the work done in the bituminous and chemical laboratories, and is in charge of the Division when the Chief is absent. He is in general charge of the testing of all bituminous materials (tars, asphalts, and road oils) and the stone, sand and filler used in connection therewith. On the basis of tests made of these constituents he sets a formula for the bituminous mix, whether hot or cold. Through plant inspections, tests made of the hot or cold mix, and from samples cut from the finished roadways, he sees to it that the formula is maintained. A report must be made of each sample tested, as well as a compiled report of all analyses for a particular road at the close of the job. He is also responsible for the proper calibration of equipment used in transporting bituminous material. His salary is $3,600 a year.

The Assistant Chief is in charge of a Senior Clerk-Stenographer who acts as his secretary; a Clerk-Stenographer who prepares the various reports and forms for which he is responsible; a Laboratory Mechanic who keeps the laboratory equipment in good condition and builds whatever new equipment he can; and a group of Testing Chemists, Assistant Testing Chemists, and Asphalt Plant Inspectors, and a Laboratory Assistant.

Testing Chemists:

There are five Testing Chemists, receiving from $2,340 to $3,000 a year. One is in direct charge of the bituminous laboratory and is responsible for the laboratory procedure and the routing of work. Another, in charge of the chemical laboratory, has similar duties in connection therewith, and has a third Testing Chemist as an assistant. A fourth Testing Chemist acts as an administrative assistant to the Assistant Chief of the Testing Laboratory, and under his direction, assigns Asphalt Plant Inspectors, keeps records of the reports of all inspectors in the bituminous section, and calculates the gallonage of all bituminous materials purchased, on the basis of 60° F. The fifth Testing Chemist is assigned to the plants and refineries producing bituminous materials in the New York metropolitan district. He is responsible for making certain preliminary tests of these materials at the plant laboratories and sending samples thereof to the Division laboratory, as well as making a so-called "Material Inspector's Report" thereon. After the material has been approved, he seals each railroad car or truck in which a shipment is made and reports the shipments on a designated form. An Assistant Testing Chemist is assigned to similar duties in the Philadelphia metropolitan area.

Assistant Testing Chemists:

There are nine Assistant Testing Chemists, including the one last mentioned. They receive from $1,740 to $2,220 a year. They, as well as a Laboratory Assistant, assist in the work of the bituminous or chemical laboratories.

Asphalt Plant Inspectors:

There are eleven Asphalt Plant Inspectors, receiving from $1,860 to $2,520 a year. Two are assigned to the engineering section of the

laboratory; nine work in the bituminous section. Before a road job involving bituminous material is started, the latter are responsible for taking samples of this material at the plant and sending them to the laboratory for bitumen analysis; they also make certain preliminary tests of stone, sand and filler with their own equipment at the plant proper, and mail in reports covering their work. They must also mail in a completed questionnaire giving certain information regarding the plant and its equipment. Before material is actually shipped, the Asphalt Plant Inspector checks to see that all deviations from standard specifications that have been discovered, have been corrected. Once shipments have begun, he is responsible for seeing that the bituminous mix formula set by the Assistant Chief of the Testing Laboratory is maintained. He makes a daily report of his inspections, any tests that he may have made, or any samples of hot or cold mix representative of the day's run that he may have sent in to the laboratory for checking. He is responsible for issuing a delivery slip with every load of material going out from the plant, showing the amount of such material and its temperature. He notes the shipments on his daily inspection report, and sends a copy of each delivery slip to the laboratory. Asphalt Plant Inspectors come in from the field from time to time to do testing work or to compile data at the laboratory.

Senior Testing Engineer:

The Senior Testing Engineer heads the engineering section of the laboratory and is in charge of the testing of all materials used in the construction of State highways or State Aid roads and bridges, except for those materials handled by the bituminous section. He is responsible for establishing the concrete mix formula for each job and seeing that it is maintained; for the inspection and standardization of the batching hoppers and equipment used on concrete work, and for testing the strength of the finished concrete product during and after construction. He also assigns the work of the Material Inspectors. His salary is $3,300 a year.

The Senior Testing Engineer is in charge of the Testing Engineers, Assistant Testing Engineer, Batching Plant Inspectors, Division Material Inspectors, Material Inspectors and Laboratory Assistants. He is assisted by a clerical staff of three: a Clerk-Stenographer who acts

as secretary to him and his administrative assistant and is in charge of the typing and distribution of reports pertaining to the work of his section, and a Clerk-Stenographer and Junior Clerk-Typist who assist her.

Testing Engineers:

There are four Testing Engineers, two receiving $3,000 and the other two $2,580 a year. The first acts as administrative assistant to the Senior Testing Engineer and supervises the work of the other three and their aides. He handles all reports coming into the laboratory (except those relating to the bituminous section); checks all analyses and tests of materials; approves, on behalf of the Senior Testing Engineer and under authority delegated by the Chief of the Testing Laboratory, materials that meet specifications (rejections, however, are handled by the Chief of the Testing Laboratory himself); is in charge of all personnel in the engineering section; makes tabulations for reports on particular materials, and assigns the work of the Batching Plant Inspectors.

The second Testing Engineer is in direct charge of the "concrete section" of the engineering division of the laboratory, whose work includes all tests on stone, wash gravel, road gravel, steel, cast iron pipe, vitrified clay pipe, concrete pipe, concrete cores and cylinders, any special tests on admixtures and any compression tests. This work is done right at the laboratory. On occasion, he makes an emergency inspection or test in the field. He is assisted by the third of the four Testing Engineers, a Material Inspector and an Asphalt Plant Inspector.[174]

The fourth Testing Engineer is responsible for field tests of all concrete pipe, vitrified clay pipe and cast iron pipe. He completes whatever tests he can in the field, using the testing equipment of the production plant if any is available. Any remaining tests are carried out at the laboratory on specimens forwarded or brought in by the Testing Engineer. Similarly, he makes all possible field tests on reinforcing steel fabricated in the New Jersey or Philadelphia area, at the point of fabrication; all other tests are completed at the laboratory. He places

[174] This is one of the two Asphalt Plant Inspectors assigned to concrete work. The other assists in cement inspection work (see *post,* under "Material Inspectors").

the Department's stamp on all approved pipe, and makes regular reports of his tests. He is assisted by a Material Inspector who works both in the field and at the laboratory.

Assistant Testing Engineer:

He has charge of carrying out physical tests at the laboratory on cements, sands used in concrete work, mortar sand, cushion sand and water, and makes regular reports of this work. His salary is $2,160 a year. He is assisted by a Material Inspector and a Laboratory Assistant.

Batching Plant Inspectors:

There are four Batching Plant Inspectors, one receiving $2,520 and three $2,340 a year. Of these, one is not actually engaged in the work indicated by his title, but is assigned in the laboratory to keeping records on all concrete cores and reporting them to the Senior Testing Engineer for his approval and the signature of the Chief of the Testing Laboratory. He also keeps records of cements used on various jobs, as reported to the laboratory. The remaining three Batching Plant Inspectors establish the weights of the materials required for various classes of concrete used in construction projects; inspect the batching hoppers and equipment used in concrete road construction; instruct Construction Division men stationed at batching plants in the methods of securing samples, running field tests, making moisture determinations, standardizing batching hoppers, and keeping records of this work; and advise producers of sand, gravel and stone as to production methods that will result in their materials conforming to State specifications. They also visit construction jobs to check on materials, construction methods, consistency of mixtures, etc., and report the results of these inspections to the laboratory. Occasionally these men are used on field inspections of vitrified clay pipe, concrete pipe, cast iron pipe, steel and brick.

Division Material Inspectors:

One Division Material Inspector performs the same duties as the Batching Plant Inspectors just mentioned. He receives $2,400 a year. Another is assigned to visiting plants, pits, quarries and construction jobs where he makes inspections and field tests of fine and coarse aggregates, and assists producers in obtaining materials that meet State standards. His salary is $2,100 a year.

Material Inspectors:

There are eleven of these men doing various types of work in the field and laboratory. Three have already been mentioned as helping the Testing Engineers and the Assistant Testing Engineer. Four, under the supervision of the several Batching Plant Inspectors, are stationed at plants, pits and quarries where they inspect materials, make field tests with their own equipment, and report the results to the laboratory. The Senior Testing Engineer assigns them wherever he thinks it necessary because of the volume of the material or a possible question arising regarding its quality. These Material Inspectors also assist producers in getting out material that comes up to State specifications.

Three Material Inspectors are located at the laboratory, where they receive all samples sent in from the field, properly identify, number, and record them, and make out and distribute to the proper laboratory sections analysis sheets for each sample.

One Material Inspector, together with an Asphalt Plant Inspector, are assigned to cement plant work. They take samples from the cement bins at the different plants, seal the bins, and forward the samples to the laboratory for testing, along with a covering report. When the cement has been approved by the Chief of the Testing Laboratory and is about to be used on a construction job, these men are responsible for unsealing the bin and re-sealing it each time a shipment is made, and for sending a report of the shipment to the laboratory.

Material Inspectors receive from $1,500 to $1,980 a year salary.

Laboratory Assistants:

One of them assists the Assistant Testing Engineer, the other being in charge of receiving supplies at the laboratory and distributing them to the proper sections, as well as of sending supplies to the men in the field.

Commercial Testing Laboratories:

Three commercial testing laboratories test reinforcing steel used in road and bridge construction that is not fabricated in the New Jersey and Philadelphia area, as well as castings, creosote-treated piles, guard-

rail posts and structural steel. The source of the material having been determined from the questionnaire filed by the contractor at the time he made his bid, the commercial laboratory is notified by the office of the Senior Testing Engineer to make the required tests on any of the indicated materials to be used in road construction. (One laboratory handles all testing of materials to be used in bridge construction; it is directed to make these tests by the Bridge Engineer in the Construction Division.) The commercial laboratories report the results of their tests directly to the Construction Division, Bridge Bureau, or State Aid Projects Division, a copy being sent to the Laboratory Division. Except for tests of bridge material, the work done by these laboratories is rotated among them alphabetically, regardless of the amount of material involved on any job. It has already been noted that the Laboratory Division itself inspects and tests any reinforcing steel fabricated in the New Jersey or Philadelphia area.

CHAPTER III

THE REORGANIZATION OF THE NEW JERSEY STATE HIGHWAY DEPARTMENT

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Relatively little thought has been given to the important question of organization for highway work during the past quarter century. The tremendous task of keeping up with the ever-increasing needs of traffic seems to have occupied the attention of administrators, legislators and the public alike, to the exclusion of almost every other problem. The emphasis has been on highway construction and maintenance. With notable exceptions, highway organization and administration have been left to accommodate themselves as best they could to the immediate job of getting the roads built, or allowed to drift into the hands of those whose interest can always be counted upon where patronage and favors are involved.

In the meantime, business and industry developed and refined their organizations in countless ways, all aimed at achieving still greater functional efficiency. There has been no similar trend in the highway field. An occasional writer has recognized the definite analogy which exists between a highway department and a large-scale business enterprise.[175] Only recently, however, has highway organization begun to receive the consideration that should have been given it long ago.

Organization implies the grouping of men, money and materials into a functional relationship designed to accomplish a particular objective or facilitate a continuing program. A proper division of work and responsibility is always necessary if a specialized function, like highway work, is to be carried out efficiently.

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[175] Not many writers realize the fact that a highway plant, like any other industrial enterprise, produces wealth. This wealth may take the form of the opening up and development of areas, the lowering of transportation costs, the increase (under certain conditions) of property values, and the positive social influences that new and improved highways bring in their wake. See, *Highway Administration and Finance*, by Thomas R. Agg and John E. Brindley (New York, 1927), chapter XVII. Wilfred Owen, in his provocative essay, *A Study in Highway Economics* (Cambridge, 1934), p. 25, discusses the nature of the highway plant and points out its many similarities to a business establishment: "It has a business unit and a production unit, turns out transportation miles, has an optimum size, is subject to certain principles of location, presents the peculiarities of overhead costs, and benefits from internal and external economies of large-scale production. It must be provided with capital, maintained on a sound financial basis; it has an earning capacity, and may show a surplus or a deficit. The highway organization must produce a satisfactory product or demand will fall off, and people will complain that they are not getting 'their money's worth.' In short, it is a 'going concern,' which must be managed with foresight and guided by the principles of modern business."

The first great trend in highway organization was toward centralization of highway work. Experience with the inability of smaller units of government to cope with the technical problems and long-range factors involved in building roads suitable for present-day traffic, led to the establishment of the State as the logical and workable unit of administration.[176] It is inconceivable to think of a modern highway system in terms of the almost feudal organization that existed in many places down to the time of the first World War. The fine progress made in highway engineering has, in large part, resulted from the activities of State highway department organizations.

Another major development in highway administration has been the insistence of leaders in the field on the maintenance of a reasonable continuity of policy and method in highway work. An organization must, of course, have a program, expressed in a set of policies, and these are to be adhered to with only such changes as are necessary to meet new and unusual circumstances.[177] Particularly should this be true of a governmental agency dealing with highways, where millions of dollars are spent annually in carrying out permanent improvements that ought to bear a precise relationship to social needs and demands. Continuity of policy and method in highway administration "is encouraged by any system that assures reasonable continuity of service of the personnel of the department."[178]

State Highway Organization in the United States

Few State highway organizations date beyond 1916, when Congress passed the first grant-in-aid law for highway purposes. No uniform type of organization has been evolved, but the various agencies in charge of highway work may be classified roughly into three groups: (a) 16 State Highway Commissions, to which should be added organizations of a similar nature in 8 other States; (b) 15 State Highway Depart-

[176] *American State Government and Administration,* by Austin F. MacDonald (New York, 1934), chapter XIX.

[177] Agg and Brindley, *op. cit.*, p. 85: "The essential thing is for each state to formulate a policy consistent with its particular needs and then follow that policy for a period of years. Any general plan may be modified if the necessity arises, but progress can only come from following some well-considered program. Aimless drifting has characterized the road work of many states and the result has been unwise expenditures of funds."

[178] *Ibid,* p. 61.

ments; and (c) 9 Departments of Public Works, where the highway program is managed as one division or bureau of a major department.[179]

Fifteen States have a single executive official administering highway affairs, and 33 have a board or commission composed of from 3 to 14 members. Of this group, in 16 States the commission serves on a part-time basis, and in 17 on a full-time basis. The terms of office for members of highway commissions and single commissioners range from 2 to 8 years, the most frequent terms being 4 to 6 years, and in three instances the officials serve at the pleasure of the Governor. Highway administrative officials are appointed by the Governor in all States except Michigan, Mississippi, Nevada and South Carolina, where they are elected. Senate confirmation of appointees is not required in 14 States.

A review of the several State highway organizations throws additional light on the statistical information found in the Kansas survey just quoted. The single executive head is usually nominated by the Governor and confirmed by the Senate for a fixed term at a stated salary. This official may or may not be an engineer, but in either case the office combines the function of policy-making with that of policy execution. New Jersey is an example of this general pattern. Michigan, which has a system generally regarded as one of the best, also provides for a highway department headed by a single commissioner, but he is elected by the voters at large and must be a registered civil engineer.

Highway commissions may be elective or appointive. The usual situation is that the Governor appoints the individual commissioners with Senate confirmation, and with staggered terms so that the commission always contains an experienced nucleus of members. The commissioners may be paid at a regular annual rate or on a *per diem* basis—a few are limited to actual expenditures incurred in the course of their official duties. This multiple-member department head may act either in an advisory capacity to the chief highway executive (who is either an administrator or an engineer), or it may actually administer the highway program itself, on a State-wide basis or through districts each headed by a commissioner.

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[179] These statistics, as well as those in the following paragraph, are taken from the study made by the research department of the Kansas Legislative Council, *Organization of State Highway Systems,* Publication No. 86, February 1939, p. VII.

When a highway department is a division of a larger governmental unit, it is usually assigned to the Department of Public Works. It may then be administered by a single commissioner, who is subordinate and responsible to the Department head, or by a semi-independent highway commission.

Each of these systems has its advocates. For a time the fashion in highway organization was the highway commission, which delegated the principal administrative authority to the chief engineer. The theory behind the form was that of the business corporation; the commission acted as a board of directors for the determination of policies that were to be carried out by the chief executive officer in the role of general manager of the highway concern.

One of the advantages cited in favor of the commission type of organization was that it guarded against the sudden, and ofttimes radical and undesirable changes that occurred where one man headed the highway organization and decided to discard the policies and methods of his predecessor. Another argument often advanced is that the commission members who continue in office when new men are appointed to the board serve to stabilize the actions of the commission and give continuity to highway policy and program. Further, the commission provides "a fairly effective buffer between the executive head of the department and those subtle but ever-present selfish interests that are inescapable in public service." [180]

But the defects inherent in the commission form of highway organization far outweigh all these considerations. One need only recall the experience of New Jersey, which was among the first to adopt the commission idea. The shadow of politics hung over each succeeding State Highway Commission. The eight-man Edge board of 1917 was considered relatively free from politics, and the same reputation is given the 1923 Scott Commission—at least during its first term in office. Some of the later members of the Scott Commission brought it headlong into politics. The Burton Commission, appointed by Governor Edwards in 1920, and the Foran Commission of 1933, appointed by Governor Moore, were considered highly political.

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[180] Agg and Brindley, *op. cit.*, pp. 58 and 64.

Some Commissioners undoubtedly resisted political pressure and avoided the legislative halls during their respective terms in office. But the fact remains that the opportunities for log-rolling, favoritism, interference in the technical phases of highway work, growth of sectional interests and conflicts, and political pressure have always been, and always will be, present in the commission form of highway organization. Twenty-five years of Highway Commission history in New Jersey stand witness. The experience of many another State could be cited. The result has been waste and inefficiency in an area of government where strict business and engineering principles should control.

Responsibility for the important function of building and maintaining the State Highway System should always be capable of definite placement. This is practically impossible where a Highway Commission is in control. The record is there for all who care to read—in the minutes of the Abell Commission hearings, in the report of the survey of the Highway Department made by the National Institute of Public Administration in 1929, in a similar survey carried out by the School of Public and International Affairs of Princeton University in 1932. New Jersey can certainly be said to have given the commission form more than a fair trial. It finally abolished the Highway Commission and created a single, responsible Commissioner as executive head of the Highway Department.

What has been said about highway commissions does not, however, rule out the possibility or usefulness of an advisory highway board composed of outstanding citizens interested in rendering a real public service. Such a group could assist "in establishing the broad policies to be adopted and in deciding questions of general public interest. It may be made up of men of affairs who lack technical information along highway lines, but who are willing to inform themselves in regard to the economic and political considerations that arise in developing a state highway system."[181] It has been found that service of this kind can be secured more readily gratuitously, or for a nominal *per diem* rate, or reimbursement for necessary expenses incurred, than it can be for hire. Such an advisory committee has the additional advantage of serving as a fairly effective buffer between the chief highway executive

[181] Agg and Brindley, *op. cit.*, p. 63.

and those who, out of political or other considerations, seek to influence him. The well-administered Michigan Highway Department organization has such a board of five members.

Among the States that have reorganized their highway administration in recent years, there has been a tendency toward administering highway work as one division of a Department of Public Works. Among these States are California, Illinois, Massachusetts and New York. These States have rejected the commission form as undesirable. The Public Works Department type of organization is considered as meeting some of the shortcomings of the single commissioner form. Those who have studied the latter form feel that not even an advisory board can fully protect the chief highway executive from the onslaught of the public and the politicians, because of the disposition of most people to have all problems solved by what they consider the highest and most effective authority in any given situation. The demands made on the time of the single commissioner are such, therefore, that he must shift a large part of his administrative responsibility to the chief engineer or some other departmental official. Furthermore, the suspicion will not down that a single executive head has too much power, may easily become dictatorial, and may act arbitrarily in many situations.

State Administration Reorganization Proposals

For these reasons, but more largely in the interest of the functional consolidation of the great number of departments, boards and agencies of the New Jersey State government, practically every important survey of State administration has recommended that the State Highway Department be made a division of a major Department of Public Works. These recommendations are reviewed because of their immediate application to the question under consideration.

There have been four general studies of New Jersey State government since 1925. The first of these surveys was conducted by the Bright Investigating Committee, authorized in 1925, which reported that a State Department of Public Works should be established under the administrative jurisdiction of a Director who would be a trained engineer. He would be in charge of three bureaus:

1. Highway Bureau, to have the duty of road construction, retaining the State Highway Commission as an unsalaried advisory board.

2. Buildings Bureau, to have charge of the design, construction and maintenance of public buildings, under a Commissioner of Buildings or a State Architect.

3. Bridges and Tunnels Bureau, to take over New Jersey's duties in the maintenance and operation of the Holland Tunnel between Jersey City and New York, and in operating the Camden-Philadelphia bridge, and also handle the work of the Commission for the Elimination of Toll Bridges.[182]

The report of the National Institute of Public Administration to the Governor and the Abell Commission, made December 31, 1929, recommended a general reorganization of the State government into fourteen departments, each to be administered by a single commissioner, appointed by the Governor and serving at his pleasure. One of these departments was to be the Department of Public Works, consisting of four bureaus:

1. Bureau of Highways, to take over the work of the State Highway Department in the development and maintenance of the State Highway System, except the function of acquiring rights-of-way. This Bureau was to be administered by a Director who was to be a qualified highway engineer chosen by competitive examination. It was suggested that an advisory board on highway matters might be set up in connection with the bureau. In addition, the highway fiscal year was to be changed to conform with that of the State government, and highway expenditures were to be placed under the control of the proposed Department of Finance and budgeted through the regular channels.

2. Bureau of Buildings, to comprise of an architectural service for all State buildings, supervising their construction and design. This Bureau was to take over the Architectural Division of the Department of Institutions and Agencies, and assume custody of the State Capitol grounds and buildings from the State House Commission.

3. Bureau of Waterways and Coast Protection, to take over jurisdiction of inland waterways and coast protection from the Department of Commerce and Navigation.

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[182] New Jersey State Chamber of Commerce, Bulletin No. 15, *State Fiscal Reform* (Newark, 1932), p. 10.

4. Bureau of Land Purchase, to be headed by a valuation engineer as Director and to have charge of land purchases for all State purposes, including rights-of-way for State highways.[183]

The 1932 inaugural address of Governor A. Harry Moore, contained a program of administrative reorganization modeled generally after the proposals of the National Institute of Public Administration, with certain modifications reflecting his own ideas. The Governor recommended the establishment of twelve major departments, each headed by a commissioner serving at the Governor's pleasure, and a deputy commissioner. The program was contained substantially in a series of bills introduced in the 1932 Legislature. Governor Moore's proposal of a Department of Public Works contemplated eight bureaus, each in charge of a bureau chief: (1) Buildings, (2) Waterways and Coast Protection, (3) Highways, (4) Land Purchase, (5) Forest and Parks, (6) Riparian Lands, (7) Fish and Game, (8) Geology and Waters.[184]

Towards the close of 1932, the School of Public and International Affairs of Princeton University reported to Governor Moore on its survey of the administration and expenditures of the State government.[185] It recommended that the Highway Commission be discontinued and the position of the State Highway Engineer made the responsible executive of the Department. The Highway Engineer was to be appointed by the Governor for an indefinite term, and be removable by him. An unsalaried Public Works Planning Commission was contemplated to study the highway needs of the State, classify highways according to highway needs, recommend the order of importance of new projects and their most economical location with reference to present and future need, report to the Governor on the annual construction program submitted by the Highway Department and by other Departments, and

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[183] *Ibid.*, p. 15. And see, *Report on a Survey of the Organization and Administration of the State Government of New Jersey*, National Institute of Public Administration (Trenton, 1930), chapter XIV.

[184] *Inaugural Address*, Governor A. Harry Moore, January 19, 1932 (Trenton, 1932). And see, 1932 Assembly Bill No. 244, setting up a Department of Public Works with a Commissioner at $10,000 a year, a Deputy Commissioner at not more than $7,500, and eight bureau chiefs at not more than $5000. The bill omitted the Governor's recommendation of a Bureau of Land Purchase and substituted a bureau to administer the State Museum.

[185] *Report on a Survey of Administration and Expenditures of the State Government of New Jersey*, School of Public and International Affairs of Princeton University (Princeton, 1932).

prepare a capital improvement plan for the State. Acquisition of rights-of-way was to be handled by a three-man condemnation commission appointed by the Governor.[186]

There have been many other plans proposed since 1932, both inside and outside the Legislature, for establishing a sounder administrative system for the transaction of the State's business. Most of the legislation introduced toward this end envisaged a small number of State departments that would assume the functions of the many related commissions, bureaus and divisions now enjoying independent status. The State Highway Department figured in many of these proposals looking toward functional integration.

External Reorganization of the State Highway Department

The problem of State highway administration is admittedly one of the most difficult in the entire field of public administration. Administrative efficiency is not to be guaranteed by the selection of one particular kind of organization. It still remains true that efficiency depends upon the men at the top who have the power and responsibility. Other things being equal, however, one type of organization may create a condition more favorable to the efficient functioning of a department than another.

The prime and ideal objective is, of course, a Highway Department whose affairs will be administered in the public interest, and whose organizational structure will offer the greatest probability of the continuance of that type of administration, and resistance to efforts from any direction to subject it to personal or partisan control.

There are certain general principles which must be considered in any discussion of the organization and administration of the State Highway Department. The application of these principles will become apparent in connection with the various proposals made in this report. It may be said, then, that:

I. Since the highway service is part of the executive branch of the government, it should be subject to the effective control, management and supervision of the Governor.

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[186] *Ibid,* chapter VIII.

II. The Legislature should concern itself only with the establishment of basic laws which will permit of the exercise of proper administrative discretion on the part of those to whom responsibility for operating the State Highway System has been delegated.

III. The State Highway Department should be considered as a regular agency and integral part of the State government, and should be subject to the same set of overhead controls of budgeting, finances, purchasing and personnel as are provided for the other agencies of the government.

IV. There should be developed a long-term highway program based on a careful planning of needs and on funds available, and which would be adhered to with only such modifications as are necessary to meet changing conditions.

The first principle is stressed because it is administratively sound and reflects the letter and spirit of the constitutional provision vesting the executive power in the Governor.[187] This power has been cut down, hedged about and otherwise limited in a variety of ways by the Legislature during the past century. Whether one interprets this as a deliberate encroachment on the Governor's power by successive Legislatures, or as the reflection of a certain distrust of the office, the practice has amounted to nothing less than a continuing trespass on the executive domain.

Admittedly, the Constitution of New Jersey provides no administrative organization for the State government. The entire matter of executive power is dealt with in the sentence "The executive power shall be vested in a Governor." The administrative organization required to carry out the executive power thus rests upon statute law, and to this end the Legislature has established generally two kinds of governmental agencies. There is the independent administrative agency to which are delegated broad powers of administration and policy determination (generally in matters of regulation), together with the duty of applying legislative "standards of conduct" to concrete cases—a function calling for the exercise of discretion, in the nature of a judicial function. In the exercise of its powers to administer and determine policy, this type of agency represents an encroach-

[187] *Constitution of New Jersey,* Article V, par. 1.

ment upon traditional executive authority, an encroachment that may be considered both necessary and desirable in modern complex government.

On the other hand, in certain fields of activity the Legislature has created what might be termed "executive agencies," designed to function under and be responsible to the Governor. An examination of the highways laws and the nature of the duties performed by the Highway Department, together with considerations of an historical and traditional nature, render inescapable the conclusion that the Highway Department is an agency of the latter type—an "executive" and not an "independent" administrative agency. Indeed, the 1935 act creating the office of Highway Commissioner refers to the Department "as a branch of the executive department of the state government."[188]

The distinction between the two types of agencies leads to important legal, political and organizational consequences. Thus, the United States Supreme Court has held that the President could remove a postmaster from office without a hearing and without filing charges against him, and that a Federal act providing for the consent of the Senate before removal was a legislative interference with the exercise of the executive power.[189] On the other hand, the same court recently held that with respect to a member of the Federal Trade Commission, which is charged with quasi-judicial and quasi-legislative functions, the President's power of removal was not "illimitable" but constitutionally subject to limitations placed thereon by the act creating the Commission.[190] The distinction between the two cases is clear and rests upon a recognition of the different legal consequences that flow from an "executive" as distinguished from an "independent" administrative agency.

Politically, an executive agency becomes the responsibility of the chief executive and should therefore be subjected to more than a mere modicum of control by him. The opposite is true of an independent administrative agency. In the case of the executive agency, there

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[188] *P. L. 1935, c. 178, s. 8; R. S. 27:1-1.*

[189] *Myers* v. *United States, 272 U. S. 52 (1926).*

[190] *Humphrey's Executor* v. *United States, 295 U. S. 602 (1935).*

should be as complete a freedom from legislative control as is possible under our tripartite system of government. The fact that the Governor is the chief executive and administrative officer of the State government should be recognized to the full, in word as well as in practice.

With respect to matters of organization, an executive agency is able to operate more effectively and more efficiently when headed by a single individual. Since its activities are made the responsibility of one man, the single-headed agency is better adapted to a program of cooperation and collaboration with the chief executive. A plural commission renders difficult of achievement intelligent executive control as well as a clear allocation of responsibility. The independent agency, on the other hand, exercising as it does quasi-judicial and quasi-legislative functions, and enjoying a large measure of discretion in the application of general principles to specific instances, is better able to discharge its duties through the medium of a plural board or commission.

There are those who question whether it is advisable to entrust the Highway Department to the control and supervision of the Governor. The thought of machine politics and similar considerations disturbs them. The remedy lies elsewhere. Government should be made more responsible to the people, rather than less responsible. What is indicated is a complete overhauling of the present obsolete governmental structure to accomplish this purpose. The need for such action has been realized for some time and is presently taking the form of a movement to revise the State Constitution, either by constitutional convention or by amendment. When the change comes it is bound to be in the direction of a proper realization and definition of the executive and administrative power and responsibility of the Governor.

In the light of the first stated principle and the above discussion of the distinction existing between an executive and an independent administrative agency, the most desirable plan for reorganizing the State Highway Department would seem to be to make it a major division in a larger Department of Public Works headed by a Commissioner appointed by the Governor and holding office at his pleasure. The Director of Highways in charge of the division would be selected by open, competitive examination. This official should, if possible, be

an engineer of proven administrative experience and ability,[191] although a good business administrator who knows how to cooperate with a technical staff often makes a satisfactory executive.

The Director of Highways would have essentially the powers enjoyed by the present Highway Commissioner and would be subject in all things—particularly in matters of policy and program—to the supervision and control of the Public Works Commissioner. He would have the advice and cooperation of a small non-partisan, non-geographical Highway Advisory Board composed of outstanding citizens of varied interests (*e.g.,* an engineer, a financial expert, an attorney), who would be reimbursed for necessary expenses but otherwise receive no compensation. They would be appointed by the Governor with the advice and consent of the Senate on a staggered term basis.

It may be argued that such a Department of Public Works will have to await the complete recasting of the State administrative structure into a dozen or more Departments, each made up of existing agencies having a similar functional relationship, in the manner so often proposed in recent years. It need hardly be said that the proposal for such a basic reorganization is as full of merit and commonsense as the day it was first put forward. The present cumbersome, expensive and inefficient administrative organization of the State government would not be tolerated for any length of time in a private enterprise one-tenth the size.

The advantages of such an overhauling of the administrative machinery have been cited many times and in many places. The change is long overdue. In the case of the Division of Highways, logically grouped with other public works agencies into a larger Department, the Governor would, through the Public Works Commissioner, have a real executive control over the highway program. There would be a definite allocation of responsibility right down the line. There would be a more than reasonable assurance of continuity of program and policy, because the personnel of the Division, from the Director down,

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[191] Many States insist upon this qualification. Thomas H. MacDonald, Commissioner of the Public Roads Administration, Federal Works Agency, basing his point of view on a wide experience in the field of highway administration, believes that the chief highway executive should preferably be an engineer. Cf. *Introduction to Highway Engineering,* by John H. Bateman (New York, 1939), p. 396; Agg and Brindley, *op. cit.,* p. 63.

would be under Civil Service tenure. The Public Works Commissioner would act as the necessary buffer between the Director of Highways and the public.

Rather than wait for the entire reorganization job to be done at one time, consideration might be given to the possibility of setting up the proposed Department of Public Works, with the Division of Highways as its major bureau, at the present time. Should this proposal be rejected as impracticable, then the following recommendation for reorganizing the Highway Department is made, pending the time when the entire State administrative machinery will be revamped and streamlined into something approaching the demands of the people and the times.

It is recommended that the affairs of the Highway Department be administered by a Director, appointed by the Governor and holding office at his pleasure. Preferably, this official would be an engineer who has had broad administrative experience and exhibited proven ability in that direction. He would have essentially the powers enjoyed by the present Highway Commissioner. He would consult and advise with a small, non-salaried Highway Advisory Board that would assist him in establishing the highway policies and programs to be followed, and in deciding questions of general public concern. The members would be leading citizens of varied interests, appointed by the Governor with the advice and consent of the Senate for overlapping terms. They would be selected without any partisan, geographical or personal considerations, and receive reimbursement for necessary expenses.[192]

Here again, there would be the desired direct executive control of the Highway Department, fixed executive and administrative responsibility, a reasonable degree of continuity in policy and program, and the existence of an advisory body and buffer in the person of the Board.

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[192] Cf. MacDonald, *op. cit.*, c. XIX, for a discussion of the single-headed department plan; Agg and Brindley, *op. cit.*, pp. 63-64, for a discussion of advisory bodies.

Internal Reorganization of the State Highway Department

An examination of the highway organization of the several States reveals a complete diversity in administrative structure. This was to be expected. In the first place, the form of organization prescribed by law varies from State to State, although a few general forms may be discerned.[193] Further variations are introduced by the organization of each highway staff in accordance with the ideas of the executive head, acting within the framework of the statutory provisions.[194] From time to time changes in the basic highway laws further complicate the organizational differences. It has been observed that "the form of organization operative at any time in a State is often the result of years of development and, so far as the technical staff is concerned, may have been determined largely by the capabilities of the personnel already in the service of the department. The ideal State highway department organization has not yet been attained, and continued progress in highway management may be expected as the lessons of experience are recognized."[195]

In New Jersey, the opportunity exists for the constant experimentation necessary to create a stronger organization by revision of the existing administrative structure. The State Highway Commissioner is given broad authority to organize the Department internally. The 1935 act provided that "The commissioner shall reorganize the department and establish therein such divisions as he may deem necessary and expedient. He may formulate and adopt rules and regulations and prescribe duties for the efficient conduct of the business, work and general administration of the department, its officers and employees."[196]

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[193] P. 138, *supra.*

[194] Discussing existing highway organizations, Michigan State Highway Commissioner G. Donald Kennedy has pointed out that they "have grown up like 'Topsy.' They are fashioned around the personalities of the executives of the various State highway departments rather than being formed from a clear analysis of the functions to be performed." *Model Organization for a State Highway Department,* 24th Annual Meeting of the American Association of State Highway Officials, Dallas, Texas, December 6, 1938.

[195] Agg and Brindley, *op. cit.,* p. 59.

[196] *P. L. 1935, c. 178, S. 6; R. S. 27:1-8.*

Armed with this power, the Commissioner has been content to limit himself to relatively minor changes from the administrative organization he found on coming into office in 1935. The creation of a separate Electrical Bureau out of one of the Maintenance Division functions is the most important piece of reorganization effected.

A criticism often made of the Highway Department in the past, and one that is still valid, is its general lack of a concept of administrative management.[196a] The tendency has been toward a departmentalization of functions and a large degree of bureaucratic rigidity. Most of the framework of the administrative structure fashioned in the 1920's, particularly under Highway Engineer Thomas J. Wasser, still obtains.

The observation made at the beginning of this chapter concerning the relatively minor attention given to highway administration in the United States, is in large part true of New Jersey. Responsible New Jersey highway officials have been more concerned with highway construction and maintenance than with fashioning a modern administrative structure. There is no evidence of a comprehensive study ever having been made by the Department of its own organization, based on "a clear analysis of the functions to be performed." Nor has there been any apparent readiness to accept what might be considered the more constructive and progressive of the recommendations for internal reorganization made by others in the past.

Division chiefs have usually looked to the responsible head of the Department, whether Commission or Commissioner, or to the Highway Engineer, to initiate any move for reorganization. For the most part, these men are graduate or practical engineers whose training and habits naturally make them more interested in "getting things done" than in problems of internal management. They are accustomed to following out the policy set at the top. In a few instances in the history of the Department, however, there has been resistance by a Bureau or Division chief to any reorganization that would have cut down his authority, or an equally understandable zealousness by an employee to have the highway work that was his responsibility raised to the dignity of a Bureau or Division which he might head.

196a *Cf.* the National Institute of Public Administration report, *op. cit.*, p. 259; Princeton Survey, *op. cit.*, pp. 193-195.

Three fundamental principles concerning the subdivisions within a larger administrative unit may be noted:[197]

> "1. So far as is practicable, the principles of unity of command should be observed. This principle dictates that individuals should receive orders from, and report to, only one supervising officer * * *
>
> "2. So far as practicable, the span of control, or number of subordinates, of each supervising officer should be kept small * * *
>
> "3. No matter what form of organization is adopted, it is important that individuals should be clearly informed of their organizational location, and of their superiors' and their subordinates' authority and responsibility."

The need of definitely fixing the responsibility of each individual (certainly for major lines of work),[198] and of "indicating direct line authority from the top to the bottom of the organization,"[199] cannot be stressed too much. Other factors corollary to the principles just set down, and of almost equal importance in connection with internal structure, are the personalities of the highway division and bureau heads, which may affect the organizational pattern, and the development of a method of having the subdivisions check on and coordinate with each other.

There is one further matter that should be mentioned, and that is the particular importance that so-called staff and line functions have in the administration of any large-scale organization. Staff functions are those which cut horizontally across division and bureau lines to serve all parts of a department. Line functions, on the other hand, embrace the operating divisions of a department and are usually concerned with one or more related functions.

The complex problems which arise when an organization is forced, because of geography, to decentralize its operations in branch offices,

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[197] "Internal Administrative Organization," by George C. S. Benson, *Public Administration Review* (Autumn, 1941), Vol. I, No. 5, p. 473.

[198] "In order to fix responsibility on the individual, he must be assigned clearly understood authority, and herein lies the weakness of many organizations. An attempt is made to hold individuals responsible for results without allowing them an opportunity for individual initiative, and such a system is deadening. The wise administrator selects dependable subordinates and makes them supreme in their province. * * *" Agg and Brindley, *op. cit.*, p. 65.

[199] Kennedy, *op. cit.*, p. 2.

need not concern us here. Fortunately, New Jersey is one of the smallest States in area, and has been able to integrate its highway activities with a minimum of decentralized activity, so that the usual difficulties which arise between the field offices and home office are almost entirely absent in this State.

No detailed application of the above general principles regarding administrative organization will be attempted in the recommendations for an internal reorganization of the Highway Department about to be made. Their validity and practical value should be clear to any administrator. Once he has chosen the type of departmental organization which best satisfies the needs of the situation, it becomes a relatively simple matter to make effective use of the propositions that have been put forward.

An examination of the highway organizations of some forty States reveals that there are two kinds of executive responsibility: that strictly of an engineering character, and that of a non-engineering character, usually of a business nature. State Highway Commissioner Kennedy makes the same observation in his study of fifteen State highway departments completed in 1938. He noted, further, that "While the engineering divisions of the administrative organization are fairly well standardized, the functions which we choose to call business functions, rest in many places in the organization insofar as authority is concerned."[200]

Those in charge of the business functions in the highway organizations studied, report in some cases to the Director of Public Works, in others to the State Highway Engineer, and very often they report directly to the State Highway Commissioner. In the case of the New Jersey State Highway Department, officials responsible for the non-engineering phases of highway work report to the State Highway Commissioner (*e.g.,* the General Solicitor, the Investigators, the Engineer of Special Design in charge of educational programs, and the publicity man); or to the State Highway Engineer (*e.g.,* the Senior Right-of-Way Agent, Special Engineer, and the Supervisor of Equipment and Transportation); or to the Chief Clerk and Secretary who is the chief administrative assistant of the State Highway Commissioner (*e.g.,* the

[200] Kennedy, *op. cit.,* p. 4.

Chief Auditor and Accountant, Chief File Clerk, Assistant Chief Clerk in charge of the Personnel Bureau, the Supervisor of Purchase and Stores, and the Head Clerk in charge of the Statistical Bureau.)

One is, therefore, logically led to the conclusion reached by Commissioner Kennedy, that the State Highway Department, under its Commissioner, "should have a fundamental two-way division or responsibility, with a principal officer at the head of each group of functions. The engineering should be headed by a competent highway engineer and the business group by a competent administrative officer, each equipped by education, training, and experience to handle problems of a large nature."[201]

A further consideration of the various State highway organizations shows that the major engineering divisions are: surveys and plans, which are sometimes combined in one division and sometimes established as separate divisions, construction, maintenance, bridge, a materials and testing (or research) division, and, in recent years, a highway planning survey division.

On the non-engineering, or business side of highway organization, most departments have divisions handling right-of-way acquisitions, legal problems, and problems of finance, auditing, accounting and purchasing. Many of them have an equipment division. A number have a division headed by a so-caller office engineer who is charged with the responsibility of office management. Usually one of his duties is that of handling personnel problems. A recent development in a few highway departments is the establishment of a division to handle public relations—an activity long neglected.

Finally, a large number of the States have coordinated their highway work in the field (surveys and plans, construction, maintenance, etc.) by setting up field districts or divisions, usually presided over by a district or division engineer. The average number of these field offices is seven.

In the case of the New Jersey State Highway Department, it is recommended that the Department be organized in a manner which recognizes the essentially two-fold character of the highway function.

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[201] Kennedy, *op. cit.*, p. 5.

There should be a principal engineering officer and a principal administration officer, appointed in accordance with Civil Service rules and regulations. They should respectively have jurisdiction over the bureaus of the two basic subdivisions and be subject to the general control of the State Highway Commissioner. In accordance with the principle enunciated above,[202] these bureaus should be reduced to the smallest possible number, so that the "span of control" of each officer can be kept to an efficient minimum.

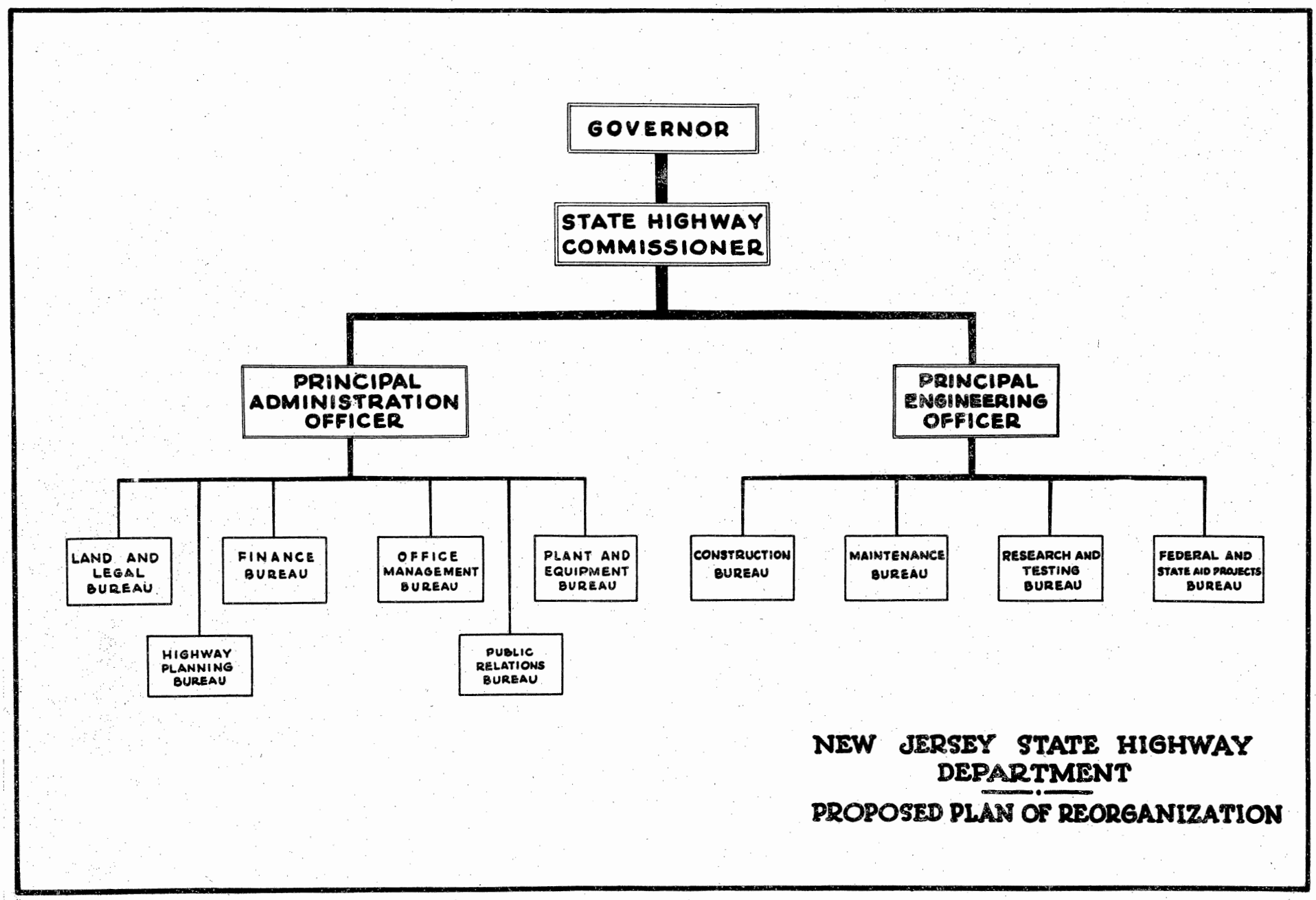
In general, the principal administration officer would be in charge of the following functions: auditing and accounting, fiscal, budget, prequalification of contractors, personnel, procurement, records and files, reporting, statistical, legal, plant and equipment, highway planning survey, right-of-way acquisition, office services, and all other overhead control and staff functions. The principal engineering officer would be responsible for the functions concerning plans, surveys, designs, construction, maintenance, landscaping and beautification, bridges, electrical, traffic safety, research and testing, standards and specifications, State and Federal aid, and all other activities of an essentially engineering nature. These functions should be distributed among the fewest number of bureaus possible, under appropriately designated and qualified bureau heads appointed in accordance with Civil Service rules and regulations.

In accordance with the above, it is suggested that the present Divisions of the State Highway Department be reorganized as follows:

A. Under the principal administration officer:

1. Land and Legal Bureau, which would take over the present duties of the Real Estate Division (negotiations) and the Legal Division (condemnation work, compensation proceedings, claims, and title searching and examination), the work of the Special Engineer now reporting directly to the Highway Engineer, and the disposal of excess real estate.
2. Finance Bureau, which would take over the present work of the Auditing and Accounting Bureau (general accounts and audit, cost accounting, prequalification of contractors, and insurance); the preparation of the budget, financial reports,

[202] P. 153, *supra*.



NEW JERSEY STATE HIGHWAY DEPARTMENT

PROPOSED PLAN OF REORGANIZATION

all payrolls and statistical information (financial); and the handling of all matters of a fiscal nature.[203]

3. Office Management Bureau, which would be in charge of purchases and stores, the records and central files, all printing and reproduction work, the details connected with the letting of contracts, the Department storeroom, administration of all personnel matters, handling of departmental mail, and the supervision of office boys.

4. Public Relations Bureau, which would have the duty of keeping the public informed of all Department activities, problems and programs through the medium of the press, radio, motion pictures, displays, lectures, publications, etc.; report road conditions; prepare and distribute road maps; carry on highway safety educational work; prepare the annual report in attractive and clearly understandable format, as well as such other reports as may be required, and edit all departmental publications.

5. Highway Planning Bureau, which would carry on the work of the State-Wide Highway Planning Survey in expanded form as a continuing program of the Department.

6. Plant and Equipment Bureau, which would take over the duties of the present Equipment and Transportation Division and be responsible for the central control and management of all departmental plant and equipment.

B. Under the principal engineering officer:

1. Construction Bureau, which would include the present Survey and Plans Bureau (with the exceptions noted in paragraph 4 below); the two road Construction Districts and the Bridge Bureau of the present Construction Division; and the non-Federal-Aid work done by the Engineer of Grade Crossings, as well as the duties of the Designing Engineer in that Division.

2. Maintenance Bureau, which would include the work of the present Maintenance Division (including landscape and roadside beautification work), and be expanded to embrace all the work now done by the Electrical Division except for the traffic

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[203] The head of the Bureau would be the Approval Officer of the Department and Custodian of the Labor Payroll Fund,—responsibilities now lodged with the Chief Clerk and Secretary.

analyses and accident investigations carried on by the Supervisors of Traffic Safety of that Division.

3. Federal and State Aid Projects Bureau, which would include the work of the present State Aid Projects Division; the duties performed by the Federal Aid Bureau, and the work of the Grade Crossing Engineer in connection with the Federal Aid grade crossing elimination program, both now in the Construction Division; the duties of the W.P.A.-State Highway Bureau connected with this Division as well as the work of the Technical Engineer now reporting to the State Highway Engineer.

4. Research and Testing Bureau, which would take over the work now performed by the Laboratory Division; the traffic analysis and accident investigation work done by the Electrical Division; the duties of the Engineer of Special Assignments and the traffic studies made by the Traffic Engineer in the Survey and Plans Bureau of the Construction Division; as well as any testing and research work (other than research work done by the Highway Planning Bureau or fiscal research by the Finance Bureau) affecting New Jersey highways.

These general recommendations for the internal reorganization of the Highway Department reflect a practical application of the organizational principles heretofore discussed, as well as a critical analysis of most of the State highway departments in the nation. They also reflect, naturally, some of the conclusions arrived at in the course of this survey of the organization of the New Jersey State Highway Department itself.

An attempt has been made to keep down the number of major bureaus, thus avoiding the tendency common in highway administration of dignifying relatively minor activities by creating special divisions to handle them. Functions which could logically and practically be grouped under one bureau have so been allocated.

A few observations may be ventured concerning the proposed reorganization. The Public Relations Bureau is meant to carry out an important function that is generally either neglected or disregarded. Public understanding of the highway program is necessary if there is to be public support of that program. A Public Relations Bureau can demonstrate its value in a variety of ways, not the least of which

are the day-by-day interpretation of the work and problems of the Department, the awakening of the public to the real meaning of the highway planning surveys and the need of a long-range highway plan, and the carrying on of a State-wide program of highway safety education. The importance of a public relations program is yearly becoming more apparent to leaders in the highway field.

The proposed Highway Planning Bureau will establish the State-Wide Highway Planning Survey that is now being carried on in cooperation with the Federal government, as a continuing function of New Jersey highway work. The importance of this program can hardly be overestimated. The results of the many studies carried on by the Survey will, if kept current, serve as a solid foundation for highway planning, both long-range and otherwise. Although the Highway Planning Survey is usually found among the engineering divisions of highway departments, it has been placed in the administrative organization, to serve as a check and balance on the engineering activities.[204]

The Plant and Equipment Bureau services the entire Department, and so is a staff function. In many States, however, the Equipment Division is not set up as a separate Division, but is usually placed under the Maintenance Division, on the theory that the latter Division is by far the greatest user of highway equipment. This fact holds true of New Jersey.[205] A good argument can therefore be made out for placing the present Equipment and Transportation Division under the proposed Maintenance Bureau, thus reducing the number of non-engineering bureaus to five.

The Bridge and the Survey and Plans Bureaus have been placed in the proposed Construction Bureau, thus retaining the present arrangement with minor exceptions. Most highway organizations set up separate divisions for these two very important functions. It will be recalled that both Bureaus were gradual developments in the Construction Division during the early 1920's. They have grown progressively more important, as a study of their programs of work as well as their

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[204] *Cf.* Kennedy, *op. cit.*, p. 8.

[205] In 1940 the Maintenance Division was charged with $871,395.83 of the $1,063,279.53 total cost of operating departmental plant and equipment. See *New Jersey State Highway Department Annual Report*, 1940, Auditing and Accounting Bureau section, schedule 29-A.

personnel will show. These two functions have been continued, along with highway construction, under one Bureau in the recommended plan of reorganization, largely because that arrangement seems to have worked out well in the past. Logically, road construction, bridge construction, and surveys, plans and designs, form a natural group.

The Maintenance Bureau has been expanded to take over the electrical installation, maintenance and operation work of the present Electrical Division, thus restoring an arrangement once in effect. The highway safety lighting program presently occupying the attention of the Electrical Division will not suffer by this rearrangement. The work of traffic analysis and accident investigation has been assigned to the new Research and Testing Bureau, where it is coordinated with other research work. The education of the public in highway safety and the need for safety features in highway design and lighting, has been assigned to the Public Relations Bureau.

Although no extensive study of divisional field office interrelationships was possible within the time limits of this survey, there is a strong indication that a coordination and integration of field office operations is possible and would result in increased efficiency and considerable savings. It is proposed that this problem be studied after the Department has been reorganized internally.

It is quite true that New Jersey, being one of the smallest States, has not been faced with the pressing demand for an integrated field organization found in the larger States. Nevertheless, this does not foreclose the need for such an organization if savings in time, manpower, and money will result.

Let us consider the present situation. There is a different field organization for each engineering Division, and for each Bureau in these Divisions. A quick review of the major field organizations of the Department is all that is necessary to reveal the confusing picture.

It has been seen that survey and plan work is carried on through seven field offices, two under one Location Engineer in the northern part of the State and five under the other Location Engineer in the rest of the State. There are two Construction Districts for highway building, Northern and Southern, headed by District Engineers who supervise a number of Resident Engineers in charge of temporary field

offices. Bridge construction is carried on through five field offices in charge of Resident Field Engineers. The WPA-State Highway Bureau has three roughly defined districts, in charge of Field Coordinators.

The Maintenance Division carries on its road maintenance work through four major districts (Northern, Western, Central and Southern, the Central embracing two subordinate districts, making six districts in fact), each in charge of a Supervisor of Maintenance assisted by Foremen, Assistant Foremen and Patrolmen. There are three districts for bridge maintenance, in charge of Foremen reporting to the Supervisor of Bridges and Structures. Landscaping work embraces eight districts, each in charge of a Foreman.

The State Aid Projects Division has its field forces spread over twelve districts in charge of Traveling Inspectors. Five sections, with headquarters at divisional garages, make up the field organization of the Equipment Division. The Electrical Division has three districts (North, Central and South) for electrical installation and maintenance work and for certain other activities, but its Bridge Bureau has two districts.

There should be little difficulty in bringing some order out of the present arrangement. The tendency in the past seems to have been for each Division to work out its own pattern of field operations. Insofar as the particular Division or Bureau affected was concerned, the arrangement was entirely satisfactory. No attention, however, was paid to the possibility of coordinating its field work with that of the next Division or Bureau.

Neither the Commissions nor the present Commissioner have attacked the problem so as to arrive at a definite arrangement. It should be worked out now. A small number of field districts may well be the result, each headed by a District Engineer who will coordinate the survey and plans work, highway and bridge construction, the maintenance program, State and Federal aid work, and the other highway activities in his district.[206] The policies and programs will be formulated in the central offices; the job of the districts will be to carry them out.

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[206] See the National Institute of Public Administration report, *op. cit.*, p. 259.

CHAPTER IV

FISCAL ADMINISTRATION OF THE NEW JERSEY STATE HIGHWAY DEPARTMENT

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FISCAL ADMINISTRATION OF THE NEW JERSEY STATE HIGHWAY DEPARTMENT

One of the criticisms most often levelled at the Highway Department is that it is an agency separate and apart from the rest of the State government. Department officials and defenders have tried to deny this in the past or to justify the existing arrangement by rather strained rationalization. It has long been evident to every disinterested observer, however, that the Department enjoys an almost completely independent status. The existence of a separate Highway Fund, a separate budget, and a fiscal year differing from that of other State agencies, makes the Highway Department a law unto itself—truly an *imperium in imperio.* This leaves the Department free from real executive control, confuses the general financial picture of the State, and complicates the system of State accounting. It is contrary to every principle of sound public administration.

The time for a change is long overdue. The principle that should control in the circumstances has already been stated: the Highway Department should be considered as a regular division and integral part of the State government, and should be subject to the same set of overhead controls of budgeting, finance, purchasing and personnel as are provided for the other departments.[207]

Change will be resisted, as it has been in the past, with every power and persuasion the Department has at its command. Time and experience have, however, pretty well exploded the arguments that are repeatedly advanced in favor of the continuation of the *status quo.* Against the Department's view there stand the massed criticism and reasoning of outstanding governmental officials and administrative experts.

The Fiscal Year of the Department

When the Highway Department was first created in 1917, its fiscal year was the same as that of the rest of the State government—Novem-

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[207] See *p. 146, supra.*

ber 1 to October 31.[208] The fiscal year of the State was changed in 1918 to cover the period from July 1 to June 30,[209] and the highway fiscal year changed with it as a matter of course. But in 1922, the Legislature made the calendar year the fiscal year of the Department, beginning January 1, 1923. The State Highway Commission was required to make a full financial report to the Comptroller each December 31 and June 30, "showing the available unexpended balances in the several accounts, also all outstanding liabilities under contracts or other financial obligations to counties, municipalities, person, firm or corporation."[210] These provisions were continued in the 1927 act revising the highway system, as well as in the *Revised Statutes of 1937*.[211]

Since 1923, therefore, there have been two fiscal years in State affairs—the calendar year of the Highway Department and the July 1-June 30 fiscal year of the rest of the State government. Highway officials have strongly opposed any suggestion or legislation that would have made the Highway Department fiscal year conform to the general fiscal year.[212]

A full-dress rehearsal of all the arguments for and against the setting up of a single fiscal year was afforded in the course of the public hearing held March 21, 1940, on Assembly Bill No. 116, sponsored in the 1940 Legislature by Assemblyman Jacob S. Glickenhaus, of Essex County, who proposed a general fiscal year (July 1-June 30) for the entire State government.[213] The two main arguments usually advanced for keeping the Highway Department on a calendar year basis were again put forward by Highway Commissioner Sterner and Highway Engineer Logan: (1) the existing arrangement allowed the

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[208] *P. L. 1917, c. 14, s. 18.*

[209] *P. L. 1918, c. 144.*

[210] *P. L. 1922, c. 161,* amending *P. L. 1917, c. 14, s. 18.*

[211] *P. L. 1927, c. 319, s. 117; R. S. 27:1-11.*

[212] See, for example, *Minutes of the Abell Commission,* 1929-1930, *op. cit.,* September 9, 1930, *p. 48;* and the statements made at the Glickenhaus hearing, *post,* by Highway Commissioner Sterner, Highway Engineer Logan and General Solicitor Van Tine (*pp. 35, 39* and *41*).

[213] *Hearing on Assembly Bill No. 116,* March 21, 1940; stenographic transcript, Office of the Finance Commissioner.

Department to set up its Spring construction, repair and maintenance programs in proper fashion; a change in the fiscal year would delay planning, the receipt of bids, the letting of contracts and getting the work started so that the roads could properly "cure" during the Summer; and (2) since the counties and municipalities of the State were also on a calendar year basis and received appropriations from the Highway Fund as State aid for road construction, repair and maintenance, any change in the fiscal year of the Highway Department would throw their budgets and plans into confusion.

These arguments were effectively answered by those endorsing the bill. It was pointed out that the Highway Appropriation Act had not, as a rule, been passed by the Legislature until almost the end of Spring or the beginning of Summer.[214] Advancing the budget year six months would give the Department ample time to prepare for the following Spring work. As for State aid to counties and municipalities, if the Highway Fund appropriations were made half a year ahead, there certainly could be no difficulty on that score.

State Comptroller Frank J. Murray, who during his five years in office had consistently recommended to members of the Legislature, and especially in his annual reports, that appropriations from the State Highway Fund be put on the same fiscal year as those from the General State Fund, could see no controlling reason for not making the change. All that it involved was that for the first year, revenues and expenditures of the Highway Fund be appropriated for 18 months instead of for 12 months. Thereafter the Appropriation Bill would be for a 12-month (July 1-June 30) period. As it was, with half the State's funds on a calendar year basis, and half on a July 1-June 30 basis, it was "impossible to make an accurate, complete, unqualified and satisfactory statement or report of the State's fiscal operations."[215]

As had been pointed out publicly and privately on many occasions, the Glickenhaus hearing noted that a change to a uniform fiscal year was to be favored for two important reasons. In the first place, "it will eliminate the present confusion which now exists under two separate fiscal year set-ups within the State government, and will pave

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[214] The dates in recent years were: June 22, 1936; June 2, 1937; February 25, 1938; June 22, 1939; July 8, 1940, and May 19, 1941.

[215] Glickenhaus hearing, *pp. 4* to *8*.

the way for a much more simplified accounting procedure, which should assure a clearer and more comprehensive picture of State finances to our legislators, our State officials, and to the public." Further, "it will pave the way towards giving the State a more effective control over the fiscal and spending activities of its largest service unit."[216]

This change has repeatedly been advocated over a period of years by high State finance officials,[217] by various commissions and agencies that have studied the problems of New Jersey's State government organization,[218] and by the present Governor, Charles Edison.[219]

In 1940 there were 21 States whose highway departments operated on a July 1-June 30 fiscal year uniform with that of the other State agencies. These departments had found no difficulty under the arrangement in planning and carrying out their programs.[220] It should be noted that the Public Roads Administration, like the rest of the Federal Government, operates on a July to June basis; Federal Aid allotments to the several States for highway work are not available until after the beginning of the Federal fiscal year.

A great deal of misunderstanding of the principle of a uniform fiscal year arises, in the words of A. E. Buck, nationally known authority on State government and public finance who participated in the Abell Commission Survey, from the "lack of discrimination

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[216] *Ibid., p. 16.*

[217] *Ibid., p. 4* (State Comptroller Frank J. Murray); *pp. 8* and *9* (State Treasurer William H. Albright, who stated that it would "greatly facilitate work in the offices of the State Comptroller and State Treasurer"); *pp. 10* and *11* (Finance Commissioner Bernard Lamb: "Much of the legislative confusion that has prevailed in New Jersey for the past five years in my opinion has resulted from misunderstanding caused by the State having different fiscal year periods. I am convinced that this legislative confusion has worked to the economic and social disadvantage of every citizen in our State."); and Finance Commissioner Lewis Compton, *Report to the Governor,* October 1, 1941.

[218] National Institute of Public Administration (Abell Commission) report, *op. cit., p. 263;* New Jersey Taxpayers' Association, platform adopted at the Sixth Annual Business Meeting, Newark, N. J., December 4, 1936, caption "State Highway Department," and see, Glickenhaus hearing, *p. 33;* New Jersey State Chamber of Commerce, Glickenhaus hearing, statement, *pp. 14* to *28.* The Princeton Survey in 1932 (*op. cit., pp. 42* and *43*), stated that the existence of two fiscal years was confusing and made it difficult to obtain a reliable sum for the total State expenditures in a given fiscal year period. Though of the opinion that a uniform fiscal year was "highly desirable" and that "a highway department can operate on the same fiscal year as the State," it considered it more conveninet for the Highway Department to continue on a calendar year basis.

[219] *Budget Message,* January 19, 1942 (Trenton, N. J., 1942), *p. viii.*

[220] Glickenhaus hearing, *pp. 21* to *23.*

between determining fiscal requirements on the basis of a long-term plan and working out the current needs of the highway work. The former may be done on the basis of most any 12-month period, while the latter may require seasonal planning, starting in the Spring and running through the Autumn."[221]

The opposition of the Highway Department to the adoption of a uniform fiscal year cannot be put down merely to natural inertia and resistance to change. Nor can it be justified by the argument that the single fiscal year is but a step toward a single State fund and a possible diversion of highway funds. One State fund, as it will be shown, makes for sound fiscal administration, and so-called "diversion" has been practiced by the Legislature for over a decade.[222] None of the other arguments advanced by the Department has held up under analysis.

Where logic has not been available to it, the Department has not hesitated to muster the support of county and municipal officials, farmer groups and its own small but effective legislative lobby. After all else has been evaluated, one enduring purpose remains for its opposition to a single fiscal year arrangement. The Department has simply dedicated itself to the proposition of maintaining its indefensibly independent position in State Government—a position that carries great power in State affairs.

It is the recommendation of this report that the Highway Department's fiscal year be made uniform with that of the rest of the State government. The change would not only be to the best interest of the taxpayer but of the Department as well.

The State Highway Fund

The Highway Department has had five principal sources of revenue: (1) the one-mill road tax, (2) bond issues, (3) the tax on motor vehicle fuels, (4) motor vehicle registration fees, fines, etc., and motor

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[221] Glickenhaus hearing, *p. 19.*

[222] It should be noted, however, that the question of "diversion" arises only because all State revenues are not placed in a single, general State fund.

vehicle inspection fees, and (5) Federal grants-in-aid. Two minor sources are the bus excise tax,[223] and miscellaneous revenues.[224]

1. *The Mill Tax:*

A State road tax was first assessed and collected for the calendar year 1918 as a temporary tax extending for a period of five years. The rate was fixed at one mill on each dollar of the value of all the real and personal property in every municipality in the State. Receipts from the tax were to be paid into the State Road Fund "to meet lawful expenditures appertaining to roads."[225] The tax was continued to meet the interest and sinking fund requirements of the $40,000,000 bond issue authorized in 1922, with the proviso that from 1923 to 1927, inclusive, the rate remain at one mill.[226] The tax was further continued as a means of meeting the interest and sinking fund requirements of the 1927 bond issue of $30,000,000, the rate to remain at one mill for the years 1928 to 1933, inclusive.[227] Although the debt service on the $83,000,000 of bonds authorized in 1930 for highways and grade crossing elimination was to be met from the tax on motor fuels, the Legislature provided that should this tax be insufficient, the deficiency was to be made up by a State road tax.[228] There has been no need to resort to this proviso, however.

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[223] *P. L. 1934, c. 68* (*R. S. 48:4-20* to *34*) provides for the payment of a bus excise tax of one-half cent a mile for each mile or fraction thereof, by the owner or operator of each autobus operated over any highway of the State for the purpose of carrying passengers to or from points outside the State. Receipts from the tax are appropriated to the State Highway Fund. Income from this source is now approximately $100,000 annually; total receipts for the period 1931-1940 equalled $818,575.12. See Schedule 1, *p. 169.*

[224] Miscellaneous revenues include receipts from the sale of condemned property, payments for highway services, return of loan to the sinking fund, amounts received in settlement of claims, etc. These revenues totaled $10,405,153.93 for the period 1931-1940, more than half this amount representing the repayment of a sinking fund loan. See Schedule 1, *p. 169.*

[225] *P. L. 1917, c. 16;* repealed by *P. L. 1930, c. 37.* See *pp. 8* and *9, supra,* concerning the State Road Fund and the 1917 mill tax.

[226] *P. L. 1922, c. 262, s. 17; R. S. 27:11-7.* See *p. 9, supra.*

[227] *P. L. 1927, c. 181, s. 17; R. S. 27:11-8.* See *pp. 9* and *10, supra.* By the provisions of *P. L. 1933, c. 218, R. S. 54:39-71.1,* the debt service on the 1922 and 1927 bond issues was to be paid from funds derived from the motor fuels tax.

[228] *P. L. 1930, c. 228, s. 16; R. S. 27:11-9,* and see *p. 11, supra.* A motor fuel tax of two cents a gallon was first leveled in 1927 (*P. L. 1927, c. 334*); in 1930 the tax was raised to three cents (*P. L. 1930, c. 239*). Both acts were repealed by *P. L. 1935, c. 319* (*R. S. 54:39-1* to *75*) which revised the entire motor fuel tax law and left the tax at three cents a gallon.

Schedule #1

State of New Jersey
STATE HIGHWAY FUND

- F u n d s -

Years 1931-1941 Inclusive

Year	Balance Forward from Previous Year	Mill Tax	Motor Vehicle Fees,etc.	Gas Tax	Bond Issue	Federal Aid Regular	Bus Excise Tax	Miscellaneous Revenues	Depreciation	Total Funds Available Yearly	Total Expenditures & Commitments	Balance Forward
1931	$ 686,605.17	$ 6,537,735.98	$ 15,466,658.11	$ 17,132,172.50	$18,000,000.00	$ 2,673,556.00	$ 61,159.58	$ 901,448.95	$ 114,606.54	$61,573,942.83	$61,157,516.66	$ 416,426.17
1932	416,426.17	6,513,647.68	14,840,065.52	16,733,384.69	15,000,000.00	3,121,216.60	79,914.63	273,599.13	114,364.73	57,092,619.15	52,557,435.61	4,535,183.54
1933	4,535,183.54	6,524,647.54	14,367,801.74	16,601,270.13	0	6,346,039.00	69,937.63	229,311.43	110,078.76	48,784,269.77	43,226,989.52	5,557,280.25
1934	5,557,280.25	0	15,237,016.14	17,003,157.42	A)6,000,000.00	3,220,879.00	77,022.17	B)5,376,537.15 204,244.58	90,732.54	52,766,869.25	37,744,585.59	15,022,283.66
1935	15,022,283.66	0	16,244,660.77	17,724,177.96	0	1,675,751.00	85,898.23	387,178.30	76,426.19	51,216,376.11	40,605,493.55	10,610,882.56
1936	10,610,882.56	0	17,517,137.56	19,525,000.00	0	1,426,718.00	84,781.72	635,046.12	78,562.50	49,878,128.46	43,231,573.64	6,646,554.82
1937	6,646,554.82	0	18,935,594.67	21,582,150.71	A)3,000,000.00	1,701,826.00	84,314.44	682,849.54	84,002.65	52,717,292.83	47,923,187.42	4,794,105.41
1938	4,794,105.41	0	19,690,410.94	22,304,962.46	A)3,421,000.00	2,846,925.00 PWA 1,662,041.00	80,780.89	470,476.71	142,373.08	55,413,075.49	50,491,284.34	4,921,791.15
1939	4,921,791.15	0	21,043,705.92	23,271,231.26	0	155,325.00 PWA 1,321,366.00	93,732.40	D) 27,327.09 C)750,000.00 360,993.64	171,481.54	52,116,954.00	49,444,491.59	2,672,462.41
1940	2,672,462.41	0	22,372,760.73	24,433,919.56	0	* 138,658.94 1,520,740.00	101,033.43	D) 450.00 105,691.29	195,407.17	51,263,805.65	44,821,677.59	6,442,128.06
1941	6,442,128.06	0	24,255,161.70	26,307,130.18	0	1,504,171.00	104,468.28	326,283.49	207,463.39	59,146,806.10	48,998,759.91	10,148,046.19
TOTAL EXPENDITURES & COMMITMENTS -											$520,202,995.42	
Total Funds 1931-1941 Inclusive, By Source		$19,576,031.20	$199,970,973.80	$222,618,556.87	$45,421,000.00	$ 29,037,894.66	$ 923,043.40	$10,731,437.42	$1,385,499.09			

A - Authorized but not issued. To be funded by 5% Appropriation each year for 20 years.
B - Return of Sinking Fund Loan.
C - City of Newark - Right of Way.
D - W. P. A. - Municipal Share of Costs.
* - PWA cancelled.

The mill tax proved more than adequate to meet the sinking fund and interest requirements of the 1922 and 1927 bond issues. There was a surplus year after year; earnings of the sinking fund in 1930 were 4½%—more than enough to cover the 3½% needed.[229] Under the provisions of *P. L. 1927, c. 331,* such surpluses were to be used for the establishment of the 1927 State Highway System. The State Highway Fund enjoyed an income exceeding $6,500,000 from the excess of the mill tax in each of the years 1931, 1932 and 1933; the receipts for the three-year period were $19,576,031.20.[230] By the provisions of *P. L. 1936, c. 9*[231] the principal and interest requirements of the 1922 and 1927 bond issues were to be paid from the proceeds of the motor vehicle fuels tax. By an act passed later that year,[232] the Comptroller of the Treasury was relieved of the obligation of certifying the State road tax to the several counties in any year so long as the motor fuel tax revenues were sufficient to meet the debt services indicated.

2. *Bond Issues:*

The Highway Department has enjoyed revenues from three large bond issues—those of 1922, 1927 and 1930, already mentioned. The purposes of these several issues have been detailed heretofore.[233] The 1922 bonds are 15-year sinking fund bonds. All were issued, $9,000,000 going for bridge purposes and $31,000,000 for road purposes. As of January 1, 1942 all of the bridge bonds had been paid and only $11,000,000 of the road bonds remained outstanding.[234]

The 1927 bonds are also sinking fund bonds. Of these bonds, $10,000,000 were issued July 1, 1929, payable in 15 years, and $20,000,000 on July 1, 1930, payable in 20 years. All of course, are outstanding.[234]

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[229] *Minutes of the Abell Commission, op. cit.* Minutes for September 9, 1930, *p. 18.*

[230] See Schedule 1, *p. 169.* By *P. L. 1930, c. 239* it was provided that $5,000,000 of the collections from the three-cent motor fuels tax was to be returned to the municipalities of the State in proportion to the ratables of each municipality, the intention being to reimburse the municipalities on account of the mill tax being collected for road purposes. This amount was paid in both 1931 and 1932. It was increased by *P. L. 1933, c. 441* to equal the amount collected through the road tax; $6,396,474.80 was returned to the municipalities in 1933.

[231] Amending *P. L. 1935, c. 319. R. S. 54:39-71.1.*

[232] *P. L. 1936, c. 191,* supplementing *P. L. 1935, c. 319. R. S. 27:11-14.*

[233] See *pp. 9* and *10, supra,* for the 1922 and 1927 issues, and *p. 11* for the 1930 issue.

[234] *New Jersey State Government,* issued by the State Budget Department (Trenton, N. J., 1941), "State Sinking Fund Bond Debt," schedule, *p. 81.*

The bonds of the 1930 issue are serial bonds, maturities starting with the second year after issue and ending in the thirty-fifth year. Of the $83,000,000 of bonds, $65,000,000 were State highway bonds and $18,000,000 grade crossing elimination bonds. Of the highway bonds, $18,000,000 (3¾%) were issued July 1, 1931, and $15,000,000 (4½%) on July 1, 1932. Of the grade crossing elimination group, $2,000,000 (3¾%) were issued on July 1, 1931, and a like amount on November 1, 1934 (3¼%) and on January 1, 1939 (2¼%). As of January 1, 1942, the following bonds were outstanding; of those issued July 1, 1931, $16,850,000; July 1, 1932, $13,180,000; November 1, 1934, $1,790,000, and January 1, 1939, $1,920,000, or a total of $33,740,000.[235]

At the General Election held November 8, 1932, $20,000,000 of the 1930 bonds were cancelled pursuant to *P. L. 1932, c. 250* (*R. S. 27:11-10*), and at the General Election held November 7, 1933, $5,000,000 additional of the bonds were cancelled pursuant to *P. L. 1933, c. 397* (*R. S. 27:11-11*).[236] $19,000,000 of bonds of the 1930 issue remain to be issued. $6,578,313.25 are for grade crossing elimination and $12,421,686.75 for highways. The Legislature has authorized the issuance of all of these highway bonds.[237]

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[235] *Budget Message of Governor Charles Edison,* 1942, *op. cit., 448.*

At the same time that the $83,000,000 bond issue was authorized, the Legislature also authorized the issue of $7,000,000 of bonds for the "acquisition of lands and interests therein, water rights and interests therein, for the purpose of appropriating, conserving and protecting the potable waters of this State" (*P. L. 1930, c. 226*), and the issue of $10,000,000 of bonds for the "construction, reconstruction, development, extension and equipment of State charitable, hospital, relief, training, correctional, reformatory and penal institutions and the appurtenances thereto" (*P. L. 1930, c. 227; R. S. 30:3-4*). Both issues were approved by the voters at the November 1930 General Election. The $7,000,000 issue was cancelled in 1933 pursuant to *P. L. 1933, c. 388,* approved by the electorate at the General Election held in November 1933, who likewise approved of a $7,000,000 issue "to aid school districts of this State in the payment of teachers' salaries and current expenses," authorized by *P. L. 1933, c. 387* (*R. S. 18:10-50*). The $10,000,000 issue, known as State Institutional Construction Bonds, and the $7,000,000 issue, known as State Educational Aid Bonds, are serial bonds, and the interest and principal requirements are met from the motor vehicle fuels tax, supplemented by a general property tax should the motor vehicle fuels tax prove insufficient or not available. As of January 1, 1942, there were still $8,760,000 of the State Institutional Construction Bonds outstanding, the Educational Aid bonds having been paid off. *Budget Message of Governor Charles Edison, 1942, op. cit., p. 449.*

[236] The 1932 act was to remain inoperative until the electorate assented to its provisions as well as to the provisions of an act authorizing the creation of a State debt of $20,000,000 for the relief of the unemployed and dependents in the State, at the General Election to be held in November 1932 (*P. L. 1932, c. 251; R. S. App. A. 1-1* to *18*). Similar provisions were contained in the 1933 act as regards the creation of a $5,000,000 State debt for relief, action to be taken by the electorate at the November 1933 General Election (*P. L. 1933, c. 398; R. S. App. A. 1-19* to *36*). The debt service of both issues was to be met from the receipts of the motor fuels tax, and if this proved insufficient or not available, the deficiency was to be met from a general property tax.

[237] *New Jersey State Government, op. cit., pp. 33* and *343.*

In 1941 Governor Edison recommended that the $12,421,686.75 balance of highway bonds be cancelled and proposed that beginning with that year $1,242,000 be set aside annually from current revenues. In that way the same amount of cash could be raised in ten years for highway construction as if the bonds were issued, with an estimated saving of over one million dollars in interest.[238] The Legislature reduced by one half the amount recommended by the Governor and appropriated $621,050 in 1941 for the purpose of funding these bonds.[239]

The Governor recommended a continuation of this funding operation in his budget message of 1942 and renewed his suggestion that the balance of the 1930 highway bonds be cancelled.[240] We concur in that recommendation. It is further recommended that for the time being no further bond issues be authorized for highway purposes.

New Jersey was a pioneer State in providing for the issuance of bonds for road purposes.[241] In 1920 the Legislature authorized the issuance of bonds of the State of New Jersey in the sum of $28,000,000 to pay for New Jersey's share of the cost of extending the State Highway System by the construction of bridges and tunnels for vehicular or other traffic across the Delaware and Hudson Rivers, and this was supplemented by the authorization of an additional bond issue of $8,0000,000 in 1924.[242] Then came the three bond issues already referred to.

During the period immediately following the adoption of the 1927 State Highway System, New Jersey was at the very top of the list of States that relied heavily on borrowed funds for road purposes.[243] In 1939, Highway Commissioner Sterner sponsored a $60,000,000 bond issue for a proposed marginal multi-lane super-highway between Perth Amboy and New York. A bill was actually introduced in the Legislature

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[238] *Budget Message of Governor Charles Edison, February 10, 1941* (Trenton, N. J., 1941), *p. ix.* A similar recommendation was made in the report of the Princeton Survey in 1932, *op. cit., p. 186.*

[239] *P. L. 1941, c. 141, p. 482.*

[240] *Budget Message of Governor Charles Edison, 1942, op. cit., pp. vii* and *viii.*

[241] Townships were authorized to issue bonds as early as 1894. Agg and Brindley, *op. cit., p. 173.*

[242] *P. L. 1920, c. 352* (*R. S. 32:7-1*) and *P. L. 1924, c. 262* (*R. S. 32:7-2*). Both issues were approved by the electorate at the General Elections which followed.

[243] Princeton Survey, *op. cit., p. 186.*

authorizing the issue, but was later withdrawn in the face of rising public opposition.

The bond-minded will probably always be with us, especially where public works projects are concerned. Bond issues are, of course, a perfectly legitimate part of any rational system of highway financing. Their use to pay for the construction of public works is recognized as valid under certain proper circumstances.[244] The American Association of State Highway Officials has stated the matter succinctly in these words: "(a) States in the initial stage of highway development should issue bonds to defer that portion of the construction cost which would overburden either property or the road user. (b) States where original construction programs are well under way can, in the main, finance normal new construction from current funds, utilizing bond issue funds to defer the cost of special projects * * *"[245]

The pressing need for building up the New Jersey State Highway System was probably a sufficient reason for the assumption of a heavy State indebtedness. But pressing need can hardly be used to justify further borrowing for highway purposes, especially in crisis times such as attend the State and the nation in our all-out war effort. The main routes of the State Highway System have been built, and the most urgent demand has been met. Although there are needed improvements to the existing system and some 637 miles of legislated routes to be taken over (assuming that they should be taken over), this should not lead to the conclusion that more highway bonds must be issued.

Other States have successfully carried on modern highway programs of a superior type out of current revenues. Bonds mean debt service, and debt service means that there will be just that much less money available for future road construction. Bonds are "easy financing" that put the State in a less advantageous position for borrowing when real need or emergency comes along. The fact is that the emergency stage in road building is past.[246] Future extensions of the system can, at least

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[244] *The Science of Finance,* by H. C. Adams (New York, 1924), *pp. 526* to *533; Public Finance,* by Harley L. Lutz (New York, 1924), *p. 515;* Agg and Brindley, *op. cit.,* chapter VIII.

[245] *Principles of Highway Administration and Finance,* adopted by the American Association of State Highway Officials, September 30, 1937 (Washington, D. C., 1937).

[246] MacDonald, *op. cit.,* chapter XIX.

for the next few years, be financed from current revenues.[247] Highway bond issues should be limited to projects of a very special type which it would be unwise—in fact, uneconomical—to postpone, and to true emergencies.

3. *The Tax on Motor Vehicle Fuels:*

A tax of three cents a gallon is now levied on motor vehicle fuels. The tax is collected by the Division of Motor Fuels of the State Tax Department through licensed motor fuel distributors.[248] Proceeds from the tax, popularly known as the gas tax, are forwarded by the State Tax Commissioner to the State Treasurer to be paid out and distributed by him for the following purposes:

(A) To meet the annual amortization and interest requirements of the following bonds:

1. The $40,000,000 issue of 1922 and the $30,000,000 issue of 1927. The State Treasurer is required to pay the sums certified as necessary by the Sinking Fund Commissions created by virtue of these bond acts, out of the gas tax moneys "first available for that purpose before any other distribution is made" pursuant to any law (*R. S. 54:39-71.1*).

2. The 1930 bond issue of $83,000,000 (*R. S. 27:11-9*).

3. The $10,000,000 State Institutional Construction and $7,000,000 State Educational Aid bond issues respectively authorized in 1930 and 1933 (*R. S. 18:10-50* and *R. S. 30:3-4*).

4. The State Emergency Relief Bonds issued pursuant to *P. L. 1932, c. 251* ($20,000,000), *P. L. 1933, c. 398* ($5,000,000)[249] and *P. L. 1939, c. 329* ($21,000,000).[250]

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[247] *Cf.*, Princeton Survey, *op. cit., p. 186.*

[248] *P. L. 1935, c. 319, s. 311; R. S. 54:39-27.*

[249] See footnote *236*, page *172, supra.* As of January 1, 1942, $625,000 of the 1932 bonds (3¾%) and $625,000 of the 1933 bonds (3¾%) were still outstanding. *Budget Message of Governor Charles Edison, 1942, op. cit., p. 450.*

[250] *R. S. App. A. 1-59* to *75.* These bonds were for "the relief of the people of the State from the hardships and suffering caused by unemployment and the effects thereof on the public health and welfare." They were to be serial bonds and known as "Unemployment Relief Bonds." Maturity was to be ten years at the latest. Principal and interest were to be paid from funds in the following order: (a) the surplus of any highway extension sinking fund remaining after the retirement of highway extension bonds (*R. S. 32:7-1* and *2*); (b) revenues derived from pari-mutuel betting; (c) revenues from the motor fuels tax; (d) revenues from the alcoholic beverage tax (*R. S. 54:8*); and (e) a general property tax. $10,500,000 of the bonds were issued on December 15, 1939, at 1¼%, and $10,500,000 on May 1, 1940, at 1¼%. As of January 1, 1942, the full amount of these bonds was outstanding. *Budget Message of Governor Edison, 1942, op. cit. 450* and *451.*

(B) $2,000,000 a year to the Board of Public Utility Commissioners, to be used by it to defray the public share of the cost of eliminating grade crossings under the provisions of *R. S. 48:12-61* to *67*, moneys so appropriated not to lapse into the treasury at the end of the fiscal year.[251]

(C) The amount appropriated by the Legislature annually to defray the expenses of the State Tax Department in collecting the gas tax (*R. S. 54:39-73*).

(D) $90,000 annually to the Department of Commerce and Navigation to be used for the construction, reconstruction, maintenance and improvement of inland waterways (*R. S. 54:39-74*); and

(E) The balance, after payment of the above and of refunds of the gas tax,[252] to be paid to the State Highway Commission for "the construction of roads and bridges included in the State Highway System as now or hereafter laid out" (*R. S. 54:39-75*).

The motor fuels tax has been the largest annual source of revenue to the State Highway Fund, as a glance at Schedule 1 on page 169 will show. Gas tax revenues during the past decade have never fallen below $16,601,270.13, the low figure reached in the depression year 1933. They have increased steadily from that time on and in 1941 passed the $26,000,000 mark. Total income from this one source for the 1931-40 period amounted to $196,311,426.69.

4. *Motor Vehicle Fees, Fines, etc.:*

Receipts from motor vehicle registration fees, license fees, inspection fees, fines and penalties rival the motor vehicle fuel tax as the second greatest source of revenue for the State Highway Fund. The total sum derived from these sources during the 10-year period from 1931 to 1940 was $175,715,812.10. Annual revenues have increased from over $14,000,000 in 1933 to almost $25,000,000 in 1941.[253]

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[251] *R. S. 54:39-72.* But no portion of this money was to be paid to the Board in any year in which funds for grade crossing elimination were available in the "Grade Crossing Elimination Fund" provided for under the terms of the 1930 act authorizing the $83,000,000 bond issue (*P. L. 1930, c. 228*).

[252] *R. S. 54:39-66* provides for a refund of taxes paid by any person using motor fuels for any one of eighteen specified purposes.

[253] See Schedule 1, *page 169.*

Registration and license fees, fines and penalties are turned over by the Commissioner of Motor Vehicles to the State Treasurer, to be credited to the State Highway Fund, pursuant to the provisions of *R. S. 39:5-40.*[254] Beginning with 1937, the Legislature has dedicated motor vehicle inspection fees to the State Highway Fund.[255]

The sum of $9,885,000 is now distributed annually by the State Highway Department as State aid to the counties and municipalities out of these motor vehicle revenues.[256]

5. *Federal Grants-in-Aid:*

New Jersey received a total of $38,661,311.66 in Federal grants-in-aid for the ten-year period from 1931 to 1940. Of this sum, $27,533,723.66 went into the State Highway Fund. The remaining $11,127,588 was administered by the State Highway Department.[257]

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[254] Fees and fines collected pursuant to *R. S. 39:3-81, 39:4-76* and *39:10-25* also go to the State Highway Fund. Motor vehicle fees and fines have been a source of highway funds for over 35 years: *P. L. 1906, c. 113; P.L. 1912, c. 396; P. L. 1917, c. 15; P. L. 1927, c. 331.*

[255] *R. S. 39:8-10* provides that the Commissioner of Motor Vehicles shall turn over to the State Treasurer all moneys derived from the inspection of motor vehicles remaining after all expenses are paid. The State Highway Fund Appropriations Act for 1937 (*c. 146*) is the first one setting up these inspection fees, amounting to $575,272 in that year, as anticipated revenues of the State Highway Fund. Amounts for subsequent years were $900,000 (*P. L. 1938, c. 11*), $940,000 (*P. L. 1939, c. 97*), $965,000 (*P. L. 1940, c. 189*), and $1,000,000 (*P. L. 1941, c. 141*).

[256] See *page 107, supra.*

[257] This sum is made up of the following items for the years indicated:

(a) 1935—$3,129,805 for the Federal Works Program (Highways) allocated under the Emergency Relief Appropriation Act of 1935, approved April 8, 1935 (*49 Stat. 115*). A 100% Federal grant on approved work, requiring no matching by the State.

(b) 1935—$3,983,826 for the Federal Works Program (Grade Crossing Elimination) allocated pursuant to the same act. A 100% Federal grant on approved work, requiring no matching by the State.

(c) 1937—$997,689
1938—$972,568
1939—$389,614
1940—$584,751

or a total of $2,944,622, for the elimination of hazards at railroad grade crossings, pursuant to the provisions of the Acts of June 16, 1936 (*49 Stat. 1519, s. 8*) and of June 8, 1938 (*52 Stat. 633, s. 3*). These were 100% Federal grants on approved work, requiring no matching by the State. The amounts appropriated by Congress were to be apportioned among the States, one-half on the basis of population, one-fourth on the mileage of the Federal Aid Highway System, and one-fourth on railroad mileage.

(d) 1937—$340,365
1938—$332,408
1939—$198,205
1940—$198,357

or a total of $1,069,335, for the construction of secondary or feeder roads, including farm-to-market roads, rural free delivery mail roads, and public school bus routes, pursuant to the acts mentioned in (c), *s. 7* and *s. 2*, respectively. These funds must be matched, dollar for dollar; the requirement is met by the counties and municipalities of the State.

Source: Public Roads Administration of the Federal Works Agency, Washington, D. C.

The $27,533,723.66 came from the following sources:

(A) *Regular Federal Aid:* The Federal Government has for a quarter of a century (except for the years 1934 and 1935) made annual appropriations for the construction, reconstruction, and improvement of rural post roads[258] (the so-called Federal Highway System) in the several States. The first of these acts, passed July 11, 1916 (*39 Stat. 355*) appropriated the sum of $5,000,000 for the fiscal year ending June 30, 1917, and provided that after deducting not more than 3% for administering the provisions of the act, the remainder be apportioned among the States as follows: one-third in the proportion of their respective areas, one-third in the proportion of their respective populations, and one-third in the proportion of their respective mileages of rural delivery routes and star routes as shown by the certificate of the Postmaster General. The amount payable by the Government on any road was limited to 50% of the cost and not more than $10,000 per mile exclusive of the cost of bridges more than twenty feet in span. This latter limitation was entirely removed in 1934.[259]

Annual appropriations for regular Federal Aid have varied from year to year, the most recent being $100,000,000 for the fiscal year ending June 30, 1940,[260] $115,000,000 for the fiscal year ending June 30, 1941,[260] and $100,000,000 for the fiscal year ending June 30, 1942.[261] The following Federal Aid funds were received by the State Treasurer from the Federal Government and placed to the credit of the State Highway Fund from 1931 to 1940:[262]

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[258] Section 5 of the act approved February 28, 1919 (*40 Stat. 1200*), defined "rural post roads" as "any public road a major portion of which is used, or can be used, or forms a connecting link not to exceed ten miles in length of any road or roads now or hereafter used for the transportation of the United States mails, excluding every street and road in a place having a population as shown by the latest available Federal census, of 2500 or more, except that portion of any such street or road along which the houses average more than 200 feet apart."

[259] Act of June 18, 1934, *48 Stat. 993, s. 13.*

[260] Act of June 8, 1938, *52 Stat. 633.*

[261] Act of September 5, 1940, *Public No. 780, 76th Cong., c. 715, 3rd sess.*

[262] *Source:* Public Roads Administration of the Federal Works Agency, and the New Jersey State Highway Department. See Schedule 1, *page 169.*

1931	$2,673,556.00[263]
1932	3,121,216.60[264]
1933	[265]
1934	
1935	1,675,751.00
1936	1,426,718.00
1937	1,701,826.00
1938	1,662,041.00
1939	1,321,366.00
1940	1,520,740.00
Total	$15,103,214.60

From 1917 to 1940, inclusive, regular Federal grants-in-aid to New Jersey for the development of the Federal Highway System totalled $27,942,390.60.[262]

(B) *National Industrial Recovery Federal Aid:*

In 1933, New Jersey received $6,346,039 of the $400,000,000 appropriated under the National Industrial Recovery Act (*48 Stat. 200, s. 204*) for "expenditure in emergency construction on the Federal Aid Highway System and extensions thereof into and through municipalities," and "in emergency construction on secondary or feeder roads * * *" The Hayden-Cartwright Act of 1934 (*48 Stat. 993*) authorized an additional $200,000,000 to be apportioned by the Secretary of Agriculture under the provisions of the cited section of the National Industrial Recovery Act. Of this sum, New Jersey received $3,220,879. One notable provision of the 1934 act was that not less than 25% of the apportionment to any State be applied to secondary or feeder roads.

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[263] Includes $1,107,807 grant of emergency funds for Federal Aid Highway System work under the Act of December 20, 1930 (*46 Stat. 1031*). This was to be repaid to the Government over a period of five years, beginning with the fiscal year 1933, by making deductions from future apportionments of regular Federal Aid funds. This provision was repealed in 1934 (*48 Stat. 933, s. 14*).

[264] Includes $1,657,733 grant of emergency funds for Federal Aid Highway System work made under the Emergency Relief and Construction Act of 1932 (*47 Stat. 709, s. 301*). This was to be reimbursed to the Federal Government over a period beginning with the fiscal year 1938, in the same manner as the 1931 emergency funds. This provision was repealed in 1934 (*48 Stat. 993, s. 14*).

[265] Federal grants-in-aid under the National Industrial Recovery Act of 1933 and the Hayden-Cartwright Act of 1934 took the place of the regular Federal Aid grants. See *post.*

These were 100% Federal grants requiring no matching by the State. The basis of apportionment to the several States was: seven-eighths in the same manner as regular Federal Aid funds and one-eighth on the basis of population. These two apportionments, totalling $9,566,918, were placed to the credit of the State Highway Fund, replacing the regular Federal Aid highway appropriations which were suspended in 1934 and 1935.[266]

(C) *Public Works Administration Federal Aid:*

New Jersey received $2,846,925 in 1938 and an additional $155,325 in 1939 from the Federal Emergency Administration of Public Works (P. W. A.) established by the President under the authority of Title II of the National Industrial Recovery Act. $138,658.94 of the funds allotted were cancelled in 1940, leaving a balance of $2,863,591.06 which was placed in the State Highway Fund.[266] Under Federal law, P. W. A. grants to States cannot exceed 45% of the cost of the projects; the remaining 55% has to be matched by the State.

These, then, are the figures for Federal grants-in-aid for the decade from 1931 to 1940 under immediate consideration. It should be noted that in 1941 the State received $379,668 for the elimination of hazards at railroad crossings, which sum was administered by the Highway Department; $1,281,146 of regular Federal Aid money, which went into the State Highway Fund, and $223,025 for secondary and feeder roads, which, for the first time, was also handled through the Highway Fund. Counties and municipalities have not taken advantage of this latter type of Federal Aid (which must be matched dollar for dollar), as shown by the balance of almost half a million dollars carried forward in that account. The 1941 grant was therefore placed in the Highway Fund to be used on Federal highways within the State.

The 1941 Federal grants-in-aid bring the total received by the State since 1931 to $40,545,150.66, of which $29,037,894.66 was handled through the Highway Fund and $11,507,256 administered by the Highway Department. Total grants to the State since the inception of Federal Aid in 1916 equal $53,384,326.66.

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[266] See Schedule 1, *page 169.*

This combination of the excess of the one-mill road tax, motor vehicle fees and fines, the motor vehicle fuels tax, bond revenues, Federal grants-in-aid, the bus excise tax, and miscellaneous revenues go to make up the amazing and complex thing known as the State Highway Fund.[267] It is the largest of the many dedicated funds that turn the State's financial picture into a tortured maze of figures which only the initiate may venture to negotiate. The Highway Fund itself is a jig-saw puzzle requiring diligence and patience to piece together.

Dedicated funds have long been a favored device in the fiscal affairs of New Jersey. The State Highway Fund is first mentioned by that name in the 1931 act providing for a State budget system,[268] but the idea of a dedicated fund for highway purposes is thirty-five years old. Reference has already been made to the 1906 "fund for the repair of the improved roads throughout the State,"[269] the 1912 State Road Fund,[270] the State Road Fund defined in the 1917 act establishing the State Highway Department,[271] and the 1927 act dedicating certain revenues to State highway purposes.[272] The highway fund provisions of the last-mentioned law still remain on the statute books (*R. S. 27:11-1*).

The 1927 statute directed that the following revenues be used for the establishment of the State Highway System pursuant to the provisions of *P. L. 1927, c. 319* providing for the revised road system: (1) the balance of the 1922 bond issue of $40,000,000; (2) the revenues from the two cent per gallon motor vehicle fuels tax imposed by the Legislature at the same time that *Chapter 331* was passed (*P. L. 1927, c. 334*); (3) Federal Aid funds derived from the Government under the Act of July 11, 1916, as amended; (4) revenues derived from the registration of motor vehicles and the licensing of drivers in any year, after deducting "the expenses of the Motor Vehicles Department; the

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[267] It should further be noted that the total funds of the State Highway Fund available yearly include the balance carried forward from the previous year as well as an item of depreciation of plant and equipment. See Schedule 1, *page 169.*

[268] *P. L. 1931, c. 142, s. 18.* This act was one of the direct results of the State Audit and Finance (Abell) Commission hearings and report made pursuant to *Legislative Joint Resolution, No. 3, Session of 1929.*

[269] *P. L. 1906, c. 113.* See *page 4, supra.*

[270] *P. L. 1912, c. 396.* See *page 5, supra.*

[271] *P. L. 1917, c. 15, s. 13.* See *page 8, supra.*

[272] *P. L. 1927, c. 331.* See *page 11, supra.*

expenses of the Toll Bridge Commission; the amounts required by virtue of any law for township aid and county aid; the amounts required for the emergency fund and the amounts necessary for the upkeep and maintenance expense, administration, engineering and inspection expenses of the State Highway Department"; and (5) the excess of the one-mill road taxes levied under the $40,000,000 bond act of 1922 and the $30,000,000 bond act of 1927.

A more general, but less satisfactory, definition of the State Highway Fund is set out in the amendments to the 1931 Budget Act, now incorporated into *R. S. 52:22-20 (i)*: "All moneys now in the treasury of the State or which hereafter shall be received into such treasury from any and every source which are dedicated to highway purposes, which shall include all revenues from the motor fuel taxes and the motor vehicle license fees and fines, shall be set up by the State Treasurer in a separate fund to be known as the State Highway Fund * * *"[273]

The total funds available in the State Highway Fund have exceeded $50,000,000 yearly in the decade from 1931 to 1940, except for 1933 and 1936 when the total fell just short of that amount.[274] The fund rivals the General State Fund in size. This means that two great funds exist side by side in the State, one dedicated to highways and a certain few related purposes, the other to meeting the needs of all the remaining State agencies. Appropriations from the Highway Fund never lapse; all unexpended or uncommitted balances revert back to the fund under the express provisions of the Budget Act.[275] In short, the fund is permanently dedicated.

The abolition of the State Highway Fund, as well as all permanently dedicated funds, and the payment of all revenues into the general State treasury, has been urged again and again in the strongest possible terms.[276] The recommendation has been opposed with the utmost vigor and ingenuity.

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[273] *P. L. 1931, c. 142, s. 18,* as amended by *P. L. 1933, c. 193; P. L. 1933, c. 451; P. L. 1935, c. 36; P. L. 1938, c. 13.*

[274] See Schedule 1, *page 169.*

[275] *R. S. 52:22-20 (i).*

[276] National Institute of Public Administration (Abell Commission) report, *op. cit., pp. 15, 58* and *59;* Princeton Survey report, *op. cit., pp. 11, 39, 40, 44* and *46; Report of the Commissioner of Finance to the Governor, op. cit.;* New Jersey State Chamber of Commerce bulletin, *State Fiscal Reform, op. cit., pp. 3* and *4.*

One of the rallying points of the opposition has been the argument that the Highway Fund is derived almost entirely from motor fuel taxes and motor vehicle fees originally earmarked for highway purposes. They claim that these revenues should continue to be earmarked and kept separate from all other revenues. The gasoline tax was referred to as "sacred money" by the President of the State Freeholders' Association and the State Farm Bureau during the course of the hearings on the 1940 Glickenhaus bill mentioned above. He spoke of the Highway Department as being "a department unto itself," and expressed the fear that if a single treasury were created, counties and municipalities would have to engage in "a grand budget scramble" with other State agencies in order to get their road funds.[277]

The State Highway Commission, answering the findings and recommendations of the Princeton Survey, recommended that motor vehicle fees and gas tax funds continue to be dedicated to highway purposes by the Legislature.[278] The American Petroleum Industries Committee has consistently and openly opposed abolition of dedicated highway funds over a period of years. It maintains that motor vehicle and motor fuel taxes are levied on the theory of benefit to the highway users, and compares these revenues to special trust funds to be spent only on highways.[279] The National Highway Users Conference has also carried on a campaign for dedicating motor fuel taxes and motor vehicle fees exclusively to highway purposes.[280]

Those who champion the dedicated highway fund—highway officials, local government officials, farmers' organizations, the automobile and petroleum industries, dealers in highway materials, road contractors, and many others (in all, a very large and influential group by any standard)—concentrate their fire on the evils of what they call "diversion." One general treasury, they say, means that funds collected

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[277] Glickenhaus hearing, *op. cit., pp. 54* to *63.*

[278] *Statement by the State Highway Commission on the Princeton Report,* January 30, 1933, typewritten manuscript, N. J. State Highway Department; Recommendation No. 7.

[279] *Tax Economics Bulletins, Vol. IV, No. 3,* June 1939, and *Vol. IV, No. 11,* February 1940, (New York), American Petroleum Industries Committee.

[280] *Dedication of Special Highway Revenues to Highway Purposes,* (Washington, D. C., 1941), published by the Conference, presents a complete brief for the dedicated fund.

from highway users may go to other governmental purposes. This will result in all sorts of dire consequences, ranging from roads falling into disrepair and defense roads going unbuilt, to double taxation and the encouragement of higher taxes.[281] Those behind the movement to preserve the dedicated highway fund urge constitutional amendments to effectuate that end.[282]

A few of the arguments advanced for a dedicated highway fund have some merit to them, especially in the case of a State which has not yet completed the main web of its highway system. Such are the States of the Middle West, West and South, with their wide areas, predominantly rural populations, and road systems projected at a relatively late date. New Jersey does not belong in their category.

Most of the reasons advanced for the dedicated highway fund lack a valid basis and are without essential merit. They are strictly the arguments of special pleaders who are only too ready to disregard the fundamental realities of the whole issue.

The Princeton Survey report put the argument against dedicated funds in perhaps its strongest form: *"It is not proper that any unit of government should live to itself alone. Each one is a part of a vast machine operating for the benefit of the people as a whole.* It is unthinkable that any agency should be allowed to spend all it can collect, while another agency, relying upon specific appropriations, starves its essential services. Only by the merest accident can the needful expenditures of a department coincide with its receipts from particular fees or taxes. *The single factor in determining what a department is to be allowed to spend should be the public value of its services."* The system of permanently dedicated funds may have been reasonable in some past day, but its continuance "has become an illogical if not impossible policy."[283]

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[281] Ibid., *pp. 3* and *8.*

[282] Constitutional amendments dedicating special motor vehicle taxes to highway purposes have been adopted in eleven States: California, Colorado, Idaho, Kansas, Michigan, Minnesota, Missouri, Nevada, New Hampshire, North Dakota, South Dakota.

[283] *Op. cit., pp. 11* and *192.* Italics supplied.

As long as dedicated funds continue—particularly one the size of the State Highway Fund—a unified system of expenditure control cannot be achieved. Their existence breaks the financial resources of the State into a series of self-contained compartments so that it becomes impossible for the State to "mass its fiscal resources and direct them to points at which they are most needed."[284]

One recognizes, of course, the existence of the constitutional provision requiring the Legislature to specify the ways and means by which the principal and interest of State bonds are to be met.[285] In this sense, and to this extent, it is impossible to avoid a certain amount of "dedication" of revenues. But beyond that the whole system of dedicated funds is open to attack. Such a system means that State money is held in escrow, beyond full control of the Governor and the Legislature. It means the fragmentation of the fiscal program and policy of the State.

One naturally assumes that when motor vehicles fees and motor fuel taxes are collected from highway users, a good part of these revenues will go for highway purposes. But this does not mean that such revenues must definitely and irrevocably be dedicated to the State Highway Fund, where they will remain completely segregated from the rest of the State revenues. An appropriation for the highway needs of the State can quite readily "be related to the revenue derived from the object that it serves, without an inflexible law permitting no other use of that revenue."[286]

The New Jersey Legislature has been faithful to the State Highway Fund after its own fashion. It has annually dedicated revenues from motor vehicle fees, the motor fuels tax and other sources to highway purposes, and then unhesitatingly proceeded to appropriate very large amounts of these revenues having no relation whatsoever to the highway function. A review of these purposes and the amounts appropri-

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[284] *Ibid.*

[285] *Constitution of New Jersey, Art. 4, s. 6, par. 5.*

[286] New Jersey State Chamber of Commerce bulletin, *op. cit., p. 3.*

ated during the past decade (1931-40) is of interest at this point. They are:[287]

1.	Debt service on $10,000,000 bond issue for the construction of State institutions[288]	$ 3,906,622.50
2.	Debt service on $7,000,000 bond issue for aid to school districts in paying teachers' salaries and other current expenses[288]	7,615,000.00
3.	Debt service on two bond issues of $20,000,000 and $5,000,000 for relief of the unemployed[288]	26,330,187.50
4.	Appropriations to the General State Fund.....	5,519,000.00
5.	For emergency relief[289].....	36,106,130.50
6.	To the Department of Commerce and Navigation, in excess of the mandatory appropriation of $90,000.00 annually	1,193,250.00

The total of these appropriations is $80,670,190.50. In the years 1936 to 1938, inclusive, the appropriations amounted to over 25% of the total funds available to the State Highway Fund; in 1939 to almost 22%, and in 1940 to slightly over 16%.

In 1941 appropriations were made for all of the purposes set out in the table above except emergency relief, and totalled $11,572,271.62, or over 19.5% of the total funds available to the State Highway Fund.

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[287] See Schedule 2 A, *page 188*.

[288] Total amortization and interest requirements for the bond issues mentioned in (1), (2) and (3) will amount to $18,325,750, $8,662,500 and $29,387,500, or a grand total of $56,375,750. *New Jersey State Government, op. cit.,* State serial bond schedule, *p. 83,* and see *p. 348*. Should the surplus from the highway extension sinking fund and the revenues derived from pari-mutuel betting be insufficient to meet the debt service of the 1939 bond issue of $21,000,000 for relief (see *p. 175* and *footnote 250*), motor fuel tax revenues would have to be appropriated for the purpose. There is a probability that this will happen. How much will be required cannot be predicted. The result will be an increase in total appropriations for other than highway purposes.

[289] Net figure. In 1935 and 1936, a total of $12,102,437 was appropriated from dedicated funds pursuant to *P. L. 1935, c. 60* and *P. L. 1936, c. 26*. However, there was a repayment of $4,530,000 from the Dorrance estate inheritance tax.

Schedule #2

STATE HIGHWAY FUND

- - - EXPENDITURES & COMMITMENTS - - -

Year 1931-1941 Inclusive

Administered by State Highway Department

Year	State Highway Right of Way	Construction of Roads & Bridges	Construction of Roads & Bridges W.P.A. Sponsor Primary Projects	Construction of Roads & Bridges W.P.A. Sponsor Secondary Proj.	State Highway Maintenance	Unemployment Relief Dept.	Institutional Roads and Approaches	Electrical Installation & Maintenance	Accident Investigation and Traffic Counting	Operation of Draw Bridges	Purchase of Plant & Equipment	County Aid	Township Aid Construction	Township Aid Maintenance	Engr. & Inspec. State Highway	Engr. & Inspec. County and Township Aid	Admin. Costs of Acquiring Right of Way	Administration General	Administration Laboratory	Miscellaneous	SUB-TOTAL
1931	$ 11,317,890.50	$ 22,449,662.41	$ 0	$ 0	$ 2,288,668.27	$ 1,000,000.00	$ 0	$ 0	$ 0	$ 211,331.73	$ 95,528.38	$ 5,000,000.00	$ 2,100,000.00	$ 210,000.00	$ 1,851,031.66	$ 215,708.07	$ 950,081.11	$ 255,645.17	$ 244,509.99	$ 20,404.57	$ 48,226,461.86
1932	3,991,325.61	9,416,132.22	0	0	1,887,062.36	1,000,000.00	0	0	0	197,937.64	72,835.48	4,995,486.75	2,100,000.00	210,000.00	1,662,155.29	196,771.31	625,699.82	290,674.50	244,820.04	3,763,231.25(A)	30,654,132.28
1933	1,484,407.17	5,408,257.97	0	0	2,194,876.31	0	11,916.08	0	0	205,123.69	99,513.18	4,735,000.00	2,100,000.00	210,000.00	1,067,947.14	155,329.82	343,560.30	272,090.20	154,547.45	0	18,443,569.31
1934	1,185,401.55	8,335,759.47	0	0	2,310,696.05	0	9,706.28	0	0	189,303.95	100,000.00	6,735,000.00	2,100,000.00	210,000.00	742,417.20	145,265.80	274,810.53	196,060.18	136,539.23	0	22,670,960.24
1935	1,419,435.30	7,459,493.49	0	0	2,456,084.17	0	240,247.45	0	0	178,232.25	160,000.00	6,735,000.00	2,100,000.00	210,000.00	795,942.15	162,492.64	264,365.99	190,790.17	140,361.82	0	22,512,445.44
1936	1,035,418.00	4,390,563.02	0	0	2,646,042.06	0	170,130.19	152,838.59	0	207,410.56	95,000.00	6,735,000.00	2,100,000.00	210,000.00	888,302.30	156,282.84	222,673.60	184,457.23	150,659.85	0	19,344,798.24
1937	1,300,573.95	6,159,742.04	0	0	2,540,301.09	0	175,000.00	430,972.65	41,748.53	242,786.44	220,000.00	6,735,000.00	2,100,000.00	210,000.00	1,005,164.52	197,257.19	246,208.99	199,020.34	158,885.78	0	21,962,661.52
1938	1,465,431.25	5,282,019.34	2,025,272.53	1,197,003.85	3,010,644.50	0	400,000.00	446,738.24	158,062.12	283,224.73	512,000.00	6,735,000.00	2,625,000.00	210,000.00	1,128,268.80	273,268.79	267,340.66	216,487.58	167,230.70	47,500.00(B)	26,450,493.14
1939	1,962,500.00	9,859,351.19	1,047,063.36	799,234.71	3,411,365.39	0	400,000.00	551,038.40	225,467.65	282,706.99	427,755.09	6,735,000.00	2,625,000.00	210,000.00	1,123,941.16	326,483.09	273,766.49	244,460.27	185,946.98	0	30,691,080.77
1940	3,182,000.00	7,353,496.21	689,296.70	859,863.36	3,272,539.23	0	400,000.00	736,573.83	276,072.65	287,523.96	301,924.62	6,735,000.00	2,625,000.00	210,000.00	1,154,867.00	325,579.96	312,990.56	241,493.38	200,899.97	2,245.74	29,167,357.17
1941	2,867,911.41	7,489,526.20	132,909.08	0	3,312,945.28	0	400,000.00	685,629.78	295,563.02	312,096.14	194,677.26	6,735,000.00	2,625,000.00	525,000.00	1,190,891.76	307,388.95	295,414.71	211,859.96	191,230.88	0	27,773,844.45

(A) - Accounts Receivable Funded.

(B) - Lafayette Boulevard, Delaware & Raritan Canal.

Schedule #2-A

STATE HIGHWAY FUND

--- EXPENDITURES & COMMITMENTS ---

Year 1931-1941 Inclusive

Administered by Other State Departments

Year	State Treasurer: Return to Municipalities	State Treasurer: Debt Service Highway Bonds	Cost of Collection: Gas Tax	Cost of Collection: M.V. Fees, Fines	Board of Commerce & Navigation	Free Bridge Commission	Bridge & Tunnel Commission	State Employees Retirement Fund	State Police	Public Utility Commission Grade Crossings	Miscellaneous	SUB-TOTAL
1931	$ 5,000,000.00	$ 6,771,474.80	$ 18,600.00	$ 770,480.00	$ 90,000.00	$ 201,000.00	$ 0	$ 0	$ 0	$ 0	$ 25,000.00	$ 12,876,554.80 :
1932	5,000,000.00	7,483,974.80	29,360.03	748,555.00	90,000.00	196,000.00	0	0	0	0	66,880.00	13,614,769.83
1933	6,396,474.80	7,490,349.80	52,450.00	1,188,450.00	90,000.00	175,000.00	2,991,178.39	0	0	0	5,162,412.22(C)	23,536,295.21
1934	0	7,663,908.90	55,480.00	778,560.00	90,000.00	61,000.00	0	0	0	0	2,458,558.95(D)	11,107,507.85
1935	0	7,477,206.40	111,180.00	782,080.00	90,000.00	0	0	0	0	2,000,000.00 (F)	1,901,551.71(E)	12,362,018.11
1936	0	7,636,051.40	145,379.50	752,520.00	90,000.00	77,500.00	0	0	0	2,000,000.00 (F)	0	10,701,450.90
1937	0	7,652,463.90	175,355.00	1,434,172.00	90,000.00	72,750.00	0	0	0	2,000,000.00 (F)	0	11,404,740.90
1938	0	7,481,901.20	209,335.00	1,618,730.00	90,000.00	102,000.00	0	0	566,275.00	0	0	10,068,241.20
1939	0	4,499,037.50	217,615.00	1,656,085.00	90,000.00	81,220.82	0	130,630.00	582,710.00	0	108,000.00	7,365,498.32
1940	0	4,202,462.50	246,520.00	1,848,992.29	90,000.00	102,887.13	0	147,846.00	597,300.00	0	135,000.00	7,371,007.92
1941		621,050.00)(A) 5,704,349.25)	231,189.00	1,947,454.00	90,000.00	93,633.61	0	150,286.00	770,577.00	0	44,105.00	9,652,643.86
TOTAL EXPENDITURES & COMMITMENTS - (1931 - 1941 Inclusive)												

Diversion

Year	Debt Service for Bonds other than State Highway: Institutional Buildings	Debt Service for Bonds other than State Highway: Educational Aid	Debt Service for Bonds other than State Highway: Emergency Relief	General State Fund	Emergency Relief	Appro. in excess of Mandatory Appro. to Dept. of Commerce & Nav.	SUB-TOTAL Diversion	% of Diversion of Total Available Funds	Total Expenditure & Commitment	Operation of Plant & Equip. Distributed in Department Expenditure
1931	$ 52,500.00	$ 0	$ 0	$ 0	$ 0	$ 0	$ 52,500.00 :	.0852	$61,157,516.66	$ 687,618.64
1932	172,500.00	0	0	0	8,116,033.50	0	8,288,533.50	14.5176	52,557,435.61	707,666.77
1933	289,125.00	0	913,000.00	0	0	45,000.00	1,247,125.00	2.5564	43,226,989.62	649,952.29
1934	369,555.00	332,500.00	3,264,062.50	0	0	0	3,966,117.50	7.5163	37,744,585.59	676,336.92
1935	434,467.50	1,332,500.00	3,964,062.50	0	0	0	5,731,030.00	11.1898	40,605,493.55	684,769.05
1936	485,700.00	1,285,000.00	3,842,187.50	0	7,572,437.00	0	13,185,324.50	26.4350	43,251,573.64	684,020.68
1937	520,312.50	1,237,500.00	3,720,312.50	0	8,917,660.00	160,000.00	14,555,785.00	27.6110	47,923,187.42	665,690.81
1938	524,112.50	1,190,000.00	3,598,437.50	0	8,500,000.00	160,000.00	13,972,550.00	25.2152	50,491,284.34	824,387.89
1939	527,600.00	1,142,500.00	3,476,562.50	3,000,000.00	3,000,000.00	241,250.00	11,387,912.50	21.8506	49,444,491.59	899,906.11
1940	530,750.00	1,095,000.00	3,551,562.50	2,519,000.00	0	587,000.00	8,283,312.50	16.1582	44,821,677.59	1,065,279.55
1941	523,700.00	1,047,500.00	2,782,071.62	6,500,000.00	0	719,000.00	11,572,271.62	19.5653	48,998,759.91 520,202,995.42	1,204,234.08

(C) - Deducted by State Treasurer, $5,152,412.22. Returned 1934.

(D) - Reserved for funds in closed banks.

(E) - Mill Taxes - Surplus funded, $1,901,551.71.

(F) - Funds authorized due to the fact that Bonds were not issued.

(G) - Funding Bonds authorized but not issued.

Mention should also be made of the rather large sums that have been appropriated for purposes looked upon by the Legislature and some Department members as "related" to highway work. The degree of relation obviously varies; one need only consider the grade crossing elimination work of the Board of Public Utility Commissioners on the one hand and the program of the Board of Commerce and Navigation on the other. During the period from 1931 to 1940 appropriations have been made from the State Highway Fund to the following State agencies: Board of Commerce and Navigation, $900,000; Free Bridge Commission, $1,069,357.95; Bridge and Tunnel Commission, $2,991,178.39; State Police, $1,746,285, and Board of Public Utility Commissioners, $6,000,000, or a total of $12,706,821.34[289a] Almost another million dollars was added to this total in 1941.

In the face of all this one may well ask why the fiction of a dedicated State Highway Fund should be kept alive. The Legislature has by its own repeated action shown that highway needs, in the words of the Princeton Survey report, can "no longer be determined separately, as though the function of providing highways were sacrosanct and unchangeable, regardless of the need for all other services of the State."[290]

The Legislature has been accused of inconsistency and deception in dedicating various revenues to highway purposes and then appropriating these very funds to relief, inland waterways, State institutions and educational aid. It can escape that charge by taking the logical, constructive step of abolishing the State Highway Fund and directing that all revenues now dedicated to the fund be paid directly into the General State Fund. From this single fund the Legislature would annually appropriate such amounts as it might determine should go to each of the State agencies after a careful study of their needs and all attending factors. There can be little doubt that in the case of the Highway Department, one of these factors is bound to be the amount realized from the revenues now dedicated to the Highway Fund. The sum that will be spent annually by the State on highways will in large measure reflect the yield from highway user fees and taxes.

The past decade has made it quite clear that modern government has become too complex, its functions too numerous and varied, to allow

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[289a] See Schedule 2A, *p. 188.*

[290] *Op. cit., p. 191.*

of the continuance of a 19th century institution like the dedicated fund. The only proper and sound basis for fiscal operations today is the single general State fund.[291] The elimination of the State Highway Fund—in fact, the elimination wherever possible of all dedicated revenues and segregated funds—will lay the foundation for an improved administration of State fiscal affairs. Better budgeting, a more unified and effective control of expenditures, a simplified accounting procedure, and a clearer, more complete picture of State finances, will be the result.

It is recommended that the State Highway Fund be abolished and all revenues previously dedicated to the fund be paid directly into the general treasury of the State. All receipts of the State Highway Department (as, for example, from sales of condemned property, road permit fees, collection of claims, and highway services), should likewise go into the general State fund. Finally, all unexpended and uncommitted balances of the Department should lapse into the general treasury at the close of the fiscal year.[292]

The State Highway Department Budget

From the recommendations for a single fiscal year and one general State fund there inevitably flows the recommendation that the expenditures of the Highway Department be included in the regular State budget, and in the annual general Appropriation Act. Under the existing arrangement, the Department presents a separate budget, and appropriations for its work are the subject of a separate act.

Highway moneys were not included in the so-called State budget under the 1916 act first establishing a budget system for the State.[293]

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[291] It has been observed that State laws require municipalities to consolidate into one fund all municipal-purpose tax receipts and other revenues. What is good for municipalities should be good for the State.

[292] The Department has for many years followed a policy of earmarking large sums for the acquisition of rights-of-way along approved routes so that funds may be available when the property is acquired by agreement or condemnation. The policy has merit but it is to be noted that the funds are not committed in the sense that they are covered by binding agreements. It is possible to carry earmarking too far, as, for example, where it was originally contemplated to construct a route and no further action has been taken for years, if the project has not in fact been abandoned in the minds of the engineers. Accordingly, these "committed" funds should be carefully examined from time to time; those not covering tracts about to be acquired within the reasonably near future, or property under condemnation, should be lapsed into the general treasury.

[293] *P. L. 1916, c. 15.*

The budget message that the Governor was required to send to the Legislature each year contained no reference to highway expenditures. These were budgeted exclusively by the Highway Commission, without executive check or legislative approval. The Abell Commission report of 1930 criticized the entire arrangement in recommending a complete revision of the budget making procedure. Among other things, it was proposed that all agencies and all funds of the State government be budgeted; "highway expenditures should be included in the budget presented by the Governor to the Legislature; otherwise some $30,000,000 of the State's annual expenditures are unaccounted for in the financial plan."[294]

One of the direct results of the Abell Committee investigation was the enactment of *P. L. 1931, c. 142,* providing for a budget system directed by a State Budget Commissioner appointed by the Governor. State agencies were required to file their requests for appropriations with the State Budget Commissioner on forms to be furnished by him. He would certify and transmit these requests, with his findings, comments and recommendations thereon, together with a report of the financial condition and operations of the State (as of June 30 last preceding) prepared by the Comptroller, to the Governor on or before December 31. After examining and considering the requests for appropriations, as well as the findings and recommendations of the Budget Commissioner, the Governor would formulate his budget recommendations and transmit them to the Legislature in a budget message which contained certain required information. The Legislature would then proceed to consider the budget message and finally pass the annual appropriation bill.

The State Highway Department managed to keep itself out of this revised pattern of budget procedure. All that the 1931 act required of it was that the State Highway Commission annually submit a report of the work, operations and financial condition of the Department for the current year (projected to December 31), directly to the Governor on or before December 1. At the same time, the Commission was also to submit a schedule of the estimated anticipated revenues available for highway purposes during the ensuing calendar year, together with a schedule and program for which it proposed to expend such funds,

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[294] National Institute of Public Administration report, *op. cit., pp. 50* and *263.*

drawn up according to purposes, routes and sections of routes. The Governor was to review the schedule of anticipated revenues and the program, and upon his approval the program was to become the established program for State highway work for the next calendar year, and control the administration of the funds. The Governor was required to include a synopsis of the Highway Commission's revenues, and the schedule and program that he had approved, in his budget message to the Legislature.[295]

Under the 1931 act, therefore, neither the expenditures nor the revenues of the Highway Department were included in the State budget, and this despite the announced intent of the act, which was "to provide for the budgeting or scheduling of all State revenues and expenditures."[296] The Governor had about one month to analyze and approve a highway program which had involved as much as $40,000,000 in recent years. The Legislature, whose action has always been deemed an essential part of a good budget system, was by-passed entirely. All it received was the synopsis contained in the Governor's budget message.

The Department still maintained its independent position, with its separate fiscal year, its dedicated funds, and its separate budget. It is true that the 1931 act gave the Governor some financial supervision over the Department where he had had none before, but the control was only partial.

The Princeton Survey report called attention to some of the weaknesses of the 1931 Budget Act, particularly in the provisions relating to the Department, and recommended a single budget for all State agencies. Like other budgets, the highway budget was to be submitted to the Governor for transmission to the Legislature and be effective only when approved by that body.[297]

The Department opposed this recomendation. Answering the Princeton Survey report, the State Highway Commission indicated that the 1931 Budget Act provisions were adequate to meet the situation; the synopsis of highway revenues and of the approved schedule and pro-

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[295] *P. L. 1931, c. 142, s. 18.*

[296] *P. L. 1931, c. 142, s. 1.*

[297] *Op. cit., pp. 16, 39* and *192.*

gram contained in the Governor's budget message gave the Legislature the highway budget for the year.[298]

The Princeton Survey recommendations regarding budget procedure found partial reflection in several amendments to the 1931 Budget Act passed by the Legislature in 1933. The intent of the act was now declared to be "to provide for the budgeting of all State revenues and expenditures, whether or not they involve free treasury funds or prededicated funds." The ultimate purpose was "to afford legislative control over the expenditure of dedicated funds as well as free treasury funds, and to provide a comprehensive budget of all State funds."[299] The State Highway Commission was required to submit a schedule of estimated anticipated revenues available for highway purposes during the ensuing calendar year, as well as the schedule and program for which it proposed to expend such funds, to the Governor before October 15 annually. After reviewing this material, the Governor was to formulate his budget recommendations and submit them to the Legislature at the same time that he submitted the regular budget message for the other State agencies. The Legislature was then to pass a separate appropriation act, to be known as the State Highway Fund Appropriation Act.[300]

The details of Highway Department budget procedure will be considered shortly. The immediate observation to be made is that the 1933 amendments, representing a long step forward in State budgeting, still failed to do what seemed so clearly indicated. Instead of requiring Highway Department expenditures to pass through the regular State budget, the Legislature authorized the creation of an entirely separate arrangement. It would seem that the Legislature would have seized upon the opportunity of setting up a simple, unified State budget system. Instead, it gave its blessing to one of the strongest of all divisive forces in State fiscal affairs—a separate highway budget.

Those who have had to work with two different budgets have consistently advocated the need and advisability of a single State budget

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[298] *Statement by the State Highway Commission on the Princeton report, op. cit.*

[299] *P. L. 1933, c. 293, s. 1,* amending *P. L. 1931, c. 142, s. 2. R. S. 52:22-2.*

[300] *P. L. 1933, c. 193* and *c. 451,* amending *P. L. 1931, c. 142, s. 18. R. S. 54:22-20.*

and a single appropriation act.[301] Such an arrangement is possible even with the continuance of dedicated funds, as witness the expenditures for educational purposes from railroad tax revenues, made in accordance with the general Appropriation Act. If the Legislature is to carry out its announced purpose of providing "a comprehensive budget of all State funds"[302] it should carry to a reasoned conclusion the budget system started over a decade ago and improved in 1933. One budget and one appropriation bill covering all revenues and all expenditures for the same fiscal year will at last give New Jersey a basis for operations that will meet the requirements of fiscal administration in the modern State.

The Annual Budget and State Highway Fund Appropriation Act

Under the Budget Act as it now stands, the State Highway Commissioner is required to submit the following to the Governor on or before October 15 of each year:[303]

> 1. A report of the work and operations and financial condition of the Highway Department for the current calendar year (projected to December 31), including an itemized report of county and township allotments and commitments under the State Aid program, in such form and such detail as the Governor requires.
>
> 2. A schedule of the estimated anticipated revenues available for highway purposes during the ensuing calendar year. The several items committed to the State Highway Fund which are dedicated to a specific purpose before being made part of that fund, as well as funds to be made available through the sale of bonds and all unappropriated balances, must be tabulated and shown as the total resources for the support of the Department schedule and program for the calendar year following.
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> 3. The schedule and program for which the Commissioner proposes to expend or use such funds for the ensuing calendar year, setting out the dedicated fund items and the general fund items separately, according to purposes, routes and sections of

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[301] See, for example, the statement by State Comptroller Frank J. Murray in the course of the Glickenhaus hearing, and the report of Commissioner of Finance Lewis Compton to the Governor, *op. cit.*

[302] *P. L. 1933, c. 293, s. 1; R. S. 52:22-2.*

[303] *R. S. 52:22-20. (a), (b) and (c).*

routes. The program may include alternate projects to be substituted for those in the program should it be found impossible or impractical to construct or carry out any one or more of the projects in the original program.

The report, schedules and programs are prepared by the Highway Commissioner in cooperation with the Chief Auditor and Accountant and the State Highway Engineer. Projects listed in the construction program include those which are most needed or for which there is the greatest demand from interested areas of the State. A complete program of alternate projects is regularly presented. The figures for anticipated revenues prepared by the Chief Auditor and Accountant are very carefully gotten together and lean toward the conservative side. Actual revenues invariably exceed his estimates.

Upon receipt of the indicated information, the Governor, through the State Budget Commissioner, reviews the schedule of anticipated revenues and the program submitted by the Highway Commissioner and formulates his budget recommendations.[303a] He also has before him at the time a report made by the State Comptroller to the Budget Commissioner on or before October 15, showing in detail the financial condition and operations of the State, including statements of revenues and expenditures for the last preceding fiscal year, estimated balances as of the close of the current fiscal year, and estimated revenues available for the ensuing fiscal year, not only for the free treasury funds but also for the several dedicated funds.[304]

The Governor transmits his recommendations to the Legislature at the same time that he submits his budget message dealing with the other State agencies, on the third Tuesday of January in each year.[305] The recommendations are for the calendar year in which the budget message is submitted, and must be in substantially the following form:[306]

[303a] The Legislature transferred the sum of $3000 in 1941 from the State Highway Fund to the General State Fund toward the salary of the State Budget Commissioner for his assistance in preparing the Highway Department budget.

[304] Pursuant to *R. S. 52:22-8.*

[305] The budget message is submitted on or before February 15 in such years as the Governor is inaugurated. *R. S. 52:22-11,* as amended by *P. L. 1941, c. 407.*

[306] *R. S. 52:22-20 (d).* The mandatory items (1), (2) and (3) are "for the purpose of statistical information only and not for the purpose of being included in the appropriation act provided for in this section."

Revenues:

A detailed schedule of revenues anticipated to be available for the State Highway Fund for the calendar year.

Mandatory Dedications:

1. Debt service: interest, sinking fund and principal payments of any State bonds issued, payable from revenues derived from the motor fuels tax.

2. State Aid projects, which shall include the following items:

First: $6,000,000 for the construction, reconstruction, maintenance and repair, operation, policing and lighting of county roads and bridges, and for the payment of principal and interest of obligations incurred for any such purposes, and for the extension of the county highway system under a formula based on the ratio of the population, county road mileage and area of each county to the total population, county road mileage and area of the State.[307]

Second: $2,625,000 to be spent pursuant to *R. S. 27:15-1.*[308]

Third: $735,000 to be spent pursuant to *R. S. 27:14-1.*[307]

Fourth: $525,000 to be spent pursuant to *R. S. 27:15-10* to *13.*[308]

Fifth: $90,000 to the Board of Commerce and Navigation for the construction, reconstruction, maintenance and improvement of inland waterways, as provided by *R. S. 54:39-74.*

Sixth: The amount required for the State Highway Sinking Fund as provided by the 1922 act authorizing a bond issue of $40,000,000 and the 1927 act authorizing a bond issue of $30,000,000, for the budget year.[309]

3. Reimbursement to counties and municipalities due in the budget period under consideration, for obligations incurred theretofore.[310]

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[307] See *footnote 142, p. 107, supra.*

[308] See *footnote 143, p. 107, supra.*

[309] *P. L. 1922, c. 262* and *P. L. 1927, c. 181.*

[310] Incurred pursuant to the provisions of *R. S. 27:9* and *27:10.* See *p. 39, supra, item 25.*

Appropriations:

4. For the administration and operation of the Department of Motor Vehicles and the Motor Fuel Tax Division of the State Tax Department.

5. For the administration, engineering, inspection and administration costs of right-of-way for the State Highway System.

6. For the construction of the State Highway System.

7. For the purchase of plant and equipment of the State Highway Department.

8. For the purchase of rights-of-way for the State Highway System.

9. For the maintenance of the State Highway System.

10. For the administration and operation of the Delaware River Joint Toll Bridge Commission, and the maintenance of free bridges, including improvements.

The Governor's recommendations as to appropriations for items 5 to 10, inclusive, are made in a lump sum for each item. However, in connection with his recommendation for item 4, he is required to submit to the Legislature the same detailed budget request as he must render for other agencies of the State government under the provisions of the Budget Act.[311]

The Governor's recommendations are taken up by the Joint Appropriations Committee of the Legislature.[312] During the past five years this Committee has, by conservative estimate, devoted over ninety hours annually to hearings on the appropriations requested by State agencies included in the general Appropriations Act. It has given no more than three hours, and sometimes a great deal less, to hearings on State Highway Fund appropriations. The Highway Department is represented at this unusually brief session by the Highway Commissioner,

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[311] *R. S. 52:22-20(g).*

[312] The Committee also has before it certain relevant schedules included in the Governor's regular budget message relating to the other State agencies, submitted pursuant to *R. S. 52:22-11.* These include an estimate as of January 1 of the amount of each of the several funds dedicated to highway purposes; an estimate of the anticipated revenues of each of these funds for the budget year under consideration as well as the actual amount received from each source during the last completed fiscal year and an estimate of the revenue from each source for the current year; and similar schedules covering Federal Aid funds.

Highway Engineer, Chief Auditor and Accountant, General Solicitor and several of the Division heads, who are prepared to give the committee any further information desired and to answer all questions. The State Budget Commissioner, who has previously reviewed all of the figures and the programs in detail, is also present.

The fact that these officials have given a great deal of time beforehand to the preparation and study of the State Highway Fund budget is hardly a substitute for a careful review by the Joint Appropriations Committee of all the detailed items contained in that budget. The amount involved is fully as much as the total appropriations from the State Fund. It is to be observed that the Department of Institutions and Agencies, whose budget is far less than that of the Highway Department, receives a great deal more of the Committee's time than does the Department. It is important, both for the Department as well as the public, that the Highway Fund appropriation requests be thoroughly examined. The floor of the Legislature is admittedly not the place for this. The place and the time are the hearings of the Joint Appropriations Committee. It is felt that more thoroughgoing hearings are in order, if only to establish the validity of the highway program. It is therefore recommended that future committees devote more time and detailed attention to the budget of the Highway Department.

The Budget Act specifically requires that the Legislature shall "by separate appropriation act which shall take effect on the first day of January preceding its enactment in each year, and which shall be known as the State Highway Fund Appropriation Act," appropriate in lump sums the amounts required for items 1 to 10 above.[312a] Legislative action is taken after the bill has been reported out by the Joint Appropriations Committee.

Pending the enactment of this bill, the Highway Commissioner is authorized to spend such sums from the State Highway Fund as are necessary for the maintenance of the State Highway System, not to exceed the amount spent for that purpose during the whole of the preceding calendar year. He may also spend for the administration of the Department a sum equal to, but not exceeding, the amount spent for similar purposes during the same period in the preceding calendar year. However, he is not permitted to enter into any contracts for new highway construction until after the State Highway Fund Appropriation Act has been passed and is in effect.[312a]

[312a] *R. S. 52: 22-20 (g).*

No money may be withdrawn from the State Highway Fund unless included in the State Highway Fund Appropriation Act, except for the purposes enumerated in items 1 to 3 under "Mandatory Dedications" above, or for further grants to counties and municipalities for road purposes or for the payment of interest or principal on reimbursement obligations incurred for road purposes. By express reservation of the statute, money may be withdrawn from the fund to pay the principal or interest of any bonded indebtedness of the State, or for sinking fund purposes on any bonds heretofore or hereafter issued by the State, or for sums appropriated by the Legislature for the collection of the motor fuels tax.[313]

The appropriations contained in the State Highway Fund Appropriation Act control the program of the State Highway Department for the calendar year. Whenever the Governor is convinced that there is extravagance, waste or mismanagement, he may prohibit and enjoin any expenditure or future expenditure under any appropriation and prescribe the terms on which such expenditure may be made, if at all, by executing an order to that effect and serving it on the duly authorized request officer (the Highway Commissioner) of the Department. A certified copy of the order must also be served upon the Comptroller and the State Purchase Commissioner, whereupon it immediately becomes operative. Thereafter any expenditures under the appropriation are limited by the terms of the order. The Governor may make such further orders in the premises as he deems necessary or advisable; these orders become operative when served in the manner indicated.[314]

This power has been exercised only once in the case of the Highway Department since the passage of the Budget Act. By Executive Order No. 1, dated June 24, 1941, Governor Edison prohibited and enjoined further expenditures from certain appropriations to the Department contained in the 1941 State Highway Fund Appropriation Act,[315] and any and all unexpended balances and uncommitted sums in these ac-

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[313] *R. S. 52:22-20 (i).*

[314] *R. S. 52:22-20 (j)* which gives the Governor the same power over appropriations to the State Highway Department as he was given over other State appropriations under the provisions of the Budget Act, *R. S. 52:22-18.*

[315] *P. L. 1941, c. 141.*

counts, until the State Highway Commissioner had fully performed the conditions set out in the order.[316] In the meantime, expenditures from the accounts indicated and any necessary commitments and contracts were to be made only on the written approval of the State Commissioner of Finance, except that in case of a catastrophe or an emergency resulting in damage to roads and bridges the Highway Commissioner might proceed to spend no more than $50,000. The order is still in full force and effect, and has not been modified.

By another provision of the Budget Act, the Legislature has provided that "in order to maintain a reasonable degree of flexibility" the State Highway Commissioner may, "with the approval of the State House Commission, transfer funds from one item to another where such action seems to be in the best interests of the State and will tend to the economical operation of the State Highway Department." But no item appropriated for any permanent construction improvement may be transferred to any administrative item.[317] An examination of the Annual Reports of the Department shows that transfers have not been unduly large or frequent in recent years. They seem to have been limited to actual needs arising within the Department. One of the largest was a transfer in 1938 of $297,000 from various items to the purchase of plant and equipment. This item was budgeted at too low a figure from 1938 to 1940 inclusive, requiring intra-departmental transfers.[318]

The Budget Act also gave the Governor the power to inquire into and investigate the operations and administration of any department or agency of the State, and any county or municipal corporation as to the expenditure and administration of State Aid road or highway funds, and to employ such agents or agencies to accomplish that purpose as he might deem proper. The Governor, or such persons as he appoints, were authorized to administer oaths, examine witnesses, and issue subpoenas to compel the attendance of witnesses and the production of all necessary reports, books, papers, etc.[319]

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[316] See Appendix A for the full text of this order.

[317] *R. S. 52:22-20 (k).*

[318] *New Jersey State Highway Department Annual Reports,* 1935 to 1941, Bureau of Auditing and Accounting, Schedule "B".

[319] *R. S. 52:22-21.*

This power was reinforced by a statute passed in 1941 authorizing the Governor, either in person or by one or more persons appointed by him for the purpose, "to examine and investigate the management by any State officer of the affairs of any department, board, bureau or commission of the State and to examine and investigate the management and affairs of any department, board, bureau or commission of the State." The Governor and the persons appointed by him were empowered to subpoena and enforce the attendance of witnesses, administer oaths and examine witnesses under oath, and to require the production of any books or papers deemed relevant or material. The chief executive was to fix the compensation of any person appointed by him where such person was not regularly in the employ of the State. This compensation, as well as all necessary expenses of the examinations and investigations, were to be paid from the State treasury out of any appropriations made for the purpose by the Governor.[320]

On July 1, 1941, Governor Edison appointed Roger Hinds, Esq., to "examine and investigate the management of the affairs of the State Highway Department by the Highway Commissioner and the other officers and employees thereof," and to report his findings to him.[321] The order was made "pursuant to the authority conferred on me by law including, but not limited to, Chapter 16 of the Laws of 1941." The qualifying phrase was entirely proper; the Budget Act provision already gave the Governor a fairly broad power of investigation.

The investigation started with private hearings. The Highway Department thereupon sought and obtained an amendment to the 1941 law stating that the investigations and examinations might be made publicly or privately, but declaring it unlawful for any person to divulge the results of any investigation or examination to anyone other than the Governor, unless a public hearing were first held. In case of public hearings, the officer, State agency, or individual under investigation was to have the right of cross-examining any witness on any phase of the matter on which he had been examined, and of introducing other witnesses and other evidence to explain, enlarge upon, or clarify the matter under investigation.[322] The Department availed itself fully of the powers given it under this amendatory act.

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[320] *P. L. 1941, c. 16.* This act was modeled after a similar New York statute.

[321] Executive Order No. 2. See Appendix A for the full text.

[322] *P. L. 1941, c. 315.*

The Budget Act requires that the State Highway Commissioner report quarterly to the Governor, and at such other times as he may direct, on the progress of the Department's approved highway program and on any project that has been carried over from the preceding year. The report is also supposed to contain a statement of the condition of the Department's revenues and finances.[323] The Auditing and Accounting Bureau of the Department prepares a rather complete fiscal report quarterly, but the only report fully meeting the statutory requirement is the annual one setting forth the work of the various Divisions. It is recommended that the Budget Act provision be enforced and that the Department make the required progress and fiscal report promptly and regularly.

Relations to Other State Officers and Agencies

The administration of the fiscal affairs of the Highway Department necessarily brings it into contact with five other important fiscal officers and agencies of the State—the Commissioner of Finance, State Comptroller, State Treasurer, State Auditor, and State House Commission —in addition to the State Budget Commissioner.

Both the Abell Commission and Princeton Survey reports had advocated a greater measure of control by the Governor over State finances. The former recommended the creation of a Department of Finance headed by a Commissioner appointed by the Governor and serving at his pleasure. This Department was to include four bureaus: budgeting, accounting, purchasing, and personnel, each in charge of a trained and experienced director qualifying for the position by competitive examination.[324] The Princeton Survey report proposed the establishment of a Department of Fiscal Control, in charge of a Commissioner who would be "the direct agent of the Governor in the exercise of the Governor's power over State expenditures." The new department would consist of three divisions—budgeting, accounting and purchasing—each under its own director. The Commissioner and directors would be appointed by the Governor to serve at his pleasure.[325]

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[323] *R. S. 52:22-20 (e).*

[324] *Op. cit., pp. 39 to 44.*

[325] *Op. cit., pp. 35 to 37.*

Neither of the proposals was adopted. Instead, there was a piecemeal acceptance by the Legislature of the recommendations for fiscal reform made by each survey. Following the Abell Commission hearings and report, the 1931 Legislature passed three laws,—the first (already referred to) setting up a budget system under the direction of a Budget Commissioner;[326] the second creating a new State Purchasing Department under a Commissioner, replacing the State House Commission and its State Purchasing Agent as the buying authority of the State;[327] and the third revising the personnel, powers and duties of the State House Commission itself.[328] The Legislature had already adopted another recommendation resulting from the Abell investigation by passing an act at the special session held late in 1930, creating a State Accounting and Auditing Department and providing for a centralized control and uniform system of accounts for State agencies. This law was repealed in 1933 when the Legislature passed an act having a similar purpose.[329]

The legislative session following the Princeton Survey report was also an important one insofar as changes in State fiscal administration were concerned. The Legislature amended the Budget Act in the manner already indicated,[330] so that its provisions covered dedicated funds as well as free treasury funds. It passed three acts reflecting certain aspects of the Princeton Survey recommendations. These were, in the order of their passage, an act establishing a Division of Accounting in the office of the Comptroller of the Treasury and providing for centralized control and a uniform system of accounting for the State and its several agencies;[331] an act creating the office of State Auditor and defining his powers and duties;[332] and, finally, an act creating the office of Commissioner of Finance and defining his powers and duties.[333]

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[326] See *p. 191, supra.*

[327] *P. L. 1931, c. 179; R. S. 52:25-1* to *26.*

[328] *P. L. 1931, c. 184; R. S. 52:20-1* to *23.*

[329] *P. L. 1930, c. 269,* repealed by *P. L. 1933, c. 234.*

[330] See *p. 193, supra.*

[331] *P. L. 1933, c. 294; R. S. 52:19-29* to *35.*

[332] *P. L. 1933, c. 295; R. S. 52:24-1* to *10.*

[333] *P. L. 1933, c. 363; R. S. 52:23-1* to *15.* The Abell Commission report had advocated the submission of work programs to the proposed Finance Department for approval before any expenditure could be made (*op. cit., pp. 56* and *57*), and the Princeton Survey made a like recommendation (*op. cit., pp. 47* to *51*).

State Commissioner of Finance:

The intent of this last-mentioned statute was "to provide control by the Governor over State expenditures, to aid the several departments, boards, institutions, commissions, officers and other agencies of the State government to exercise greater restraint in the spending of money available for their uses through legislative appropriation by the adoption of a system of allotments." The ultimate purpose was "to provide complete legislative and executive control over every State expenditure." The new statute was not to apply to mandatory dedications from the State Highway Fund.[334]

The Commissioner of Finance, who is appointed by the Governor and serves at his pleasure, is charged with executing the provisions of the act "under the authority, direction, supervision and control of the Governor." It is his duty to cooperate with the State Budget Commissioner and furnish him with such information as he may request in connection with the compiling of the budget.

Under the statute, every spending agency of the State is required to file a work program for the ensuing fiscal year with the Commissioner. This program must include all appropriations made available to the spending agency and set out the allotments requested by it for the entire fiscal year, by quarters. The Commissioner reviews the requested allotments and revises such of them as he thinks necessary before giving his approval. A copy of the approved allotments is then sent to the spending agency as well as the Comptroller, who may thereupon warrant expenditures for payment on the basis of such allotments, and not otherwise. Should the Commissioner disapprove of any of the requested allotments, he notifies the spending agency and helps it set up its work program and allotments in satisfactory fashion.

The head of a spending agency may revise the work program of his department at the beginning of any quarter during the fiscal year, either because of changed conditions or for some other good reason. He then submits the revised program to the Commissioner with a formal request for a revision of the allotments for the remaining quarters of the fiscal year. The Commissioner follows the same procedure with this as in making the original allotment.

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[334] See *p. 196, supra,* for these mandatory dedications.

In order to provide for possible emergencies during the fiscal year, the Commissioner has the power, with the approval of the Governor, to require each spending agency to set aside a reserve in the amount he fixes, out of the total appropriated to it. During the fiscal year this reserve, or any portion of it, may be returned to the appropriation to which it belongs or be added to any one or more of the quarterly allotments, providing the Commissioner finds such action necessary.

Another provision of the statute requires that every purchase order or request for permission to spend must be forwarded to the Commissioner of Finance by the Comptroller after he has pre-audited it. If approved by the Commissioner, he forwards it to the State Purchase Commissioner in the case of the purchase of materials and supplies, or returns it to the Comptroller for payment when it is for other purposes, except that payrolls are sent to the Civil Service Commission.

Any request for inter- or intra-departmental transfers of appropriations or for allotments from any emergency fund must be sent to the Commissioner of Finance along with a revised work program and allotment request. He has forty-eight hours to consider such request and forward it with his approval or disapproval to the State House Commission, stating the reasons for his decision. The State House Commission then considers the request and his recommendations, and makes the latter public when it announces its disposition of the request.

Any spending agency aggrieved by the action or decision of the Commissioner of Finance, has the right to appeal to the Governor, and his ruling is final. However, the agency may again appeal to the Governor at the start of any quarterly allotment period for any change in the schedules set up by the Commissioner.

The 1933 statute has been described at some length because it represented a significant advance in State fiscal administration at the time. The Budget Act of 1931, as amended in 1933, sought to give New Jersey a modern budget system. The act creating the office of State Commissioner of Finance was the natural complement of that statute, and provided the machinery and method for the execution of the budget. Together, these two laws gave the Governor a large measure of control over budgeting and expenditures by State agencies. The State Budget Commissioner and the State Finance Commissioner were his chief fiscal aides in the accomplishment of that purpose.

The Highway Department claimed to be exempt from the obligation to submit detailed work programs to the Commissioner of Finance from the very start. This was done on the advice of the present General Solicitor who told the Highway Commission, and in 1935 the Highway Commissioner, that the Department need not file work programs with the Commissioner of Finance.[335]

The filing of work programs and quarterly allotment requests became quite an issue between the Commissioner of Finance and the Department, particularly during the term when Bernard Lamb filled that office and insisted that the statute be obeyed. The Highway Department has filed only one work program with the Commissioner (in 1940), and that has been described as in the nature of an "experiment."

In more recent days the argument advanced by the Department has been that it is impractical to file a work program and allotment requests. The requirement might be suited for other administrative and executive agencies whose work proceeds on a fairly even and predictable level. But in the case of highway work complicating factors enter. The construction program is often revised; certain highway projects may be dropped or added, or the construction contracts changed. There are always contracts that carry over into the next calendar year. Balances, too, are carried forward. The entire fiscal and engineering set-up is a complex, variable one.

The answer of the Commissioner of Finance is that other agencies with similar problems, some of them just as complex, have found no difficulty in complying with the statutory requirement. In fact, they have found the arrangement eminently satisfactory. Moreover, the pro-

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[335] See Glickenhaus hearing, *op. cit., pp. 41* to *45*. The General Solicitor stated that he had prepared an opinion to that effect which was signed by the Attorney-General. The argument was that the Budget Act (*R. S. 52:22-20 (e)*) required the Highway Department to make quarterly reports of its finances and progress directly to the Governor. It was inconsistent, therefore, to require the Department to file work programs with the Commissioner of Finance, who was merely a subordinate of the Governor. There was the additional argument that the Commissioner of Finance, in reviewing the work programs filed with him, might disapprove that which the Governor had already approved in passing on the annual program which the Department was obliged to submit to him on or before October 15 of each year.

Similar was the claim made by the Department in 1932 that it was exempt from the provisions of the 1931 Budget Act (*P. L. 1931, c. 142, s. 16*) giving the Governor power to prohibit and enjoin any expenditure deemed not in the best interests of the State. The Attorney-General stated that this section applied only to the purchase of goods and chattels, thus cutting down the Governor's control over most of the Department's expenditures. Princeton Survey report, *op. cit., pp. 51* and *52*.

vision of the law authorizing revisions in the work program and allotments at the beginning of any quarter during the fiscal year, permits of maximum flexibility and adjustment.

In enjoining further expenditures from appropriations to the State Highway Department under Executive Order No. 1, Governor Edison called attention to the fact that the Department had continually refused to file work programs, thus "making impossible adequate executive control over the tremendous expenditures of said Department." The first condition imposed by him on the Department was that it forthwith file detailed work programs with the Commissioner of Finance "setting out allotments by quarters commencing July 1, 1941, covering all unexpended balances and uncommitted funds * * *."[336]

It took this executive order to get the Department to do what it should have been doing for the past eight years. The opinion held in many quarters is that the Department violated the express intent and purpose of the statute by resorting to a rather fine, legalistic interpretation of the act.[337] If it is determined that the law must be amended so as to make it clear beyond quibble that the Highway Department is no different from any other State agency, the amendment should be introduced and passed as quickly as possible.

There is no real reason why the Highway Department should be allowed to remain outside the Commissioner of Finance Act. No departmental budget ought to be self-executing. Control over expenditures was the moving idea behind the act; so large a State agency should not be free from that control. Admittedly the filing of a work program and quarterly allotment requests by the Highway Department will not be the relatively simple thing that it is in the case of, say, the State Library or the Department of Weights and Measures. The difficulties are not insurmountable, however, or so great as to interfere seriously with the orderly administration of the day-by-day work of the Department. And under the statute the Department is assured of the fullest cooperation of the Commissioner of Finance in ironing out any problems that may arise and in keeping its program flexible.

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[336] See Appendix A.

[337] Section 1 of the 1933 act (now *R. S. 52:23-1*) specifically referred to the statute dealing with highway funds, *R. S. 52:22-20*. Section 4 (now *R. S. 52:23-5*) directs the Commissioner of Finance to require "each department * * *" to file a work program with him.

State Comptroller:

The Comptroller, like the State Treasurer and State Auditor, is elected by the Senate and General Assembly in joint session.[338] These officers are the chief agents of the Legislature in controlling State finances.

After the State Highway Fund Appropriation Act has been passed, the Comptroller sets up the several Highway Department requisition accounts on his books. These accounts correspond to the appropriation items found in the act. It might be noted that if the Department followed the provisions of the Commissioner of Finance Act, the Comptroller would set up these requisition accounts in accordance with the quarterly allotments approved by the Commissioner, as he does in the case of all other State agencies. However, since the Department has claimed to be exempt from the requirements of that statute, the Comptroller sets up the departmental accounts once a year, directly after the Legislature has acted on the highway appropriations.

All claims against the Highway Department, whether for contract work; equipment, materials, or supplies sold; expense accounts, or otherwise, are presented on a regular bill form prescribed by the Comptroller.[339] Each bill indicates the requisition account under which the indebtedness was incurred. The bills are first audited by the Auditors in the respective Divisions of the Department that incurred the indebtedness. After being approved by the Division heads, the bills pass on to the central Auditing and Accounting Bureau where they are preaudited by the staff of Auditors assisting the Chief Auditor and Accountant, and charged against the appropriate projects and accounts by the cost accounting staff. Each bill is posted in the bill register and then sent to the Chief Clerk, who is the Approval Officer of the Department, for his signature.[340]

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[338] *Constitution of the State of New Jersey, Art. VII, s. 2, par. 2,* as to the Comptroller and Treasurer, and *R. S. 52:24-2,* as to the Auditor.

[339] *R. S. 52:19-21.*

[340] *R. S. 52:19-21,* which refers to *R. S. 52:18-28,* directing that no moneys shall be drawn from the State treasury to pay salaries and expenses of State employees or to defray the expenses of a department or other agency, or official of the State, or for or on account of a contract for building or for repairs or supplies, except upon bills presented to the Comptroller, approved, in the case of a department, by its head or by a person designated by him.

The statute requires the Comptroller to examine, audit, adjust and settle all accounts due to or presented against the State, and certify the amounts adjusted or allowed to the State Treasurer for receipt and payment.[341] All Highway Department bills are pre-audited by a single Auditor in the Comptroller's office. The amounts of the bills are charged against the respective requisition accounts of the Highway Department.

The 1933 act referred to above created and established a Division of Accounting in the Comptroller's office which replaced the Accounting Division of the Department of Accounting and Auditing set up in 1930.[342] The Comptroller is charged with carrying out the provisions of this act, and has the responsibility of prescribing and enforcing the form, manner and content of the accounts to be kept by each accounting agency, and of the accounting reports and statements to be rendered to him with respect thereto.[343] The Highway Department, like other State agencies, must submit a monthly report to the Comptroller, showing the complete cash receipts and disbursements for the preceding month, the outstanding balances of accounts receivable and payable, and such other information as the Comptroller may require. These monthly reports are in addition to any other reports or statements that the Comptroller may call for.

Special mention should be made at this point of the excellent system of accounts and financial records maintained by the Chief Auditor and Accountant. They are unusually complete and are in such shape that it is possible to get any desired information concerning the financial status of the Department, or of any project or program, quite readily. The system of cost and financial accounts set up by the Chief Auditor and Accountant are the result of his recognized ability and long experience in the field of highway accounting. The accounting forms and methods introduced by him have been used as models by other highway departments. They serve as an efficient and effective check on every phase of highway finances.

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[341] *R. S. 52:19-11* and *22.*

[342] *R. S. 52:19-29 to 35.* See *p. 203, supra.*

[343] The Comptroller is also required to maintain a complete set of double-entry accounts in the Division of Accounting, reflecting directly or through proper controlling accounts, on an accrual basis, all assets, liabilities, revenues and expenditures of the State and all of its accounting agencies. *R. S. 52:19-33.*

No criticism can be addressed to the quality of the accounting work now carried on by the Bureau of Auditing and Accounting. However, the question arises whether the general accounting control over highway expenditures should continue in the Highway Department.[343a] Such an arrangement is inconsistent with the idea of a central accounting office for the State government and is another of the several factors that have contributed to making the Department a self-contained, independent agency. Under the existing State fiscal system, the general accounting work of the Highway Department properly belongs in the Division of Accounting under the jurisdiction of the Comptroller. The carrying out of this recommendation would involve the transfer of the several Division Auditors of the highway organization to the Division of Accounting. The cost accounting work now carried on by the Bureau of Auditing and Accounting of the Department would remain where it is.

The payrolls for salaried employees are prepared by the Assistant to the Chief Clerk on the basis of reports sent to that office by the various Divisions. The payrolls pass through the Bureau of Auditing and Accounting, and then over the desk of the Chief Clerk for his signature as Approval Officer. Following this, they go to the Civil Service Commission for checking and then to the Comptroller. In the case of hourly basis employees, payrolls are prepared in the various Division offices and go to the Bureau of Auditing and Accounting where they are checked against the daily time reports and checks drawn on the Labor Payroll Fund. These checks are signed by the Chief Clerk as Custodian of the Fund[344] after the payrolls have been checked by the Civil Service Commission. The hourly payroll schedules, approved by the Chief Clerk, are sent to the Comptroller who audits them and then sees to it that the Labor Payroll Fund (a $50,000 revolving fund) is reimbursed.

Because of Executive Order No. 1, all bills, payrolls, expense accounts, etc., now also require the approval of the Commissioner of Finance. Bills go to him before passing on to the Comptroller, and payrolls before they are sent to the Civil Service Commission.

[343a] *Cf.*, Abell Commission report, *op. cit., p. 265.*

[344] Appointed pursuant to *R. S. 27:11-3.*

The Comptroller is required to countersign and register all checks drawn by the Treasurer.[345] (In practice, these checks are drawn by the Comptroller, signed by him and then by the Treasurer.) The checks are sent to the Bureau of Auditing and Accounting, where their dates and amounts are noted in the bill register opposite the respective bill entries. The Chief Auditor and Accountant then forwards the checks to the creditors.

The Comptroller is also charged with superintending the collection of the State revenues.[346] The Highway Department receives various sums of money from time to time for permits issued, sales of excess condemned property, payments for damage to highway equipment or structures, and the like. The Chief Clerk deposits these receipts in a special bank ("suspense") account. By law he is required to report them to the Comptroller in detail and pay the moneys into the State treasury not later than the tenth of the month following the month during which they were collected or received.[347] This is done quite regularly; a check is drawn on the special account payable to the Treasurer and is sent to the Comptroller, along with an accompanying schedule indicating the various receipts making up the total of the check. The Comptroller must countersign all receipts for money paid to the Treasurer.[345]

The State Highway Commissioner makes a full financial report to the Comptroller on June 30 and December 31 of each year, pursuant to statute, showing the available unexpended balances in the several accounts, and all outstanding liabilities under contracts or other financial obligations to counties, municipalities and persons.[348]

In 1941 the Legislature appropriated $3,000 from the State Highway Fund to the General State Fund for salaries in the State Comptroller's office.

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[345] *R. S. 52:19-12.*

[346] *R. S. 52:19-10.*

[347] *R. S. 52:19-17* and *52:18-29.* In the case of money received in payment of damage done to highway equipment or structures necessitating repair or replacement, the Department retains the amount necessary to pay for this work. The records of the Comptroller and of the Department show both the expenditure and the payment.

[348] *R. S. 27:1-11.*

State Treasurer:

The State Treasurer pays, on the warrant of the Comptroller, all bills of the Highway Department which have been duly certified by the Comptroller according to the provisions of the law.[349] As stated above, no money may be drawn from the State treasury to pay the salaries and expenses of highway officers and employees, or to defray the expenses of the Department, or for or on account of a contract for building or for repairs or supplies, except on bills presented to the Comptroller approved by the Approval Officer (Chief Clerk) of the Department.[350] All checks must be signed by the Treasurer and countersigned by the Comptroller.[351] Moneys collected by the Department are turned over to the Treasurer by the Chief Clerk on the tenth of the month following the month during which they were received, and the receipt for such moneys must likewise be signed by the Comptroller and Treasurer.[352] The Treasurer keeps his accounts on a cash basis.

State Auditor:

The office of State Auditor was established by the Legislature in 1933,[353] and the employees holding positions in the former Department of Accounting and Auditing (created in 1930) and assigned to State auditing work were transferred to his jurisdiction. The State Auditor is required "to examine and audit all the accounts, reports and statements and make independent verifications of all assets, liabilities, revenues and expenditures" of the Highway Department. The officers and employees of the Department are enjoined to assist the State Auditor, when and as he requires, in order to help him carry out the provisions of the act. Under the statute, the State Auditor must make a written report to the Governor of any special condition disclosed by his audit of the Department at least once in every two years.

There has never been a complete post-audit of the Highway Department, either in the period preceding the creation of the State Auditor's

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[349] *R. S. 52:19-28.*

[350] *R. S. 52:18-28.*

[351] *R. S. 52:18-20.*

[352] *R. S. 52:18-29* and *52:19-12.*

[353] *P. L. 1933, c. 295; R. S. 52:24-1* to *10.*

office[354] or since. In 1938 the State Auditor made a brief, partial audit to determine the actual amount of unexpended and uncommitted balances of the Department, pursuant to a resolution of the General Assembly.

One does not have to look very far for the reason for this failure to post-audit the Department. The State Auditor has a staff of only twenty-one active Auditors and Supervisors to carry out the duties assigned him. He reports that it is impossible to do more than post-audit departments where there has been a change of head, or where a special audit has been requested. As a matter of record, there were only seventeen men on his staff until a year or so ago.

A complete post-audit of the Highway Department should be carried out regularly, certainly at least once every two years. It is not enough to depend upon the reconciliation of the Comptroller's records with the Department's records, as is presently done. That is not a true post-audit, and certainly not within the intendment of the statute.

As long as the law creating the office of the State Auditor and defining his powers and duties remains on the books, the Legislature should give the State Auditor the man-power and means to do the job it has assigned to him. Post-audits are sound business practice, in State government as in private enterprise. It is recommended that a full and complete post-audit of the books and accounts of the Highway Department be made by the State Auditor at least once every two years.[355]

State House Commission:

The act of 1931, referred to above,[356] revised the personnel, powers and duties of the State House Commission. The membership of the Commission was enlarged to include, in addition to the Governor, Treasurer and Comptroller, the chairmen of the Senate Appropriation and House of Assembly Appropriation Committees. The power of the

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[354] *Minutes of the Abell Commission, op. cit.;* minutes of September 9, 1930, *pp. 36* and *37.*

[355] Under the statute, *R. S. 52:24-9,* no State department or agency may employ auditors for auditing its books and accounts, but must rely entirely on the State Auditor to perform that duty unless the Governor and the State Auditor give their written permission so to do.

[356] *P. L. 1931, c. 184; R. S. 52:20-1* to *23.*

former Commission over allotments from the State Emergency Fund[357] and the intra-departmental transfer of appropriations was continued in the new body. The concurrence of four of the members is necessary to the validity of all acts of the State House Commission, but allotments from the Emergency Fund require unanimous consent.

The Commission has custody of the State House and all State buildings. It therefore controls the amount of space available for Highway Department use. The inadequacy of the quarters presently occupied by the Department has already been commented upon.[358] In 1941 the Legislature appropriated $20,000 from the State Highway Fund to the General State Fund for maintenance expenditures of the State House Commission. This is in effect a rental charge for quarters in the State House Annex which the Department helped build through an appropriation of $500,000.

The Department has made no requests to the State House Commission for any allotments from the State Emergency Fund. It has, however, requested intra-departmental transfers of appropriations from time to time, as need arose.[359] Such requests are referred to the State Finance Commissioner who must approve or disapprove of the same within forty-eight hours, stating his reasons.[360] The Department has

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[357] The State Emergency Fund was established in order to enable the State House Commission to meet any condition of emergency or contingency. It was inaugurated in 1916, the intention of the Legislature, as stated in the Budget Act of that year (*P. L. 1916, c. 5, s. 13*) being that no supplemental, deficiency or incidental bill would thereafter be considered, but that this emergency item should take care of such matters. The Legislature soon departed from its own program. The State House Commission has in the past made allotments from the fund which could by no standard be considered emergencies, and the Legislature has passed many supplemental appropriation bills. The Princeton Survey called attention to this practice and recommended that the Emergency Fund be abolished (*op. cit., pp. 50* and *51*). The Emergency Fund used to vary from $200,000 to $350,000; in recent years the appropriation to the fund has been $25,000.

[358] See *pp. 31* to *33, supra.* The State House Commission also has charge of the erection of any new buildings and the substantial alteration or enlargement of existing buildings, used or to be used by the State or any of its departments or agencies for office purposes *in the City of Trenton.* It may not incur any obligations for such work until the proposed new building, alteration or enlargement has been submitted to the Legislature with the estimated cost thereof and such other details as will fully inform the Legislature of the proposed improvement, and both Houses of the Legislature have concurred therein (*R. S. 52:20-14*). This statutory provision was the direct result of the Abell Commission hearings, one of whose prime purposes was to investigate alleged irregularities in the construction of the State House Annex.

[359] See *p. 200, supra.*

[360] See *p. 205, supra.*

also adopted the policy of getting the Commission's approval for any new project not included in the construction program and alternate program submitted and approved by the Governor.

It would seem that the fiscal officer to whom such requests for transfers of appropriations and approval of new projects ought to be addressed is the Commissioner of Finance. He is charged with controlling expenditures, and has an intimate knowledge of the affairs of the Department. It is recommended that the authority to approve of intra-departmental transfers and new construction projects be given to the Commissioner of Finance.

Such, then, are the more important relationships existing between the Highway Department and the major fiscal State agencies. It has been necessary to discuss the entire subject in the light of the present fiscal organization of the State. This organization has obvious weaknesses which have been pointed out not only in the course of the Abell Commission and Princeton Survey studies, but by others. The latest study is that completed by the Department of Governmental Research of the New Jersey State Chamber of Commerce which touches upon some of the observations and suggestions made in the past and outlines a workable plan for the future.[361] This study is summarized here because it has an important bearing on the fiscal administration of the Highway Department.

The main defects in the present fiscal organization may be summarized as follows:

1. Lack of centralized responsibility—supervision over the *administration* of State fiscal affairs is now divided between the Governor and the Legislature. There is little or no cooperation or coordination between the various State fiscal officers in the formulation or administration of the expenditure program.

2. Duplication and overlapping of functions—the Comptroller and Commissioner of Finance, for example, both preaudit State expenditures. The Commissioner of Finance and the State Purchase Commissioner both "price-audit" purchase orders. The Comptroller and the Treasurer are each required to keep complete accounts of State receipts and disbursements.

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[361] *A Plan for Reorganizing New Jersey State Fiscal Departments,* (Newark, 1941), mimeograph report.

3. Confusing financial reports—the Comptroller, Treasurer and Commissioner of Finance each prepare a report showing the condition of the State's finances. It has been noted that the Treasurer keeps his accounts on a cash basis and the Comptroller reports the State's financial condition on an accrual basis. The Comptroller indicates that he is unable to present the State's finances as they affect the budget because the Highway Department operates on a calendar year basis while the rest of the State Government operates on a July 1-June 30 fiscal year basis.

A chart of the State fiscal organization shows that the Department of Finance, Budget Department, Tax Department and Purchasing Department are under the Governor, and are respectively headed by the Commissioner of Finance, Budget Commissioner, Tax Commissioner and Purchase Commissioner. The first two are appointed by and serve at the will of the Governor, and the last two are appointed by the Governor with the advice and consent of the Senate for fixed terms.[362] The Treasurer, Comptroller and State Auditor come under the Legislature, being appointed by the Senate and House of Assembly in joint session for fixed terms.

A study of recent administrative reorganizations in progressive States shows that they all follow certain fundamental principles. They make the chief executive directly responsible for financial planning and control; delegate the administrative responsibility to an official directly under the Governor's supervision; clarify financial procedures and eliminate all duplicating functions; provide for an audit review of the Governor's administration by a legislative appointee, and simplify and consolidate the financial reports of the State.

The plan proposed for reorganizing the State's fiscal departments envisages both executive and legislative control over State spending and finances. The Governor would appoint a Commissioner of Fiscal Control, with the advice and consent of the Senate, to hold office at the pleasure of the Governor. The Commissioner would be charged with preparation of the State budget, exercise of budgetary and financial control over State operations, maintenance of the central purchasing system, and revenue administration. He would, therefore, supervise and coordinate the activities of the following four Divisions:

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[362] *R. S. 52:25-7* for the State Purchases Commissioner, and *R. S. 54:1-3* for the State Tax Commissioner. The latter is in charge of the Inheritance Tax, Beverage Tax, Corporation Tax, Railroad Tax, Local Tax, Billboard Tax and Utility Tax Divisions.

1. Budget Division, headed by a Budget Director, whose main duties would be to prepare the State budget, approve quarterly allotments (work programs), and devise ways to increase the efficiency of general operations. The present Budget Commissioner would become Budget Director; thereafter he would be selected according to Civil Service rules and regulations.

2. Division of Accounting, headed by a Director of Accounts, whose duties would be to maintain control accounts, prescribe accounting systems for State departments and agencies, pre-audit receipts and expenditures, administer the quarterly allotment system and prepare payrolls. This Division would be the chief financial reporting office for the State. The Director would be selected hereafter according to Civil Service rules and regulations.

3. Division of Purchases, headed by a Director of Purchases, who would purchase for all State departments and agencies, and check requisitions and determine needs. He would handle the reclamation and disposal of property owned or acquired by the State. The present Purchase Commissioner would become Director of Purchases; thereafter he would be selected according to Civil Service rules and regulations.

4. Tax and Revenue Division, headed by the State Tax Commissioner, who would have the same duties that he now has, except that the Division would supervise and make detailed reports of all State revenues.

The Commissioner of Fiscal Control would also be charged with the property management and insurance functions of the State House Commission, as well as the approval of all intra-departmental transfers of appropriations.

The present offices of the Budget Commissioner, Purchase Commissioner and Tax Commissioner would thus come under the direct supervision of the Commissioner of Fiscal Control. The Division of Accounting under his supervision would take over the pre-audit accounting functions of the Comptroller, and the payroll functions of the Comptroller and Civil Service Commission; and the Director of Accounts would take charge of the administration of the work program and quarterly allotment system now the responsibility of the Commissioner of Finance. The Director of Purchases would take over the property reclamation and disposal activities now handled by the Commissioner of Finance.

The Legislature would, in addition to studying, amending and finally adopting the Governor's budget as prepared by the Budget Director under the supervision of the Commissioner of Fiscal Control, also exercise an over-all control of State spending and finances through the two constitutional officers which it appoints. The Comptroller would take over the duties now vested in the State Auditor, post-audit all State accounts, and render an annual audit report to the Legislature on the administration of the State's finances.[363a] He would retain all other duties now assigned to him and not transferred to the Divisions under the Commissioner of Fiscal Control. The State Treasurer's duties would remain as they are now, and he would continue as custodian of all State funds.

This plan assumes and absolutely requires as a condition precedent to achieving the best possible results, the establishing of a single fiscal year for all departments, a single General State Fund, and one State budget.

Such a plan meets all the fundamental requirements of a simplified modern and effective State fiscal system mentioned on page 216, above. Its benefits would permeate the whole State Government and would be reflected in the fiscal administration of every department. The High way Department would take its place with other agencies as an integral part of the State administration. It would have the same fiscal year as the rest of the State Government, receive its funds from the single State Fund which would be the repository for all State-purpose tax revenues and receipts, and have its needs budgeted along with those of the other State agencies.

The Department would be subject to the same overhead fiscal controls as the rest of the Government. The chief executive would have the effective and direct control over its planning and expenditures that should logically be his. And the Legislature, on its part, would have an adequate check on State spending and finances. The entire State fiscal picture, complex and beclouded as it has been until now, would be simplified and made clear.

[363a] A similar recommendation was made in the Abell Commission report, *op. cit., p. 44,* and the Princeton Survey report, *op. cit., p. 37.*

Highway Cost Allocation

Most of the funds for State highway construction and maintenance today come, as we have seen, from motor vehicle fees and the motor vehicle fuels tax. A large part of the cost of building and maintaining county and township roads is met by State Aid funds derived from the same source. This being so, it is appropriate to consider the important question of the proper allocation of highway costs.[363]

It is generally agreed that the cost of building and maintaining adequate systems of highways should be distributed in an equitable relation to the benefits derived.[364] Those benefiting from improved highways are: the traffic which uses the highways, the owners of adjacent property, and the general public. Some of the benefits enjoyed by each of these groups are capable of reasonably accurate measurement; others are more difficult to appraise because of their intangible nature and changing value. Particularly is this true of the benefits derived by the general public.

To assess highway costs in strict accordance with the benefits received by the respective groups would involve the State in a cumbersome, slow and very expensive procedure. The tendency in the United States has, therefore, been to allocate certain methods of taxation to different divisions of the governmental structure. These methods include the following:[365] (1) assessment of motor vehicles—license, inspection and registration fees, motor fuel taxes and, in some States, sales taxes on vehicles and automotive parts and supplies; (2) assessment of adjoining property—special assessments levied directly against the property; and (3) assessment of the general public—general property taxes and, less frequently, sales taxes, income and other taxes. The methods used vary from State to State, and have been modified in almost every State at one time or another.

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[363] In this connection, see Agg and Brindley, *op. cit., c. VIII* and *c. IX; Introduction to Highway Engineering,* by John H. Bateman (3rd ed., New York, 1939), *pp. 386* to *393;* Owen, *op. cit., Parts II* and *III; American Highway Policy,* by Charles L. Dearing (Washington, 1941), *pp. 158* to *175; Principles of Highway Administration and Finance, op. cit.*

[364] Bateman, *op. cit., pp. 386* and *387; Principles of Highway Administration and Finance, op. cit.,* "Distribution of Cost," *par. 1.*

[365] Bateman, *op. cit., p. 390.*

Careful study of the problem of distributing highway costs will show that its solution depends fundamentally upon the use that is made of the various highways. Highways may be grouped into four major classes:[366] (1) primary roads, comprising the Federal Aid and State systems and their extensions within municipalities; (2) secondary roads, comprising State Aid highways and principal county trunk highways; (3) purely local township roads; and (4) roads and streets within municipalities other than those which are extensions of Federal Aid or State roads. The first two groups are commonly known as general-use highways, and the last two as local-use roads.

The following principles adopted by the American Association of State Highway Officials relative to highway financing represent the weight of official opinion in the United States and, in a general way, the views held by many of the leading authorities on highway economics:[367]

> 1. Primary roads should be financed insofar as possible from State funds derived from motor vehicle fees and motor fuel taxes, and from Federal Aid funds. Where these funds are sufficient to finance the primary roads without undue burden to the individual motorist, there should be no local tax funds or special assessment funds used on such roads except, possibly, to pay for the excess surface width on streets which constitute primary road extensions within municipalities.
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> 2. Secondary roads should be financed largely by local revenues derived from local general tax levies, but a part of the State motor fuel tax funds and some of the Federal Aid funds may properly be used on these roads based on the traffic which they serve.
>
> 3. Roads of a purely local nature serving only local needs should be financed by funds derived from local general tax revenues. Special assessments on adjoining lands to pay for part of the cost of such roads may be justified.
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> 4. Municipal roads or streets should be financed by local taxes or by special assessments on adjoining property.

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[366] *Principles of Highway Administration and Finance, op. cit.,* "Classification of Highdays"; and see Owen, *op. cit., p. 41.*

[367] *Principles of Highway Administration and Finance, op. cit.,* "General Principles"; Bateman, *op. cit., p. 392;* Agg and Brindley, *op. cit., p. 171;* Dearing, *op. cit., pp. 158* to *162.*

5. There are special benefits which result from extraordinary highway improvements in congested districts which may properly be financed, at least in part, by the formation of improvement districts with special assessments. Such cases should be distinguished from those where the proposed improvement may result in damage rather than benefit to adjacent property. This principal is limited to conditions that are not normal or average, and does not apply to rural districts.

Thus, the major financial responsibility for the support of general-use roads is assigned to motor vehicle users, while local-use roads become the responsibility of local taxpayers. It should be noted that highway policy in New Jersey accords with the first and fourth of these principles. However. in the case of secondary roads, the tendency has been to pay an increasingly larger share of their cost out of State Aid funds. State Aid funds are also going into roads of a purely local character. In these two respects, New Jersey highway policy represents a definite departure from the second and third principles outlined above, and should accordingly be reexamined and redefined.

Although general-use highways form a relatively small part of the total road mileage of the State, they absorb a large portion of the total expenditures for roads because of their necessarily superior development. The distribution of this cost in an equitable manner calls for a comprehensive review and analysis of the entire problem. The most that can be done here is to indicate the main outlines of the subject.

It should be noted that the State-Wide Highway Planning Survey now under way in this State will be of inestimable help in any consideration of the fair apportionment of highway costs. The road inventory, financial survey and traffic survey making up that study should be the starting point of any investigation of highway financing in New Jersey.[368]

In the last analysis, "every vehicle must bear two charges for road construction and maintenance. The one is called a 'readiness to serve' charge, for the particular road facilities needed; the other is called a 'use' charge for the extent to which the vehicle is driven".[369]

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[368] See *p. 79, supra,* for a brief description of the contents of this survey, and *pp. 363* to *365* for a detailed discussion.

[369] Owen, *op. cit., p. 53.*

The wide variations in types of motor vehicles and the intensiveness of their use of the highways must be recognized in considering the "readiness to serve" charge.[370] In New Jersey this charge takes the form of a registration fee based on rated horsepower in the case of passenger motor vehicles,[371] carrying capacity in the case of omnibuses,[372] and on the gross weight of the vehicle when loaded to its carrying capacity, in the case of automotive commercial vehicles, tractors, trailers and semitrailers.[373]. Registration fees were first levied in 1921 and have not been revised since 1934, when the Motor Vehicle Act was last amended in this respect.[374]

These fees have the virtue of being simple to administer, but they can hardly claim to be more than a rough approximation to scientific accuracy in allocating the "readiness to serve" charge. They were levied at a time when there was only a limited amount of information available as to how highway costs might be distributed equitably and accurately to each type of vehicle. The extensive research carried on in this field during the past decade, and the mass of significant data being accumulated daily in the course of road studies going on in every part of the United States, provide the basis for a revision of the entire system of motor vehicle fees.

The very statement of the shifting basis that is used for determining the fee to be charged for passenger automobiles, omnibuses, and

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[370] Dearing, *op. cit., p. 163.*

[371] *R. S. 39:3-8.* The fee is forty cents per horsepower or the major fraction thereof for the rated horsepower of a passenger motor vehicle, up to and including vehicles of a 29 horsepower rating, and fifty cents per horsepower or the major fraction thereof for all such vehicles having a rating of 30 horsepower or more. A fee of $2 is charged for motorcycles (*R. S. 39:3-21*). No fee is charged for motor vehicles not used for pleasure or hire, owned by the United States, the State of New Jersey, a municipality or county, duly authorized voluntary fire department, hospital, humane society, an anticruelty society of New Jersey, or the American Red Cross (*R. S. 39:3-27*).

[372] *R. S. 39:3-19.* The fee is $15 for each omnibus having a carrying capacity of five passengers or less, and increases until a charge of $40 is made for a vehicle having a carrying capacity of 27 to 30 passengers. The fee is $40 for every omnibus with a capacity in excess of 30 passengers, with an additional charge of $2 for each passenger, measured by carrying capacity in excess of 30 passengers.

[373] *R. S. 39:3-20.* The fees vary from $10 for a gross weight of 1000 pounds or less, to $99 for a gross weight of 29,001 to 30,000 pounds. After 5000 pounds the fee increases $3 for every 1000 pounds. Farmers pay one-half the registration fee for trucks (*R. S. 39:3-25*). A flat fee of $3 is charged for farm tractors and traction equipment used for farm operation, and for traction or tractor well-drill machines or well-drilling equipment. (*R. S. 39:3-24* and *26*).

[374] *P. L. 1921, c. 208; P. L. 1934, c. 123.*

commercial vehicles like trucks and trailers, indicates the unreasonableness and inequity of the present system of motor vehicle user taxes. Legislation has lagged behind research. Neither rated horsepower, nor carrying capacity, nor gross weight is alone a proper measure for assessing motor vehicle fees.[375] If one consider the problem solely from the point of view of the force exerted on the pavement by the vehicle, for example, then it is the maximum wheel load and not the gross weight of the truck when loaded to capacity, that should be used as the basis of the charge. Even the wheel load is only a rough measure of the force exerted on the road. "The real pressure upon the road is not a static weight, but the push of the wheel while it moves—the impact force. And this impact varies with the wheel load, speed of vehicle, type of road, and tire equipment, increasing with speed, up to fifty miles per hour, and being less for the same static loads if balloon or pneumatic tires are used instead of solid rubber, or if the road is smooth".[376]

New Jersey has followed the policy of providing roads that will permit of the free flow of all vehicles, even though they vary, within limits, in speed, weight and dimensions, rather than exclude the different types altogether or require them to use inadequate roads.[377] In consequence of this modern policy of "providing general purpose facilities designed to permit an optimum flow of traffic composed of heterogeneous units, a joint-cost problem is encountered in the distribution of the tax burden".[378]

A certain portion of the total cost of furnishing these facilities should be shared by all vehicles equally, regardless of the extent of their use of the highways. Highway administration costs, the costs incurred for acquiring right-of-way, constructing bridges, preparing the sub-grade and to some extent provision for surfacing, are largely independent of the type and volume of traffic up to the point where

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[375] *Cf.*, Owen, *op. cit., pp. 78* to *80.*

[376] *Ibid., p. 52.*

[377] Restrictions on the dimensions and weight of commercial motor vehicles, tractors, trailers and semitrailers are imposed by *R. S. 39:3-84.* Passenger and commercial vehicles must be equipped with rubber tires in such condition as not to be likely to cause damage to the highways (*R. S. 39:3-23* and *80*). *R. S. 39:3-83* fixes the gross wheel load for various size solid and pneumatic tires for commercial motor vehicles, trailers and tractors. Rates of speed are fixed by *R. S. 39:4-98.*

[378] Dearing, *op. cit., p. 164.*

congestion or the character of the vehicles "forces either superior design or the provision of additional facilities".[378] It is also clear that "there are certain minimum requirements in road quality due to vehicle speed, weather, topography and safety".[379] A basic fee may properly be charged to all motor vehicles in order to meet this minimum cost.

Certain vehicles, however, require road qualities above the minimum. Extra costs must be incurred by the State in order to provide roads capable of accomodating vehicles possessing certain characteristics, measured by their gross weight,[380] wheel load,[381] length, width and height.[382]

Another interesting aspect of the problem of properly distributing the cost of general-use roads is posed by Dearing in his recent work, *American Highway Policy*. He calls attention to the fact that the presence of heavier vehicles, such as buses, trucks, and tractor and trailer combinations, on the road lowers the general standard of highway mobility and convenience.[383] This "factor of differential road

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[379] Owen, *op. cit., p. 63.*

[380] By relating the registration fee charged for trucks, trailers and tractors to their gross weight when loaded to capacity, New Jersey has clearly taken the view that increased weight puts the State to proportionately greater expense in providing facilities capable of accommodating these heavier vehicles.

[381] Owen, *op. cit.,* uses wheel load as a basis for cost allocation. Arguing that "different types of vehicles, because they require different road facilities, may be held responsible for specific highway costs," he develops a formula for allocating highway costs in accordance with this principle. He states that "Such alterations as are introduced by desirability factors and extra charges for using the highway as a place of business have no significance in accurate cost allocation. Highway costs are not more because a certain automobile is used for business purposes, or because trucks are 'undesirable'." *Pp. 64* to *67*, and see particularly, Table V on *p. 65.*

See, also, *Princeton Survey of New Jersey Finance,* Public Interest (Folder) Series No. 7 (Princeton, 1940), issued by the School of Public and International Affairs of Princeton University, which proposes a method of cost allocation ranging from $6 to $700 for various types of vehicles, based on wheel load.

[382] Dearing, *op. cit., p. 165,* notes that there is a split in engineering opinion on the question of these incremental costs. "From the technical standpoint of highway design, gross weight has significance with reference to bridge capacity; wheel or axle load to impact on pavement; width, height, and length to pavement width, road curvature, and clearance of overhead structures." See *Public Aids to Transportation,* prepared by the Office of the Federal Coordinator of Transportation (Washington, 1940), *Vol. IV, p. 81, ff.,* for a discussion of the various views regarding the appropriate weighting of these physical factors.

[383] *Pp. 164* to *168. Cf.,* Owen, *op. cit., p. 59,* who takes the view that trucks and buses should not be made to pay for the extra width of highways. In the eight years since his book was written, the use of highways by local and interstate trucks and buses, especially in New Jersey, has increased rapidly. Vehicles have become larger and heavier. Problems of reduced grades, wider roads, improved alignment, and additional facilities capable of handling these vehicles or even of segregating them from the normal flow of traffic, have become increasingly important.

occupancy", as he terms it, has thus far received little recognition in highway administration and tax policy, probably because the movement of motor vehicles "has not long been so rapid as to require special consideration, and also that in the pioneer phase of road building, from which we have only just emerged, the paramount need of a merely passable road surface prevented attention to what would have been considered excessive refinement of design".[384]

The effect of these bulky, slow-moving vehicles on the general flow of traffic, as Dearing points out, "has passed the stage where it can be dismissed merely as a nuisance factor". Not only do they cut down the speed of all traffic and make it almost impossible for the average highway user to realize the advantages that the road was designed to provide, but they create traffic hazards by tempting or forcing drivers into passing movements. Studies are now under way to determine the minimum speed which must be maintained under various conditions of grade and traffic volume in order to prevent this congestion. Once this minimum standard has been determined for a particular State or region, three lines of action are possible: (1) excluding vehicles that cannot meet the standard, (2) redesigning the highway, or (3) exacting a user charge from vehicles that occasion unusual road conditions.[385]

Serious consideration may well be given by taxing authorities to the possibility of dealing with the problem of differential road occupancy through user fees. The highway engineers can address themselves to the question of the need and advisability of redesigning the roads.

The second charge levied on motor vehicle users is that imposed for the amount of use which each vehicle makes of the highway facilities. The motor vehicle fuels tax has found universal acceptance as a "use" charge.[386] Although the proper assessment of the "readiness

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[384] "Utilization of the Planning Survey," by H. S. Fairbank, *Proceedings of the Twenty-Fourth Annual Highway Conference, 1938, p. 103.*

[385] Dearing, *op. cit., p. 168.*

[386] The tax was first introduced in Oregon in 1917. Within ten years every State had enacted a similar law. Its popularity may be attributed to the fact that it is easy to collect, it has not proved burdensome to consumers, it has provided better roads for motorists, and, finally, because it is a very accurate measure of the use made of the roads. Owen, *op. cit., p. 84.*

to serve" tax (motor vehicle fees) presents certain problems requiring very careful study, there is little difficulty about the assessment of the gasoline tax. It has the three characteristics which every good tax should have: equity, simplicity and adaptability. It is easy to collect. Its scientific basis is sound. It is an excellent measure of road use.[387] It may be considered "as a device for measuring the dynamic factors of highway occupancy".[388]

The only controversies that have arisen over the gasoline tax have been those regarding the amount of the tax and its distribution (the "diversion" argument). Although the cost of collecting the tax has been relatively low, authorities here as well as throughout the nation have been faced by the ever-present problem of tax evasion. This problem is closely connected with the practice of granting refunds.[389]

There can be no doubt that the refund privilege has been abused—to what extent one can only guess. New Jersey now allows refunds in the case of eighteen different uses of motor fuels.[390] The list has gradually been lengthened through the years. The increase in the amount of refunds has resulted from the greater use of motor fuels on the farm, the fact that more and more people are constantly becoming familiar with the refund privilege, and the making of false reports concerning the uses to which the motor fuels are to be put.[389]

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[387] *Ibid., pp. 86* and *87.* Owen restates the arguments in support of this statement: (1) the gasoline tax automatically taxes vehicles according to mileage travelled; (2) out-of-State vehicles contribute toward road costs within the State; (3) heavy vehicles consume more gasoline per mile, and hence pay a higher tax than light vehicles; (4) high speed, causing greater road impacts, requires more gasoline consumption; (5) where there is heavy volume of traffic, and hence increased road costs, the congestion which results in slow driving and frequent stopping and starting, will increase gasoline consumption, thereby making more taxes available for the extra road costs.

[388] Dearing, *op. cit., p. 162.* "However [the gasoline tax] is not capable of exacting from all vehicles, irrespective of relative use, an appropriate contribution to the fixed capital costs of providing a standard highway. Nor does it constitute a satisfactory method of dealing with the extra-cost problem that arises from the differences among vehicles in their physical relationship to the road" (*p. 163*). These costs can only be met by levying a "readiness to serve" charge like the registration fee. *Cf.,* Owen, *op. cit., p. 92.*

[389] Owen, *op. cit., pp. 87* to *89.*

[390] *R. S. 54:39-66,* as amended by *P. L. 1940, c. 169.* These include fuels used for motor vehicles and boats owned by the State and its political subdivisions, farm machinery, aircraft, ambulances, rural free delivery carriers, vehicles running only on rails or tracks, vehicles operated exclusively on private property; motor boats and vessels used in the oyster trade in the tidal waters of the State, or for commercial fishing, or fishing parties; cleaning and dyeing; stationary machinery, heating and lighting devices, fuels exported or sold for export to any other State or country. See Princeton Survey report, *op. cit., pp. 100* to *102,* for a criticism of this system of refunds and recommendation that most of them be eliminated.

This brief discussion of the allocation of highway costs has indicated the need of reconsidering several important questions. Shall New Jersey continue to pay as much of the cost of secondary roads as she does under her present liberal State Aid policy? Should State funds be expended on roads of a purely local nature, as is now the practice?[391] Is the present unscientific, inequitable and dated system of motor vehicle registration fees to be allowed to stand? Ought there not to be a revision of the generous gasoline tax refund policy of the State?

It is recommended that the Legislature, in cooperation with the highway officials and tax authorities of the State, undertake a comprehensive study of these matters in order to recast the present highway fiscal policy and particularly to establish a system of highway cost allocation which will be equitable, simple and adaptable to all types of vehicles.

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[391] See *p. 527 ff., post,* for a different treatment of this question.

CHAPTER V

THE WORK OF THE NEW JERSEY STATE HIGHWAY DEPARTMENT

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The objectives of a State highway department are:

1. To construct, reconstruct, maintain, repair, light and equip the existing highway system and future additions thereto.

2. To conduct continuing planning surveys covering all phases of the highway system of the State from the administrative, engineering and financial points of view.

3. To carry on constant research into and the testing of materials used in construction and maintenance for the purpose of providing durable, safe, efficient and attractive roads and other structures at the lowest possible cost.

4. To provide the safest system of roads and bridges consistent with the speed and volume of modern transportation.

5. To landscape and otherwise beautify the highway system.

6. To keep the highways free and open at all times, especially from ice and snow, from encroachments, and from any other conditions which may endanger life or property.

7. To cooperate with the Federal Government in public works programs involving highways and highway structures.

8. To administer any grants-in-aid for highway purposes, whether received from the Federal Government or granted by the State to the counties and municipalities.

9. To maintain a central control and management of all plant and equipment owned or leased by the department.

10. To keep the public informed of highway programs and activities through appropriate and clearly understandable media.

Over 3200 persons comprise the New Jersey State highway organization engaged in carrying out these objectives. The details of this organization and the duties of the various engineering and non-engineering employees are set out at length in Chapter II. This chapter deals with certain important aspects of the work of the Department and sets forth recommendations concerning these functions.

ADMINISTRATION DIVISION

Chief Clerk and Secretary:

As the principal administrative aide to the State Highway Commissioner, the Chief Clerk and Secretary should logically be responsible for all administrative functions. He is not. Publicity and educational work, for example, are respectively entrusted to a publicity man and to the Engineer of Special Design attached to the office of the Commissioner. The Investigators who check on complaints and investigate the work of the employees in the field, also report to the Commissioner. Insurance is handled by the Commissioner, who also exercises a large measure of control over personnel administration.

Because of the great volume of detail and paper work which he is obliged to handle as Chief Clerk, Secretary, Approval Officer, and Custodian of the Labor Payroll Fund, the Chief Clerk has had little time for the more important task of studying and improving existing administrative practices.[392] He has been able to delegate only a part of the duties which devolve upon him. The result has been that important problems of administration have not had the attention which he otherwise might have given them. Administrative procedures have remained relatively static.

The Highway Commissioner has done no more to remedy this situation than did the Highway Commissions that preceded him. He did not grasp the opportunity of freeing the Chief Clerk from trammeling detail so that he could devote his energies to major administrative problems. The Commissioner has failed to recast the administrative functions of the Department so as to achieve a coordinated, efficient organization along the lines suggested in Chapter III.[393] The need for such reorganization is again emphasized. It should be effected as soon as possible.

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[392] The present Chief Clerk has held that office since 1914. The first State Highway Commission designated him Secretary to the Department in 1917. As Secretary he must, among other things, attend all meetings of the Commissioner, look after meeting schedules and minutes, and handle departmental correspondence. In 1918 he was designated Approval Officer for the Department, and as such must approve all bills, payrolls, etc. He has been Custodian of the Labor Payroll Fund since 1921, and hence must sign all labor payroll checks. See *pp. 47* and *48, supra.*

[393] See *pp. 156* and *157, supra.*

Chief Auditor and Accountant:

The relation of the Chief Clerk and Secretary to the Bureau of Auditing and Accounting under him is almost entirely nominal, his supervision over its work being of a very general nature. For the most part, he serves as a conduit for matters passing to and from the Chief Auditor and Accountant, such as bills, payrolls, contracts, reports, and the like.

The quality of the work done by the Bureau and the completeness of its records have already been commented upon. The major recommendations relating to the fiscal administration of the Department are set out in Chapter IV.

As chief fiscal officer of the Department, the Chief Auditor and Accountant must approve all bills, estimates, payrolls, etc., of the Department. He is logically the person to provide the responsible signature required by the Comptroller before he will honor a bill or payroll for payment.[393a] Under the present arrangement, the Chief Clerk is the designated Approval Officer for the Highway Department. This means waste motion and needless extra work for the Chief Clerk. It is recommended that the head of the proposed Finance Bureau, which will take over the duties of the Bureau of Auditing and Accounting, be the Approval Officer for the Department.

Since the Chief Auditor and Accountant is responsible for the preparation of the labor payroll, he should for similar reasons also be Custodian of the Labor Payroll Fund in place of the Chief Clerk.[393a] It is therefore recommended that the head of the proposed Finance Bureau be Custodian of the Labor Payroll Fund and sign the checks drawn thereon. In fact, he will be in charge of all payrolls under the proposed plan of reorganization.[393b]

Accounts Receivable:

As of December 31, 1941 there were $492,675.53 in accounts receivable on the books of the Department:[394] $9,893.30 due from State de-

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[393a] See *pp. 47, 48* and *208, supra.*

[393b] See *p. 156, supra,* and *p. 256, post.*

[394] *New Jersey State Highway Department Annual Report, 1941,* Auditing and Accounting Bureau, Schedules 37 to 37-N. Accounts receivable totalled $3,837,662.73 in 1934 and remained above the $3,000,000 mark until 1939, when they were reduced to $483,511.18, largely due to the settlement of a claim of $2,317,371.47 against the City of Newark in 1938 arising out of the right-of-way required for Route 21 through that city. *Annual Reports, 1934* to *1940,* Auditing and Accounting Bureau, "Accounts Receivable" schedules.

partments, $2,541.69 from counties and municipalities, $397,814.64 from public utilities and $82,425.90 from outside parties (representing mostly damage done by them to road structures). Many of these accounts are more than ten years old. A claim of $304,916.44 due from the Public Service Railway Company for work on the Hackensack River bridge dates back to May 1926. Two others for $51,711.89 and $40,061.31 due from the New Jersey and New York Railroad Co., were billed in 1931 and 1933, respectively. Accounts receivable are not included among the assets of the Highway Department, by ruling of the Attorney-General. Practically every account has been referred to him for collection. In view of the age of many of these claims, they ought to be settled promptly. In the future every effort should be made to collect or otherwise dispose of claims within one year after they have been billed by the Department.

Insurance:

The insurance carried by the Department on its plant, equipment and highway structures is placed by the Commissioner. Requests for specific coverage originate in the various offices and Divisions of the Department, and are accompanied by such information as is deemed pertinent. It is apparent that such a procedure results in each item of insurance being considered pretty much by itself. There is a lack of a systematic, scientific handling of the insurance problem as a whole, centered in one bureau or officer.[395]

A check of the insurance now carried by the Department shows that it enjoys a low premium rate on the larger policies because of keen competition among insurers for the business. A question which at once suggests itself, and one which seemingly has not been fully considered, is whether the Department ought not to be a self-insurer on some of its plant and equipment.[396] When careful study has given the answer to this query, there should be a determination of the exact present value (depreciated) of the property to be insured and how much coverage is advisable in each case. Such a reexamination may well result in a revision of the insurance presently carried, with attendant savings.

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[395] There has been some improvement in the handling of Department insurance since the promulgation of Executive Order No. 1, under which the Commissioner of Finance critically examines each policy. In one case, a double coverage of certain equipment was brought to light.

[396] The Department is a self-insurer on workmen's compensation.

Finally, the type of policy to be written in each case should be determined—its term, co-insurance clause, conditions, etc. The cooperation of Department officials, insurance companies and experts, and the staff of the Commissioner of Finance can easily be obtained in carrying out a comprehensive study of the insurance coverage of the Department.

Although the Chief Auditor and Accountant has most of the records and figures that would normally be referred to in determining the nature and amount of insurance needed in any particular situation, he was never consulted by the Commissioner in the placement of insurance until 1941, when he was called in on the policy covering the new Newark garage. As chief fiscal officer of the Department he is the logical person to handle all insurance, with the Commissioner giving his final approval or disapproval. It is recommended that insurance hereafter be made the responsibility of the Chief Auditor and Accountant, and that he make a thorough check of the policies carried by the Department with a view to obtaining maximum effective coverage at the lowest possible price where it is determined that the Department shall not be a self-insurer.

It is to be noted that in the recommended plan for reorganizing the Department, the insurance function is placed under the Finance Bureau.[397] The arrangement ultimately recommended, when the fiscal administration of the State has been revised, is that the chief State fiscal officer (the Commissioner of Fiscal Control in the plan proposed in Chapter IV) handle the insurance for all State agencies, including the Highway Department.[398]

Safety Education:

The Department has no program to educate the employees in methods that will reduce the incidence of damage to property and equipment. The value of such a program is clear. Less property damage means lower insurance premiums. A safety program of this type should be instituted. It can be combined with the health and welfare program for departmental employees mentioned hereafter.[399]

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[397] See *pp. 156* and *157, supra.*

[398] See *p. 217, supra.*

[399] See *p. 255, post.*

Prequalification of Bidders:

Excellent results have been obtained by the Department under its system of prequalifying bidders.[400] Before 1932, when the first group of prequalifications was adopted, the Department was burdened with enumerable claims filed by creditors against contractors. This took up a great deal of the time of the Chief Auditor and Accountant and his staff, and turned the Department into a collection agency. A concerted effort by departmental official, reputable contractors, and bonding companies to rid the highway field of incompetent and financially unsound contractors, eventually resulted in the system now used in prequalifying bidders. The present Contractors' Qualification Officer has done much of the work in setting up the regulations, forms and methods presently in force.

Each contractor must file a comprehensive statement every six months, or as often as the Commissioner deems advisable, setting out the details of his financial condition, as well as the equipment he owns and a record of his experience and past performance.[401] This is analyzed by the Contractors' Classification Officer whose recommendations are reviewed by a Prequalification Committee consisting of the Highway Engineer, Construction Engineer, General Solicitor, and Chief Auditor and Accountant. The committee classifies the prospective bidder according to the type of work (general construction, grading, paving, bridge construction, and special miscellaneous) and amount of work ($50,000 to unlimited amount) on which he may bid. The committee's recommendation goes to the Highway Commissioner who then makes an order establishing the contractor's classification and rating. The contractor is notified of the action taken, the date his classification and rating will expire, and when he must file a new prequalification questionnaire. A dissatisfied contractor may request a hearing before the State Highway Commissioner. In case of an unfavorable ruling he

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[400] *R. S. 52:35-1* to *12* controls the classification of bidders. See *pp. 49* and *52* for the duties of the Chief Auditor and Accountant and the Contractors' Qualification Officer in prequalifying bidders.

[401] The equipment statement has taken on an increased importance because of defense priorities. Unless prospective bidders have the equipment necessary for the job, it is extremely unlikely that they can obtain it elsewhere. Hence any award of contract to such bidders involves considerable risk.

may then appeal to the Board of Review established by statute.[402] There has been no appeal to the Board to date, although there have been appeals to the Commissioner for hearings.

No contractor may bid unless his prequalification statement has been on file with the Department at least twenty days. No statement may be more than six months old on the date on which he proposes to submit his bid. In addition to the regular prequalification questionnaire, the contractor must file a new statement whenever he actually bids. This is analyzed by the Contractors' Qualification Officer to determine whether the condition of the contractor has materially changed. He reports the results of his analysis to the Construction Engineer who considers the report before recommending the award of the contract by the Commissioner.

Just before a contractor's classification and rating expires he is notified of the approaching expiration. If no questionnaire is filed, the contractor is notified that his classification and rating has expired.

Regulations covering the classification of prospective bidders were formally adopted by the Highway Commissioner in accordance with the statute on February 7, 1936, effective April 1, 1936.[402a] The present prequalification procedure is systematic, accurate and fair. It has been faithfully adhered to with the result that the Department is no longer troubled by defaulting contractors and a swarm of lien claimants.

Personnel Administration:

The Highway Department has not given its full cooperation to the Civil Service authorities in carrying out the provisions of the Civil Service laws, rules and regulations. In fact, the Department has evaded and violated the law, in letter as well as in spirit. It has failed to set up an effective and responsible personnel administration. It has done almost nothing to establish modern personnel practices. Payroll procedure is not as efficient as it could be.

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[402] *R. S. 52:35-5* and *6.*

[402a] *Minutes of Meetings of the State Highway Commissioner,* minutes of February 7, 1936.

Politics has played a large part in the employment, retention and promotion of laborers, and has not been entirely absent in the case of a few salaried employees. Proper and effective use has not been made of the services of certain employees, while some have been kept on the payroll when the need for them has been questionable, to say the least.

No effort has been made to effect a reclassification of the entire departmental personnel, although the need for this step has been apparent for some time. Along with the reclassification would go such adjustments of salary as are necessary.

As a result of all this, Department morale has undoubtedly suffered, particularly among the younger employees and those in the lower salary brackets. This is beginning to show in the case of the men who are leaving the Department to work in defense industries. As the present war effort continues, more and more of the younger engineering personnel may be expected to be attracted to other fields. There is little to hold them to their present jobs except such tenure and seniority rights as they may have acquired.

It must be said at the very outset, however, that the personnel of the Department as a whole enjoys a fine reputation throughout the nation. The skill and ability of the Division heads and their staffs are outstanding. A great number of them have made State highway work a career. The average of their years in service is very high, that of the Division heads, for example, being 27 years. Their loyalty is beyond question. The interest which they show in their work and their devotion to the tasks at hand were readily apparent in the course of the many conferences preceding this report. Nonetheless, most of them are keenly aware of the deficiencies of the existing personnel policies of the Department. They especially recognize the need for a general reclassification and salary readjustment. Not a few expressed concern as to the effect that the delay in carrying out this revision may have on the morale of the younger men and their continuance in the service of the Department.

The increase in the number of highway employees and the departmental payroll is revealed by the following figures:[403]

Year	*Number of Employees*	*Amount of Payroll*
1931-32	2470	$3,981,676.96
1932-33	2206	3,342,579.69
1933-34	1914	2,674,552.94
1934-35	1968	2,783,540.04
1935-36	2080	3,004,738.71
1936-37	2193	3,257,124.72
1937-38	2371	3,861,350.81
1938-39	2769	4,549,969.97
1939-40	3073	4,948,000.39
1940-41	3287	5,223,930.36

The decade opened with the State highway program at its peak. The reduction in the number of employees in 1933-34 reflects the reorganization carried out by the new State Highway (Foran) Commission. There has been a steady increase in personnel since then.

This increase is out of proportion to the highway program as it has developed during recent years.[404] New construction is less than it was ten years ago. Reconstruction and improvements brought about by refinements in design do not explain the increase in salaried personnel. Nor do such new developments as landscape work and the program of the Electrical Division.[405] Maintenance work has increased, but not to such a degree as to require an average of 866 more men monthly in 1940 than in 1931.

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[403] *New Jersey Civil Service Commission Annual Report, 1940-1941,* Table XVI, *p. 85.* The figures are for the payrolls passing through the Civil Service Department. The following statistics taken from the annual reports of the Commission, show the average number of employees engaged on various projects as a measure of unemployment relief:

Year	*Number of Employees*	*Amount of Payroll*
1937-1938	47	$30,012.14
1938-1939	176	101,845.72
1939-1940	173	201,591.56
1940-1941	141	139,404.16

These are in addition to the regular employees noted in the text.

[404] See the statistics for construction work in progress during the decade, *p. 421, post,* and the schedule of maintenance expenditures, *p. 479, post.*

[405] The Highway Commissioner stated in a letter to the Governor's Highway Examiner, dated August 11, 1941: "It should be specifically mentioned that the creation and expansion of the electrical division, the development of a landscaping program, and our new twenty-four hour snow and ice patrol and safety program, all caused rather extensive additions to our personnel in both manual labor as well as operators of equipment." An analysis of these and other figures fails to account for the increase of 1200 in the number of employees since the Commissioner took office in 1935.

The chart on page 239 shows the increase in the number of salaried personnel and hourly basis employees for the ten-year period. The latter group includes laborers in the Maintenance, Electrical and Equipment Divisions.[406] The chart is based on two schedules prepared by the Highway Department showing the average number of each class of employees by semi-monthly pay periods.

There seems to be no need for the large number of employees now carried on the payrolls of the Department. The time has come for a careful reexamination of the personnel needs of the Department in order to effect an intelligent reduction.

There will be a radical contraction in the work of some of the Divisions because of the war. Many programs will have to be revised. The opportunity presents itself for a comprehensive and thorough study of all phases of the Department's personnel administration.

It is felt that a reduction in the number of employees is possible without jeopardizing the basic organization and the efficiency of the Department, or the quality of its performance. Although it was impossible to make a detailed study of departmental personnel, it would appear from what has already been indicated as well as observations made in the course of a four-month investigation of the Department, that the number of employees is excessive for the present highway program. Particularly is this so in the case of laborers.

There is, of course, no call for the arbitrary and obviously unfair sort of reduction in personnel that the Foran Commission made in 1933. What is required is a reevaluation of the programs of the several Divisions as well as of each job. Part-time employees and those who hold positions for which there is no real need, should be eliminated. There should be a coordination of functions wherever practical; the possibilities of a reduction in personnel and increased efficiency through a coordination of the field forces has already been indicated.[407]

The practice of the Department, limited to a few instances, of not properly or effectively utilizing the services of well-qualified employees, should be discontinued forthwith. The case of the Special Engineer in

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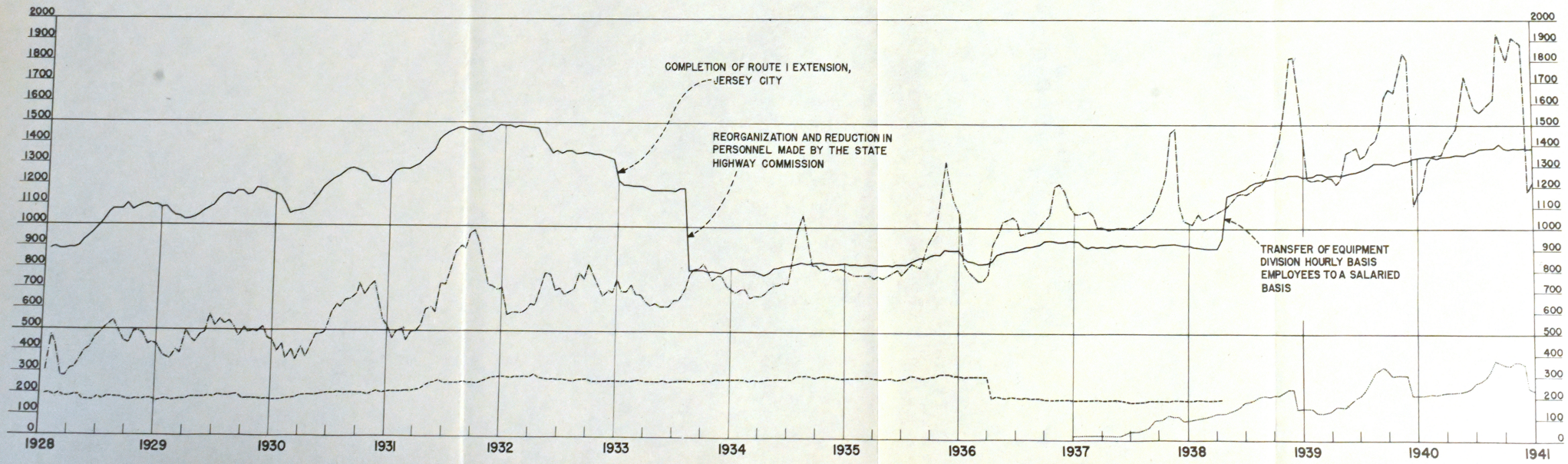
[406] "Laborer" was misused by certain Divisions in reporting payrolls, and often covered positions that should have been in the competitive class on a salaried basis. See *p. 244, post.* Men on the labor payroll of the Equipment Division were transferred to the salary basis payroll April 16, 1938. This explains the increase in the salaried personnel at that time.

[407] See *p. 161, supra.*

NEW JERSEY
STATE HIGHWAY DEPARTMENT
PAYROLLS
SALARIED AND HOURLY BASIS EMPLOYEES
(AVERAGE SEMI-MONTHLY PAYROLLS)
1928 — 1940

LEGEND

——— SALARIED PAYROLLS
-·-·- MAINTENANCE PAYROLLS (HOURLY BASIS)
- - - - - - EQUIPMENT PAYROLLS (HOURLY BASIS)
..... ELECTRICAL PAYROLLS (HOURLY BASIS)



the Real Estate Division, who is now responsible to the Highway Engineer, has been noted.[408] The former Confidential Clerk to the State Highway Commission, and the Head Clerk in the so-called Statistical Bureau, both carried on the payroll of the Administration Division, and the Designing Engineer attached to the Construction Division (an engineer of outstanding ability whose services, it is felt, have not been utilized to the fullest extent), are other examples that come to mind.

Contrast with this the part-time job of Supervisor of Titles; the six legal assistants to the General Solicitor whose duties could readily be carried out by two or at most three full-time counsel; the positions held by the Technical Engineer and the "Investigator" (W. P. A. Field Coordinator) under the Highway Engineer, both jobs being of doubtful need; and the number of chauffeurs in the Equipment and Transportation Division assigned to drive various officials and employees. A study of the duties connected with each job in the Department would reveal many instances where positions could be eliminated, either because they are unnecessary or the duties could be absorbed by other employees.

There is a strong suggestion that other than engineering and administrative considerations controlled the employment and retention of a small group of salaried employees on the payrolls of the Department, as well as the use that was made of their services. That personal and political considerations dictated personnel practices in the employment, promotion and discharge of laborers was brought out in the course of the investigation and hearings conducted by the Governor's Highway Examiner.[409]

The Examiner's report summarizes his findings as to the employment practices in the Maintenance Department as follows: "We report with respect to the employment practices of the department, that it had no system, or established policy for the choice of good and competent men; that its employment capacity was laid at the disposal of the political friends of the Commissioner; that the Commissioner was far less concerned for the welfare of the department, or of the would-be employees, than he was of the political consequences to the so-called

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[408] See *p. 65, supra.*

[409] *Preliminary Report to Governor Charles Edison,* by Roger Hinds, Governor's Examiner of the New Jersey Highway Department, (Trenton, 1942), Part II, *pp. 116* to *134.*

sponsors; that appointments as well as promotions were dictated by the political officeholders; that there was not only a substantially complete surrender of the employment function into the hands of outsiders, but there was a positive and active plan to use employment for the political advancement of certain men; and that this situation was well known to the rank and file of the department, with a demoralizing effect upon them."[410]

The investigation and hearings bear out what was observed in the course of this independent administrative study of the Department. The Examiner found that there were a large number of non-Civil Service employees in the Maintenance Division, and "no personnel bureau with considered forms of application or examination of qualifications (other than physical)."[411] The demand for employment of more men did not originate in the Division, but from politicians.[412] (Incidentally, the same practice prevailed in the case of the "laborers"—particularly the traffic enumerators—employed by the Electrical Division.) The sponsors' political exigencies, rather than the needs of the Department or of the men themselves, motivated their employment. Employment was timed with the elections, both primary and general.[413]

An employee's card index maintained in the central files of the Department reveals that laborers in the Maintenance and Electrical Divisions are grouped according to their sponsors, except for those having Civil Service status or who were carried over from preceding administrations. Applicants for labor jobs do not, as might be expected under a properly conducted personnel system, fill out an application blank prior to being employed. The procedure has been for the sponsor to request employment for certain men. This request is acknowledged by the Highway Engineer, and the men are then notified to appear for medical examination. "In such an arrangement of affairs, application blanks had no function, and were, in fact, not used."[414] Although the Highway Commissioner maintains that men were hired

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[410] *Ibid., p. 134.*

[411] *Ibid., pp. 117* and *118.*

[412] *Ibid., p. 121.*

[413] *Ibid., p. 125,* and see the chart of hourly basis employees in the Maintenance Division, *p. 239.*

[414] *Ibid., p. 129.*

because there was work to be done, the evidence brought out in the hearings definitely refutes this.

There is reason to believe that this political aspect of the personnel policy of the Department may account for its refusal to cooperate with the Civil Service authorities. For years the Department, upon the advice of its General Solicitor, took the stand that highway laborers did not belong in the labor class of the classified Civil Service. The law is clearly to the contrary and the General Solicitor and the Department were repeatedly advised to that effect by the Attorney-General.[415] The Civil Service Department time and again asked for the list of highway laborers. After a time, partial lists were submitted.

The Department finally capitulated when the law giving all permanent employees in the classified service annual leave for vacation purposes with pay, as well as sick leave with pay, was passed in 1939.[416] The highway laborers insisted that they be given the same privileges as others in the employ of the State, or doing similar work for counties and municipalities.[417] Their demand was unanswerable; the Department could no longer persist in its inequitable and illegal position.

Civil Service law was evaded in still another regard. The statute provides for temporary appointments in the classified service for a period not exceeding three months, such appointments not being renewable more than once within a fiscal year.[418] Temporary employees were carried on the payroll for periods far exceeding this limit. Other employees were certified on the payrolls as "emergency" laborers and

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[415] *R. S. 11:4-3.* The Civil Service Commission was finally obliged to obtain a written ruling from the Attorney-General, dated June 10, 1940, in which he advised that "Permanent laboring positions, including seasonal permanent employees, must be filled in accordance with the Civil Service Law, under a system of registration and appointment established by your Commission. With respect to the temporary, casual or emergency laboring positions or employment * * * the right of employment should rest, as it presently does, under existing law, with the Highway Commission (*sic*), subject only, as I have pointed out, to the general supervision and approval of the Civil Service Commission over the payrolls * * *" *New Jersey State Civil Service Commission Annual Report, 1939-1940, pp. 31, ff.*

[416] *P. L. 1939, c. 233; R. S. 11:14-1* and *2.*

[417] *P. L. 1939, c. 232; R. S. 11:24A-1* to *6* provided for vacations and sick leave with pay for permanent employees in the classified service in counties, municipalities and school districts, excepting policemen or firemen.

[418] *R. S. 11:11-1.*

carried as such for extended periods of time, in violation of the act.[419] Still others were certified as irregularly employed, and therefore not in the classified Civil Service, when their employment was actually other than casual or temporary.

Another practice, in clear violation of the Civil Service law, rules and regulations, was that of certifying employees as "laborers" on the payrolls submitted to the Civil Service Commission when, in fact, their duties belied that classification. An analysis of the June 1941 payrolls of the Department disclosed that no less than 398 employees in the Department, most of them in the Electrical and Maintenance Divisions, were certified as "laborers" although they were carrying on work of a clerical or technical nature.[420] Although this system lent itself to, and was used for, political and personal ends, it had another aspect. Employees brought into the highway organization under such a designation would find themselves, after years of service and after having become highly competent in their positions by reason of experience, subject to discharge, or to discrimination when the opportunity for promotion presented itself. Their positions were thus subject to the control of the Highway Commissioner and political influence.

As the Highway Examiner has pointed out elsewhere, the responsibility for this state of affairs lies with the Highway Commissioner and the officials of the Department who certified payrolls which were replete with misrepresentations. "With power goes responsibility and the responsibility for the false designation of those employees, and the resulting opportunities for political control of their positions, falls squarely upon those (whoever they may be) who effectually control the highway department."[421]

Mention should also be made of the fact that a number of salaried positions in the Department bear titles which are inappropriate to the

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[419] *R. S. 11:11-2.*

[420] These employees included clerks, traffic enumerators and investigators, supervisors, engineers, draughtsmen, and other technically skilled employees. A review of some of the positions carried under the title of "Laborer," in the sections of Chapter II dealing with the Maintenance and Electrical Divisions (*pp. 91* to *104,* and *pp. 115* to *121*), will indicate some of these positions.

[421] *Preliminary Report to Governor Charles Edison, op. cit.,* Part I, *p. 65.*

duties performed. No inference of a deliberate attempt at misrepresentation or an intentional violation of the Civil Service law, as in the case of the labor group, is intended to be drawn in this connection.

All of this obviously points to the need of a complete change in the Department's attitude toward the Civil Service Commission and the Civil Service law. The 1939 vacation and sick leave act brought about the first change, albeit grudging. During recent months the Commission has finally completed the registration of all highway employees who properly belong in the labor class of the classified service. The examination into the Highway Department brought to light what the Civil Service authorities already knew, and hastened the correction of the practice of certifying men as "laborers" when they were not. A series of competitive examinations resulted in the proper classification of many of these employees. Other examinations, now pending, will eventually result in the proper filling of these positions under appropriate titles in the competitive division of the classified service.

The Civil Service Commission has tried to obtain the cooperation of the Highway Department in the past. The personnel problems of the Department are not the Commission's responsibility alone. As the Commission has pointed out, personnel management is "first the job of the individual department or agency itself * * * it is a joint undertaking in which departmental authorities, the general administrative authorities, the employees affected and this Commission have a part. * * * It is equally incumbent for appointing authorities to observe the spirit and letter of the Civil Service law as it is for them to observe the law and procedure directly applying to their own particular activities."[422]

The first step to be taken in correcting and improving the personnel management of the Highway Department is the appointment of a fully responsible personnel officer to serve in the proposed Office Management Bureau. He will coordinate all the personnel work of the Department, carry out a modern personnel program, and serve as a liaison officer between the Civil Service Commission and the highway organization. He should be given the power and responsibility requisite to the prompt and efficient discharge of the duties of his office.

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[422] *New Jersey State Civil Service Commission Annual Report, 1940-1941, pp. 7, 8* and *9a. Cf.* Princeton Survey report, *op. cit., p. 112.*

The Assistant to the Chief Clerk now in charge of personnel matters has no real powers or discretion. His responsibility is limited to handling records, clearing personnel matters with the Civil Service Department, preparing the payrolls of salaried employees, and attending to the details relating to the State Employees' Retirement System.[423]

When a vacancy or new position is to be filled, a request goes forward from the Division head to the Highway Engineer for his approval. It then passes to the Chief Clerk who submits the request to the Highway Commissioner. Upon his approval, the Chief Clerk notifies his Assistant who arranges with the Civil Service Commission for an examination (if there is no eligible list) and certification of eligibles. The Division head chooses from the list submitted by the Commission. The Assistant prepares three copies of the order of appointment; one is retained by the Division and the other two, signed by the head of the Division and approved by the Highway Engineer, go to the Chief Clerk. He presents the matter to the Commissioner for his approval. The Chief Clerk (as Secretary) then certifies the action taken and the Assistant sends a certified copy of the Commissioner's order to the Division. The Assistant also prepares a regular form of notice of the appointment which the Chief Clerk sends to the Civil Service Commission.[424]

Other personnel matters affecting salaried employees, such as layoffs, leaves of absence, resignations and disciplinary action (suspension, fine, demotion or removal) originate in the Divisions affected, pass to the Highway Engineer for approval,[425] and are then presented by the Chief Clerk to the Commissioner for his approval. The Assistant to the Chief Clerk attends to the details, sending a certified copy of the Commissioner's order to the Division head. In the case of disciplinary action, he prepares a form of notice setting out the reasons for the action, and serves it on the employee. The Commissioner or the Highway Engineer hears the charges where the employee requests a trial, and the Assistant notifies the employee in writing of the action taken.

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[423] See *p. 49, supra.*

[424] Under Executive Order No. 1, all new appointments require the approval of the Finance Commissioner before becoming effective.

[425] It is to be noted that the Highway Engineer must approve personnel matters even in the case of administrative employees. The Chief Clerk should be the intermediate approval officer in such cases.

Transfers and pay increases similarly pass from the Divisions to the Highway Engineer, Chief Clerk and Commissioner for action, the Assistant preparing the forms and handling all the details. In all matters affecting salaried personnel, the Assistant notifies the Civil Service Commission of the action taken and maintains a proper record for his files.

The Civil Service authorities have for some time considered the present personnel management system of the Highway Department unsatisfactory. There is, in effect, no one to whom they can look for prompt, definite and responsible action. The Assistant to the Chief Clerk is limited to handling the paper work and records, and the Chief Clerk himself has little authority. Matters capable of direct, clear-cut action get tangled in conferences and correspondence with Division heads, the Highway Engineer, the Commissioner, and other highway officials, including the General Solicitor where a legal question is at issue. The resulting delay often allows the Department to continue a personnel practice which is clearly in violation of Civil Service law and regulations. In distinct contrast with this state of affairs, the Department of Institutions and Agencies, which has two thousand employees more than the Highway Department, gives the Civil Service Commission comparatively little trouble. It is evolving a responsible and efficient system of personnel administration under an officer who works in close relation with the Commission and with the great number of institutions and agencies comprising his Department.

The Assistant to the Chief Clerk has absolutely nothing to do with the hourly basis employees. They are the concern of the Division head, Highway Engineer and Commissioner. The irregularities in the present system of dealing with these employees have been mentioned.[426] It is recommended that the proposed Personnel Officer be responsible not only for all personnel matters relating to salaried employees, but hourly basis employees as well.

The Personnel Officer will work in close cooperation with the Civil Service Commission, the Highway Commissioner, and the proposed principal administration and principal engineering officers of the Department. He will be in full and responsible charge of all matters relating to the departmental personnel, subject, of course, to the approval of the

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[426] See *p. 241, supra.*

Commissioner. He will hear all charges for the Commissioner and present to him the record of the hearings for his final decision. He will be responsible for carrying out the recommendations that follow and which are intended to improve and modernize the present personnel system of the Department:

1. *Reclassification of Highway Personnel*: The Civil Service Commission has been at work during the past few years on a complete reclassification of the State service, involving the editing of class specifications and "including such modification in the compensation schedules as are necessary and equitable, and the adjustments in compensation of at least the outstanding inequalities which are known to exist."[427] The project has proceeded slowly because of lack of funds and available personnel. The Commission realizes the vital importance of completing the study with all possible speed. "A classification that may be correct and adequate at the time it is made does not remain adequate and applicable indefinitely. Since the classification of every position in every department and agency of the government on the basis of the duties performed and responsibilities carried by the individual employee lies at the foundation of all personnel management, it is of first importance that such classification shall be complete, based upon ascertained facts and currently maintained."[428]

Even a causal reading of Chapter II dealing with the organization of the Highway Department will reveal that the personnel classification now in force does not accurately reflect the duties performed and the responsibilities carried by many employees. Many of the titles are entirely inappropriate to the positions. A situation has developed where a large number of employees find themselves "frozen" to their titles and salaries. Their duties have changed. Their responsibilities have grown. Experience has made them more valuable to the Department. Still, title and compensation remain the same. Many have for some time felt the

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[427] *New Jersey State Civil Service Commission Annual Report, 1938-1939, p. 13.* See also the *Annual Report, 1937-1938, p. 46.*

[428] *New Jersey State Civil Service Commission Annual Report, 1940-1941, p. 11. Cf., Better Roads,* February 1941, "A Survey of Personnel Practices of State Highway Departments": "The proper classification of positions is the most important single problem of merit systems. Classification includes grouping into classes positions with equal responsibility and duties, preparation of formal written explanations of those duties, assignment of fair wage scales for each classification, and finally the classifying of each employee. Classification plans need periodic revision as conditions change."

inequity of the situation. Despite their interest in their work and loyalty to the Department, their morale has suffered.

The situation has been aggravated by the existence of a number of jobs where the salary is out of proportion to the time and duties required of the employee. In some cases, there is no need for the positions—a fact already alluded to.

Funds should at once be made available and the Civil Service Commission directed to carry out a complete reclassification of the Highway Department personnel. The Department should give its full support to such a program in order to make possible its early realization. One of the first tasks of the Personnel Officer should be to provide the Civil Service Commission with an exact statement of the responsibilities and duties of each employee, together with all other necessary data relating to the employee and his position. Using this and other pertinent factual material, he would assist the Commission in defining and setting up the specifications for each position, and in adjusting such changes as must be made to the working forces of the Highway Department. He would also help in developing equitable compensation schedules and in correcting any existing inequalities in salaries.

Once a reclassification of highway positions and an equitable adjustment of salaries have been effected, it will be the duty of the Personnel Officer to help keep the classification up-to-date and complete, so that it may always be adequate and applicable. If the integrity of the classification and the compensation schedules is maintained, there is every assurance that the present personnel situation in the Highway Department will not recur.

2. *Organizational Studies:* Highway organization is not, and cannot afford to be, a static thing. It is a dynamic force which directly affects administrative and engineering efficiency. The failure of the Department to maintain a maximum flexibility of organization in anticipation of the constantly changing problems that characterize modern highway work, was developed in Chapter III.[429]

After the plan of reorganization proposed in that chapter has been carried out, it will be the duty of the Personnel Officer to assist the

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[429] See *pp. 151* and *152, supra.*

Commissioner and the principal administration and engineering officers in restudying the organization of the departmental personnel at regular intervals. This will keep the Department from slipping back into a fixed and rigid organizational pattern. The aim will be to improve the quality and quantity of the work done by the Department's forces, and of handling new tasks and programs with a minimum of new personnel. A coordinated organization capable of the highest functional efficiency is the desired goal.

3. *Service Rating Schedules*: The Personnel Officer would establish and maintain a comprehensive rating system for all departmental personnel, to serve as a basis for promotion and salary increases or decreases.[430] These evaluations of the work of each employee should be kept current.

The rating system now used is entirely inadequate and unscientific. Division heads send in "efficiency rating reports" from time to time, addressed to the Commissioner. These are prepared by the employees' superiors and set out the ratings for quality and quantity of work, personality, attendance and discipline. There is no definition of these terms. The ratings assigned may be E (excellent, 90-100), G (good, 80-90), F (fair, 70-80) and UF (unfavorable). A detailed report must be submitted where UF is indicated. These ratings are kept in the files maintained by the Assistant to the Chief Clerk. Little effective use is made of them. They have not been sent to the Civil Service Commission for some time.

The first step in any good rating system is that the rating schedule be a fair determinant of future performance. A single report like the one used by the Department is clearly not a proper criterion of performance and is, at best, the most general sort of evaluation of the employee's worth. Use should be made of a service rating schedule similar to the one developed by the Civil Service Commission, dealing with the quantity and quality of work done by the employee, his knowledge of duties, technical skill, dependability, judgment, industry and willingness, ability to get along with co-workers and superiors, ability to get along with the general public, his value in his present position and capacity for more difficult and responsible work.

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[430] *Cf.*, National Institute of Public Administration (Abell Commission) report, *op. cit., p. 84;* Princeton Survey report, *op. cit., p. 126. R. S. 11:13-1* provides for the establishment of service standards and ratings by the Chief Examiner and Secretary of the Civil Service Commission in cooperation with departmental authorities.

Each of these qualities and attributes is carefully defined. There are four possible ratings, and the meaning of each is clearly indicated. The schedule is complete, searching and definite. It has the added virtue, lacking in the Highway Department's rating system, of eliminating the personal equation to a considerable degree. Prejudice, pressure and individual reaction are too often reflected in service ratings. Under the system devised by the Civil Service Commission, the employee's superior and the head of the bureau or division independently rate the employee. These ratings go to the Civil Service Commission where values are assigned to each quality and attribute rated. Not every item receives the same number of merit points; only the Civil Service Commission knows the weight given to each item. If the two ratings show too wide a divergence, they are sent back to the agency for re-rating.

The Highway Department might develop a variation of the above procedure which is the one used by the New Jersey State Unemployment Compensation Commission. After the employee's superior and the bureau head have made their independent ratings, the Personnel Officer would present the ratings, together with any other information he may have as to the quality of the work, personal character and value of the employee, to a Personnel Rating Board appointed by the Commissioner consisting of the Personnel Officer and two staff officers, who would be changed from time to time. This Board would establish its own rating which would be sent along with the other two, to the Civil Service Commission for final rating.

This general rating should be made quarterly for every employee in the Highway Department other than temporary or emergency employees, and sent to the Civil Service Commission promptly. It should be supplemented by other ratings, as follows.[431]

(a) A "special qualifications" rating covering the education and experience of the employee pertinent to his particular position. For example, in the case of the engineering group this rating would cover the engineer's technical education (credits being allowed for extension courses and for service in lieu of school work) and technical experience in the applicable classification or higher grade. Such a special rating

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[431] *The Merit System for Engineering Personnel,* by R. H. Baldock and C. B. McCullough, Bulletin No. 9, Oregon State Highway Commission, February 1938; *pp. 28* to *31.* It should be emphasized that no rating system is any better than the individuals doing the rating. They must be willing to evaluate personnel on a non-partisan, unbiased, scientific plane.

would cover highway employees other than non-skilled or semi-skilled labor employed on an hourly basis, or whose employment is of a temporary or emergency nature.

(b) A service bonus rating providing for additional merit points for each year of satisfactory service. These service ratings and the maximum permissible allowances would vary for different personnel groups.

(c) An in-service merit rating, providing additional merit points for accomplishments evidencing self-improvement while in service, as, for example, preparation for and passing an examination for registered professional engineer, interest in current engineering literature and research, the preparation of approved professional papers, analysis of any specialized problem within the employee's field of action, and outstanding achievements as a result of individual endeavor.

(d) A merit rating for advanced educational training, credits being granted for post-graduate study in an accepted institution of learning and for the satisfactory completion of certain specialized short courses.

(e) A rating schedule for those acting wholly or partially in an executive or administrative capacity, such as Construction District Engineers, Location Engineers and Maintenance Supervisors. This schedule would rate such capabilities as general administrative judgment, administrative stability and fortitude, capacity for prompt and comprehensive planning; capacity for assumption of responsibility, decision and prompt action; contact and cooperative capabilities, capacity for logical engineering analysis, capacity for sustained energy output, and ability to select, control and train subordinates. This last-mentioned item will encourage the cooperative efforts of all executives in the in-service training of their subordinates.

The Personnel Officer will be responsible for the regular and prompt filing of all rating schedules and arrange, through cooperation with the Civil Service Commission, in having final ratings established as quickly as possible. He will maintain a complete personnel file for each employee in which the copies of the various ratings will be kept. These ratings will be used as a primary guide in all promotions, salary in-

creases and decreases, transfers, and similar personnel action. The right of an aggrieved employee to appeal from a particular rating will, of course, be reserved.

4. *In-service training:* A few instances exist where a Division or Bureau head has taken a personal interest in training some of the more promising men under him. The Department itself has done nothing about training its employees while in service. It has thus ignored entirely one of the most important of administrative functions. Two definite lines of activity are possible: the stimulation of individual effort toward self-advancement, and the encouragement of training through the medium of graduate study, specialized short courses and service schools. Since reward is always a strong motivation, employees who participate fully in the program of in-service training will be given additional rating credits in the manner indicated above in paragraphs (c) and (d) dealing with personnel ratings.

The Personnel Officer will be responsible for establishing and carrying forward a comprehensive program of in-service training, in cooperation with Department officials and the Civil Service Commission.[432] Employees will be encouraged to seek professional engineering status, to familiarize themselves with current literature relating to highway practice, to prepare papers on various phases of highway work (these should be approved by the principal engineering officer before final release for publication), and to concentrate on problems involved in their particular fields of work and submit written reports thereon, thus stimulating the research and investigation which is so important in any highway department. These reports would be reviewed and graded by the appropriate staff officer and submitted for final review to the proposed Personnel Rating Board. If the report has sufficient merit it may be mimeographed and distributed among employees engaged in similar work, to the benefit of the Department. Finally, where an especially difficult problem has been handled by an employee in such a way as to achieve economies or improve engineering practice, the employee would be rewarded with additional merit rating points.

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[432] *Baldock and McCullough, op. cit., pp. 18* to *22.*

Employees should likewise be encouraged to take advanced educational training. This phase of the in-service training program can start right in the Department itself by the setting up of special courses in charge of qualified departmental or extra-departmental instructors. Almost every phase of highway work lends itself to this suggestion. Employees can also be encouraged to take approved correspondence courses. Short courses and conferences can be arranged in cooperation with Rutgers University and other nearby technical schools and universities.

5. *Labor personnel management:* The existing system of labor personnel management, as we have seen, is shot through with irregularities. Persons employed as unskilled or semi-skilled laborers are included in the labor class, and the labor class is a part of the classified Civil Service. Accordingly, the provisions of the Civil Service law, rules and regulations should be followed to the letter by the Highway Department. Politics and personnel preference have no place in the system.

The Personnel Officer will take over all details relating to the labor personnel. He should lend every assistance to the Civil Service Commission in re-establishing and maintaining labor registers and labor registration procedure in the State government, since the Highway Department is by far the greatest employer of labor among all the State agencies.[433] Prospective laborers would register with the Commission by filing regular application forms. Certification and appointment would be made from the registration list.

Every laborer will be obliged to submit to a physical examination, as is now the practice. The present system of physical examinations for laborers was instituted by the Highway Department in 1937 and has since been administered by the Workmen's Compensation and Claims Clerk in the Legal Division.[434] Each man is given a slip, signed by himself and his supervisor, directing the physician named therein to examine the man and report the results of his examination on a form card that is provided. When the Workmen's Compensation and Claims

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[433] *Cf., New Jersey State Civil Service Commission Annual Reports, 1938-1939, p. 13,* and *1940-1941, pp. 11* and *12.*

[434] See *p. 59, supra.*

Clerk receives the slip and card from the physician, he notifies the Division head whether the laborer is physically acceptable.

The Personnel Officer should be in charge of these examinations hereafter. The Workmen's Compensation and Claims Clerk will continue to handle compensation work. He will, however, cooperate closely with the Personnel Officer and clear all pertinent information through him.

6. *Health and Welfare Program:* The Highway Department, like the rest of the State government, makes no provision for a health and welfare program for its employees.[435] The value of such a program has been demonstrated many times over in private enterprise by way of improved health, attendance and morale, and better work on the part of employees. It should be made a part of the personnel program of the Highway Department[436] and be administered by the Personnel Officer.

In addition to looking after the health and morale of the departmental forces, devising means for the prevention of accidents to employees, establishing intra-departmental recreational programs, etc., there will be instruction in first aid and in safety methods. The safety course is intended to reduce the number of accidents normally occurring to highway employees not engaged in purely administrative tasks.[437]

The Personnel Officer will be provided with an adequate staff to carry out the duties assigned to him. Located in the Office Management Bureau, he will be in constant touch with the chief administration officer, the heads of the other proposed Bureaus, the Workmen's Com-

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[435] Besides arranging for physical examinations of laborers, the Workmen's Compensation and Claims Clerk also supervises the placement and upkeep of some 300 first aid kits located on each truck and in every garage. Drivers and foremen are given simple instructions in the use of these kits when they are first installed. A report is made on a regular form whenever first aid is given, showing the person injured, time of treatment and nature of injury, as well as the first-aid items used. Each kit is inspected from time to time and a report made of its condition and the items supplied by the inspector. Both of these reports are sent to the Workmen's Compensation and Claims Clerk.

[436] The Civil Service Commission has recommended a health and welfare program for all State employees. *Annual Report, 1940-1941, pp. 12* and *13.*

[437] *Cf., The Organization and Administration of Pennsylvania's State Government,* a report by the Joint State Government Commission of the General Assembly of Pennsylvania (Harrisburg, 1941), chapter XXIV, "Department of Highways," *p. 2420,* for the improvement brought about in the Highway Department's accident record through such a safety program.

pensation and Claims Clerk, and the Civil Service authorities. He will maintain complete and up-to-date personnel files. He will also continue to administer the details of the State Employees' Retirement System for the highway personnel.

Payroll Procedure:

Highway employees are paid semi-monthly, like other employees in the State service.[437a] As pointed out heretofore,[438] payrolls for salaried employees are prepared by the Assistant to the Chief Clerk, audited in the Bureau of Auditing and Accounting and signed by the Chief Clerk as Approval Officer. After being approved by the Civil Service Commission and the Commissioner of Finance (under Executive Order No. 1), they go to the Comptroller where they are audited and the individual checks drawn. The Treasurer signs the checks and they are then returned to the Chief Clerk for distribution.

The payroll records of hourly basis employees, prepared in the field, are checked against the accumulated daily payroll records in the Bureau of Auditing and Accounting which also prepares the individual pay checks.[439] The Chief Clerk signs these checks as Custodian of the Labor Payroll Fund after the Civil Service Commission and the Commissioner of Finance have approved the payrolls. These checks are drawn on the $50,000 revolving Labor Payroll Fund. Four of the eight men who handle payrolls in the Auditing and Accounting Bureau act as paymasters in distributing the checks to the men in the field. The payroll schedules, signed by the Chief Clerk, go to the Comptroller, who arranges for a reimbursement of the Labor Payroll Fund in the amount that has been paid out.

In the proposed plan of reorganization, payrolls will be the responsibility of the Finance Bureau. The head of the Bureau will, as Approval Officer of the Department, approve all salary payrolls, and act as Custodian of the Labor Payroll Fund for hourly basis payrolls. This will save time and eliminate the extra work involved in having the Chief Clerk approve payrolls and handle checks. It will centralize

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[437a] *R. S. 52:14-15* provides for semi-monthly payment of compensation to State officials and employees.

[438] See *p. 210, supra.*

[439] See *pp. 51* and *52, supra.*

the whole payroll procedure in the Finance Bureau—the place where this work naturally belongs.

For the past three years the Civil Service Commission, in cooperation with the Comptroller, State Treasurer and the Commissioner of Finance, has been studying the possibility of instituting centralized payroll preparation. It has decided that such a system is "not only practicable but that it has substantial advantages over the present system and that worth-while economies can be effected." The Commission has recommended the prompt initiation of such a system "through the cooperation of the departmental officers whose payroll work and records will be directly concerned in this new procedure".[440]

The efficiency, economy and benefits of a centralized payroll system are set forth in a study recently completed by the New Jersey State Chamber of Commerce.[441] Although State Government personnel has increased five-fold during the past twenty-five years, the payroll preparation system has remained relatively unchanged. In that period, many efficient, cost-saving devices have been developed and come into wide use. The State Government, however, has continued with its antiquated and inefficient payroll procedure. The main weaknesses of this system have been summarized as follows:[442]

> 1. The reliance on manual repetitive work in the semi-monthly preparations of payrolls in the several offices. Highway payrolls are typed out twice a month despite the fact that the net amounts due to almost half its employees remain constant, pay period after pay period.
>
> 2. The cumbersome check by the Civil Service Commission which must verify each payroll item. Five persons spend all their time checking State payrolls.
>
> 3. The wasteful duplication of work in the Comptroller's office. The items appearing on the payrolls are transcribed, line

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[440] *New Jersey State Civil Service Commission Annual Report, 1940-1941, pp. 13* and *14.*

[441] *A Centralized Payroll System for our State Government,* by Alvin A. Burger and G. G. Tegnell, Department of Governmental Research, New Jersey State Chamber of Commerce (Newark, 1941).

[442] *Ibid., pp. 4* to *6.*

for line, to ledger sheets. Individual salary checks must be prepared, a great number of them manually, and these are signed mechanically with the name of the Comptroller.

4. The unnecessary duplication of work in the Treasurer's office. The Treasurer prepares a check register listing each payroll account, name, amount due, and check number. The salary checks are again signed, in the name of the Treasurer. Each check, upon its return to the Treasurer, is matched against the check register as a sort of "post-audit."

5. The lack of facilities to provide the Civil Service Commission with adequate personnel statistics. While all the basic information required to derive personnel data is now available to the Commission, that office is not able to compile necessary statistical breakdowns without a considerable amount of manual work. This has proved a stumbling block to the proper functioning of the Commission, particularly in the matter of the reclassification of State employees.

Most State employees receive a standard pay each pay period in 95% of the cases. This is also true for the salaried personnel of the Highway Department, numbering almost 1400 persons. The preparation of payrolls therefore lends itself to the use of mechanical equipment which will repeat the standard net amount due an employee on the payrolls, pay checks, and check registers, each pay period.

Both the Addressograph Company and the International Business Machines Corporation have mechanical payroll equipment suitable for use in New Jersey. Both will prepare payrolls, pay checks and check registers automatically. The I.B.M. equipment, which uses punch-cards, is by far the more preferable and flexible system. Information may be included on the punch cards that can be used for other than payroll purposes, such as length of service, age, sex, date engaged, title, account number, Civil Service status, marital status, efficiency rating, etc. Through the use of an automatic sorter, which can be set to give any desired statistical breakdown, the I.B.M. equipment would prove of inestimable value in providing the necessary data on which to base an intelligent personnel program. This is of importance to the Highway Department, and particularly to the Civil Service Com-

mission, which will be able to proceed with its classification and salary standardization work. Another helpful feature of the I.B.M. equipment is that it accumulates totals for accounting and other purposes.[443]

The Highway Department now rents I.B.M. equipment, including key punches, sorting and accounting machines. This equipment, together with that used in other State departments,[444] should be made available to the Civil Service Commission when not in use. This will reduce by a considerable amount the cost of installing the centralized payroll system.

Under the proposed system the Civil Service Commission would prepare all salaried payrolls for the Highway Department and other State agencies on the basis of payroll advices forwarded to that office. Instead of reporting the data for each employee every pay period, only those cases would be reported which vary from the normal. Reference has been made to the fact that there will be a variation from the standard net amount due in about 5% of the cases. The forms and procedure to be followed in reporting temporary changes (absence with or without pay, overtime, leaves of absence, etc.) and permanent changes (salary changes, separations from service, transfers, etc.) have been developed and are available for use.

The preparation of the payrolls by the Civil Service Commission would be a relatively simple thing. Prior to the receipt of any current payroll advices from the several departments, the Civil Service clerks will prepare an accounting control form showing, for each payroll account, the number of employees and the grand total of the gross amounts due, authorized pension deductions and net amounts due. Upon receipt of the "variation" reports, the clerks will post the variations to the accounting control form and obtain correct balancing totals for the various accounts. They will also prepare new cards to agree with these variations. The complete set of cards will then be run through the machine, which will prepare the payrolls, pay checks and check registers at one time, automatically. Before releasing these to the Comptroller and Treasurer, the account total will be balanced to the accounting control record.

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[443] *Ibid., pp. 15* and *16*. The Highway Department uses this equipment in making payroll cost distributions and cost analyses of many kinds.

[444] The State Tax Department, Motor Vehicle Department and the Department of Institutions and Agencies use I.B.M. equipment.

A copy of each payroll and check register, and the pay checks will be sent to the Comptroller, who will transfer the account totals to his payroll ledgers and countersign the checks. The payrolls will be retained as subsidiary accounting records. The Comptroller will then forward the check registers and checks to the Treasurer. He will countersign the checks and release them for distribution. The check registers will be retained so that after the checks return from the banks he may "post-audit" them against the registers.[445]

The saving of time and energy in this system is self-evident. Highway employees now engaged in preparing payrolls will be released for other tasks, eliminating the possible necessity of engaging new personnel for the work at hand. The advantages of the system in making available needed data that can be used for classification, salary and other personnel studies have been indicated. If the Highway Department and a few other large agencies give their full cooperation to the establishment of the proposed centralized payroll system, it will be realized for the entire State Government in quick order, to the advantage of all. The Civil Service Commission will then be in a position to function efficiently as the central personnel department of the State Government.

Staff Conferences:

The practice of weekly staff conferences which prevailed in the early 1920's,[446] should be resumed. The Commissioner, the proposed chief administration and engineering officers, and the head of each Bureau would be in attendance. Besides serving as an opportunity for a general exchange of views and ideas, these meetings could be used for a discussion of current problems and programs, the planning of future programs, and other matters vital to the general welfare and work of the Department. The chief administration and engineering officers would be responsible for following up the matters developed at these conferences. It would be advisable to keep minutes, to serve as a record of what was decided and what progress resulted from the decisions taken.

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[445] Burger and Tegnell, *op. cit., pp. 21* and *22.*

[446] See *p. 16, supra.*

Several Division heads have expressed regret that this system of conferences was allowed to fall into disuse. They were helpful in many ways, serving as a means whereby Division heads became acquainted with each other's problems and the general problems of the Department. They afforded a ready medium for the constant re-examination of the departmental program and policy. If nothing more, the conferences brought the administrative and engineering personnel in closer contact with each other and built up departmental *esprit de corps.*

These conferences should be supplemented by meetings held once a month, attended by Bureau heads and their chief assistants. General discussions, reports and an exchange of views on the progress and efficiency of departmental work, would feature these meetings. All employees would be encouraged to report matters of special interest through their supervisors or directly to the conference, especially any suggestions relating to improved methods and planning.

Department Manual:

There is no departmental manual of the type usually found in large organizations. Such a manual would include a brief history of the Department, an outline of its organization (organization charts showing the main lines of coordination and responsibility would be very useful),[447] a list of its chief administrative and engineering personnel, a summary of its fiscal operations and, most important of all, an exposition of the methods to be used and the procedures to be followed in properly carrying out the various administrative and engineering duties.

This manual would be of invaluable help to employees and those interested in the work of the Department. It is recommended that a general manual be prepared as soon as possible after the Department has been reorganized and the personnel reclassification completed.[448]

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[447] At the time of this study, the Department organization chart had not been redesigned since 1933. Some Division organization charts existed, but they were not current or in general circulation. The Division charts included in this report were specially prepared under the direction of the authors, and the general organization chart that appears opposite page 31, prepared from these.

[448] The manual might be of the familiar loose-leaf type, held together by binder posts. This will allow sheets to be replaced whenever changes in the text so require.

Purchasing Procedure:[449]

The 1917 act establishing the State Highway Department authorized the Highway Commission to buy all materials and equipment needed in connection with its work.[450] But the Department was not afforded an exemption from the State purchasing law passed in 1916.[451] Under that act, the State House Commission was empowered to purchase any furniture, equipment, material, supplies, printing and stationery used by any State agency. The act was not to apply to the "construction or repair of any road or bridge, *nor to the performance of any like work.*"[452] The new law created the office of State Purchasing Agent who was to carry out the provisions of the statute under the supervision and control of the State House Commission.

Accordingly, office, engineering and laboratory supplies and equipment, automobiles, trucks, gasoline, coal, oil, books, and similar items, were bought through the State Purchasing Agent. The Purchase Clerk in the Highway Department,[453] however, bought all the road maintenance materials direct, pursuant to an understanding between the State House Commission and the Department that such materials did not come within the operation of the Purchase Act. In this they were fortified by an opinion of the Attorney-General who ruled that the exception to the authority of the State Purchasing Agent, noted in the italicized portion of the statutory language quoted in the preceding paragraph, covered maintenance materials.[454]

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[449] See *pp. 52* and *53, supra,* for the organization and duties of the Purchase and Stores Bureau.

[450] *P. L. 1917, c. 15, s. 11.*

[451] *P. L. 1916, c. 68.*

[452] *Ibid., s. 3.* A similar provision was incorporated in the 1931 act setting up a State Purchasing Department. *R. S. 52:25-2.*

[453] The Highway Department had its own Purchasing Division in 1919 (see *p. 16, supra*) headed by a "Business Agent." This position was abolished late in 1920 and all the personnel of the Purchasing Division transferred under the Chief Clerk. The new position of "Purchase Clerk" was created and was filled by the present Supervisor of Purchase and Stores. The Purchase and Stores Bureau was set up in the Administration Division pursuant to an order of the Commissioner in 1936. See *Minutes of Meetings of the State Highway Commissioner,* minutes of October 6, 1936.

[454] See *Minutes of the Abell Commission, op. cit.,* minutes of September 30, 1930, supplementary report of D. Frederick Burnett, examiner for the Commission. He felt that the statutory provision was susceptible of two possible interpretations and recommended clarification by the Legislature.

The present State Purchasing Department was created and established in 1931, with the State Purchase Commissioner in charge.[455] It was given exclusive authority to purchase "all materials, supplies, furniture, equipment, printing, stationery, live stock, and all other chattels, goods, wares, and merchandise whatsoever" used or needed by any State agency.[456] The new act continued the exception found in the 1916 statute; the broad power given the Purchasing Department was not to extend to the "erection or construction or original equipment of any building or addition thereto or alteration or repair thereof as distinguished from the furnishing or maintenance thereof, nor to the construction or repair of any road or bridge, nor to the performance of any like work".[457]

Three exceptions to this system of centralized purchasing exist. The first relates to the use of so-called "confirming orders," whereby purchases are made by the Highway Department without the prior approval of the State Purchase Commissioner. These orders cover materials, supplies and equipment which ordinarily should be obtained through the Purchasing Department but are bought directly so that work will not be interrupted in the field. The usual situation which presents itself is one where the foreman in charge of a job wants certain items at once and feels that he cannot wait for the Purchase Department to make the purchase. Sometimes the Purchasing Department does not know offhand what vendor near the site of the job carries the items required—at least, such is the suggestion made by highway officials. In either situation, the foreman is supposed to buy at the best possible price and from the most convenient source. The bill or other evidence of cost is sent to the Supervisor of Purchase and Stores, who transmits it to the Purchasing Department where the confirming order is issued.

These confirming orders represent a definite departure from the regular system of centralized purchasing. The possibility of abusing

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[455] *P. L. 1931. c. 179; R. S. 52:25-1* to *26.* This act was a direct result of the recommendations contained in the Abell Commission report, *op. cit.,* chapter V.

[456] *R. S. 52:25-1* and *6.*

[457] *R. S. 52:25-2.* The amount of direct buying done by the Purchase Clerk of the Highway Department decreased considerably after the passage of this act because of the narrower interpretation given to the exception. See *infra.*

this practice by arbitrarily classifying purchases as emergencies in order to suit the convenience of the Highway Department, always exists. However, the use of confirming orders seems to have been fairly well controlled in recent years. There are quite a number of such orders, but a cursory check indicates that they were made in connection with the purchase of some item that was immediately needed in the field and which was not available in the Department storeroom. The Purchase Commissioner reports that confirming orders are being kept at a minimum.[458]

Similar to this is the emergency purchase order, the second of the exceptions to the established central purchasing system. Highway employees in the field are permitted to buy any necessary item costing less than $20, but such purchases are supposed to be limited strictly to emergencies. Actual practice is somewhat looser than this. The Supervisor issues a book of emergency purchase order forms to each foreman in the Maintenance and Electrical Divisions, to the stockroom, and to a few other offices that might possibly have to make such emergency purchases. The order forms come in triplicate and are serially numbered. The vendor gets the original, a copy goes to the Division Auditor with the foreman's report or delivery slip, and an imperforate copy remains in the book.

The Supervisor of Purchase and Stores keeps a record of all outstanding books and reviews all emergency purchase orders as they come in. These purchases are not confirmed or checked by the Purchasing Department. Like the confirming order practice, unless these emergency purchases are carefully restricted to emergency conditions they can be used to circumvent the State Purchasing Department Act.

A third exception to the central purchasing system is the practice of the Department in buying directly maintenance materials that are to be put "in place" by the vendors. In 1932, the Attorney-General ruled that the provision of the State Purchasing Department Act of 1931 excepting the construction or repair of any road or bridge, or "the performance of any like work" from the operation of the statute, permits the Highway Department to buy any material that requires

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[458] The National Institute of Public Administration (Abell Commission) report, *op. cit., p. 68,* recommended that confirming orders be confined to real emergencies, in commenting on the abuse of the system before 1930.

the services of the vendor in putting it in place on the road.[459] In connection with purchases of this type where the amount involved is over $1,000,[460] the Supervisor of Purchase and Stores advertises for bids in the name of the Chief Clerk, complete specifications being furnished the bidder. The bids are turned over to the Superintendent of Maintenance who, through the Highway Engineer, recommends the award of the contract to the Highway Commissioner. The Commissioner then takes formal action by order, the Legal Division draws the agreement, and the contract is executed.[461]

The Supervisor of Purchase and Stores handles all purchasing details for the Highway Department in the name of the Chief Clerk, who is his direct supervisor. The name of the Chief Clerk appears on the various forms used, and these forms are signed by the Supervisor as his agent.

When a sub-division needs certain material, supplies or equipment, an order request form is prepared in quintuplicate by the person in charge of the sub-division. Two copies are retained at the office of origin and three go to the Division head for his signature. The order request is approved by the Chief Auditor and Accountant as to funds,[462] and then by the Highway Engineer. The original copy passes to the Supervisor of Purchase and Stores and two copies go to the Auditing and Accounting Bureau. The Supervisor of Purchase and Stores decides whether the items are to be bought by him or through the State Purchasing Department. Where the purchase is to be made direct, the Supervisor attends to all the details. If the amount involved is over $1,000, the regular procedure of advertising for bids and letting the contract is followed.

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[459] It will be noted that this is not as broad an interpretation as the one made under the 1916 act.

[460] *R. S. 54:34-1* provides that no contract for the construction, alteration, extension or repair of a building, or for the doing of any work or labor, or for the furnishing of any goods, chattels, supplies or materials of any kind, the cost of which exceeds $1,000, shall be awarded, made or entered into by any State department or by any person on behalf of the State, without first having publicly advertised for bids, according to specifications to be furnished to or for the inspection of the prospective bidders.

[461] The amount of these purchases of materials "in place" amounted to almost $35,000 in 1940, according to the Supervisor of Purchase and Stores.

[462] If the amount involved is over $1000, the Commissioner must first approve the order request before it passes to the Chief Auditor and Accountant.

The Supervisor then prepares six copies of the purchase order, the original going to the vendor, a copy remaining with the Supervisor himself, and the other copies going respectively to the representative in the field, the Division office, Division Auditor, and Cost Accountant in the Bureau of Auditing and Accounting.[463]

Where the items requested are to be bought through the State Purchasing Department, the Supervisor of Purchase and Stores prepares a form in duplicate known as a detailed application, setting out the estimated amount of material that will be required for the period indicated, the description, date that delivery is wanted, and the standard or specification number.[464] The original is sent to the Purchasing Department.[465] Where the amount involved is less than $1,000, the Purchasing Department proceeds to buy the desired items at the lowest possible price. The Highway Department is not consulted unless some question regarding the materials arises. The Purchasing Department sends a copy of its purchase order to the Supervisor of Purchase and Stores and he, in turn, prepares a set of copies for the field representative, Division office, Division Auditor, Cost Accountant, Laboratory and for himself.[466]

Where the amount involved is over $1,000, the Purchasing Department prepares the advertisement for bids. The Supervisor prepares the detailed specifications on certain types of purchases, particularly main-

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[463] The field representative makes an itemized record of materials received and the bridge or job to which they were delivered, on the back of his copy. He is required to forward the usual car record and truck shipment reports to the central office daily. Upon completion of the delivery of all the material, he signs the copy and returns it to the Division head. The Division office copy has a similar itemized record on its reverse side. The Division Auditor records all bills passed on his copy which shows, for each delivery, the amount chargeable against the purchase order for material, carrying charges and demurrage. The latter item is carefully watched to eliminate or keep it at a minimum.

[464] There is a special form of detailed application used only for stationery stocked by the Purchasing Department in its storeroom and available immediately. The Supervisor of Purchase and Stores prepares this form in duplicate, sending the original to the Purchasing Department and retaining the copy.

[465] Purchase orders made by the State Purchasing Department for any using agency are subject to the approval of Commissioner of Finance. *R. S. 52:23-11.* In addition, the provisions of Executive Order No. 1 make all highway purchases subject to his control.

[466] These copies are very much like the direct purchase order copies referred to above. It is to be noted that these purchases of less than $1,000 by the Purchasing Department involve items all of which invariably go to a single point for use.

tenance materials, and provides a sufficient number of copies for the Purchasing Department to send out to prospective bidders along with its proposal forms. The Purchasing Department tabulates the bids received, except in the case of maintenance materials, where they are sent to the Supervisor of Purchase and Stores for tabulation. These latter bids are then analyzed by the Superintendent of Maintenance, who recommends the lowest responsible bid to the Highway Engineer. After the Engineer and the Highway Commissioner have approved the recommendation, the bids go back to the Purchasing Department which then executes a contract with the successful bidder. It also draws up a master order, a copy of which goes to the Supervisor of Purchase and Stores.

As the Maintenance Division requires the materials, regular order requests are prepared and signed by the Superintendent of Maintenance. These come to the Supervisor of Purchase and Stores who then draws an authorization to furnish the contract materials. The original goes to the vendor, copies being supplied to the field representative, Division office, Division Auditor, Cost Accountant, Purchasing Department, and Laboratory, one being retained by the Supervisor.[467]

The practice of the Purchasing Department in referring bids to the Highway Department for tabulation and analysis has obvious merit. It is the extension of this practice that is open to criticism. Centralized purchasing demands that the Purchase Commissioner decide who is the lowest responsible bidder under the specifications for a particular material. There is nothing wrong in his obtaining the advice of the Highway Department as to the quality of the materials offered and the responsibility of the vendor. But for the Purchase Commissioner to allow the Highway Department to analyze the bids, which are then returned to him by the Highway Commissioner with detailed instructions as to who shall get the business and in what proportion, amounts to nothing less than a delegation of his authority.

Very often identical bids are received for maintenance materials like cement, calcium chloride, steel and wire products, and stone. The Highway Commissioner has rather carefully refused to recommend the

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[467] The field, Division office and Division Auditor's copies are like those described in footnote 463, and the same procedure is followed by all parties concerned.

award of contracts for the first two items, leaving that responsibility to the Purchase Commissioner, but he has not hesitated to make recommendations as to the other materials.[467a]

The opportunity for favoritism and a selective treatment of vendors is clearly present in all this. The practice of allowing the Highway Department to make definite recommendations of the award of bids should be discontinued. The Purchase Commissioner alone should be responsible for the decision; he may, if he wants to, consult the Highway Department concerning the integrity of the materials and the responsibility of the bidder, before making his own decision.[468]

An investigation of the general specifications, bid form and contract used by the Purchasing Department in connection with purchases for the Highway Department, reveals that the quantities set forth in the bid form are not intended "to be either a minimum or a maximum amount that may be required * * * The contract to be entered into shall be treated as a price agreement as provided in section 52:25-25 of the Revised Statutes. The Purchase Commissioner shall, therefore, have the right to order any amounts that may be needed by the State for delivery at any given point, and the bidder agrees to furnish the material needed at the point required at the bid price regardless of the quantity that may be shown in the Bid Form."[469] There are some advantages to an "open end" type of contract. The better practice, however, is to limit the amount of excess materials that can be purchased. A spot check of the Highway Department's file of purchase orders revealed several instances where large excess orders of maintenance materials had been made under the original contracts. These did not seem to be the result of any normal miscalculation in desired quantities. The danger of the "open end" contract is that the successful bidder may have prior knowledge of the possibility of large excess orders and quote accordingly, or that excess orders will be resorted to instead of

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[467a] See, for example, *Minutes of Meetings of the State Highway Commissioner,* minutes of May 17, 1935, where the Commissioner referred tie bids on joint filler and paints back to the Purchase Commissioner for determination of award.

[468] *Cf., The State Purchasing Department: An Administrative Survey,* by Alvin A. Burger and Thomas J. Graves, Department of Governmental Research, New Jersey State Chamber of Commerce (Newark, 1941), *p. 49.*

[469] *R. S. 52:25-25* states that "Agreements for purchases may be made in the form of contracts for the furnishing of specific articles at fixed prices, or for the articles according to the specifications at a fixed rate with provisions for a minimum amount subject to increase at the same rate, or for the furnishing of articles according to specifications without a stated minimum or maximum at a rate stated, commonly known as the 'price agreement' at the discretion of the [Purchase] Commissioner."

advertising for bids from other sources. It is recommended that all contracts for the purchase of materials and supplies contain a provision limiting the amount of excess orders that may be made thereunder to 20% or 25% of the quantity estimated in the bid form. The advisability of setting a similar lower limit for the minimum amount of material that may be ordered, should be considered. It is felt that a limiting provision of the type recommended will encourage closer bidding and make for a more careful calculation by Department officials of material requirements.[470]

It has been noted that purchases involving more than $1,000 must be duly advertised. The State House Commission has the power, however to grant a waiver of this important requirement "in case of public exigency, or for the purchase of perishable food supplies, or where property has been destroyed by fire or by the elements." Its determination of the existence of a public exigency may not be questioned.[471] This leaves the door wide open to an evasion of the statutory purpose, which is to encourage the widest possible competition in State purchasing.

An extraordinary example of such a waiver was the one granted by the State House Commission on March 28, 1938, which allowed the Highway Department to purchase materials for W. P. A. projects without advertising. The reason given at the time the waiver was requested was that the W. P. A. program had to be put into motion at once, or its benefits would be lost. To advertise for materials would entail delay. The waiver continued in full force and effect until it was discovered in the course of the present administrative study. It was immediately rescinded at the request of the Governor on August 26, 1941. The office of the Commissioner of Finance states that $10,700,000 was appropriated to the Highway Department for W. P. A. purposes during the life of the waiver.

This is an outstanding example of the manner in which the power of waiver can be abused. If there was any emergency at the time the

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[470] A provision limiting purchases in excess of or less than the estimated amount set out in the invitation to bid, is a common feature of public works agreements.

[471] *R. S. 52:34-5.* The waiver requires the unanimous vote of all the members of the Commission, taken in open public meeting. Waivers of advertising by the State House Commission were common before the passage of the 1930 act limiting waivers to public exigencies, etc. See *Minutes of the Abell Commission, op. cit.,* minutes of September 30, 1930. They seem to be equally common since.

waiver was requested, it soon ran its course. Once the W. P. A. program was started, the Highway Department was in a position where it could obtain the materials it needed in the regular way, through advertising and open, competitive bidding. The Federal Government and other governmental agencies found no difficulty at the time, or since, in obtaining road materials in that manner, and with a minimum of delay. Clearly, it was for the Highway Department to have asked for the rescinding of the waiver shortly after it had served its announced purpose. No estimate can be ventured as to the amount of money that might have been saved had W. P. A. materials been bought through the regular channels after May 1938.

There is need for a stricter control of the power to waive the advertising provision of the law. This power ought to be lodged in the Commissioner of Finance and eventually, after the State Government has been reorganized, in the proposed Commissioner of Fiscal Control[472] or other head of the central State fiscal agency. In this connection, it is interesting to note that by resolution adopted December 9, 1941, the State House Commission authorized the Commissioner of Finance and the State Purchase Commissioner to grant waivers during the present war emergency when in their joint opinion it is necessary to do so.

The State Purchasing Department maintains no inspection division and so makes no tests of the quality or quantity of the materials and supplies purchased for the Highway Department. The Highway Department, however, makes its own careful check. Sound purchasing practice dictates that the Purchase Commissioner should make a continuing independent inspection of deliveries, and it is so recommended.[473]

The State Purchase Commissioner is authorized to levy a maximum service charge of 2% on all purchases made for using agencies to cover the cost of operating the Purchasing Department.[474] These revenues go into the $250,000 revolving State Purchase Fund. Appropriations to the Purchasing Department are made in the annual Appropriations Act, and are met out of the Purchase Fund. This system

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[472] See *pp. 216* and *217*.

[473] *Cf.*, Princeton Survey report, *op. cit., p. 81.*

[474] This authorization was first included in the 1940 Appropriations Act, *P. L. 1940, c. 158, p. 505.*

of obtaining revenues through a service charge was adopted over the protests of the Purchasing Department. It has resulted in obscuring the appropriations to the Purchasing Department, has increased accounting work and been disadvantageous to the using agencies. The operating expenses of the State Purchasing Department should be financed by regular appropriations in the State budget, in the same manner as other State agencies, and the 2% charge discontinued.[475]

The Supervisor of Purchase and Stores has suggested the desirability of the Highway Department handling all of its own purchasing of highway materials, independently of the regular State purchasing system, because of the character of the work performed by the Department. Highway requirements, it is claimed, are quite different from those of other agencies, and should be purchased under the supervision of a single official responsible to the Highway Commissioner and located in the Highway Department. A saving in time, paper work and money will result. The suggestion is not new.[476] If followed, it would result in a dangerous departure from the adopted policy of centralized State purchasing.

It is realized that the Highway Department has available engineering personnel who could be used in purchasing road materials, supplies and equipment. It also has complete laboratory facilities for testing purposes, as well as a warehouse for storage purposes. But once the Highway Department is allowed to make its own purchases, it will not be long before other departments will be arguing for a similar exemption from the operation of the central purchase system. It would only be a question of time before that system would be wrecked.[477] Moreover, there is no real need for letting the Highway Department

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[475] See Burger and Graves, *op. cit., pp. 37* and *41*, for a criticism of this system and a similar recommendation. Discontinuing the 2% charge would eliminate a great deal of bookkeeping and relieve the Purchase Commissioner of the responsibility of establishing service charge rates which, if too large, will work to the disadvantage of the various departments because their purchasing capacity would be reduced.

The service charge levied by the State Purchasing Department cost the Highway Department $36,106.85 in 1939, $33,528.93 in 1940, and $9,405.15 in the first three months of 1941, according to figures supplied by the Supervisor of Purchase and Stores.

[476] See, for example, Burger and Graves, *op. cit., p. 51.*

[477] *Ibid., p. 52:* "One deviation from the system may easily start a chain of exemptions which would result in the complete demoralization of the centralized purchasing system and a return to former days. Governmental purchasing has developed to the point where specialized problems can be taken care of by a central bureau without resort to makeshift arrangements."

make its own purchases of road materials. All the advantages claimed for that arrangement can be obtained by assigning all highway purchases to a qualified purchase supervisor under the direction of the State Purchase Commissioner. Instead of allowing any further deviations from the established purchasing system, it is the recommendation of this report that *all* purchases made for the Highway Department, except for those of a strict emergency nature, should be made by and be subject to the absolute control of the State Purchase Commissioner. This includes purchases of materials to be put "in place."[478] A fully qualified and competent purchase supervisor should be appointed to the Purchasing Department who would specialize in purchasing for highway needs.

Returning, now, to the procedure followed where goods are purchased for the Highway Department by the State Purchasing Department, there is a special form that is used by the Supervisor of Purchase and Stores to report any shortage or rejection of items received, or condition of material varying from the specifications. He makes up this report on the basis of information received from the using subdivision. The original goes to the vendor, a copy being sent to the Purchasing Department. Adjustments in the purchase price are made in the light of these reports.

Provision is made in the State Purchasing Department Act for a so-called "Standards and Specifications Committee" composed of the State Purchase Commissioner, the Highway Commissioner or nominee, and the Commissioner of Institutions and Agencies or his nominee. It is the duty of this committee, among other things, to determine and establish standards and specifications for materials and supplies required by State agencies. Each using agency is afforded the opportunity of a hearing before the committee to assist it in formulating and establishing suitable standards and specifications. However, any using agency may veto any standard or specification covering any article required by it, stating its reasons for such veto in writing. It is then the responsibility of the using agency to formulate and submit to the committee such written standard or specification as the agency adjudges

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[478] This will probably require legislation, as long as the Attorney-General's interpretation of the State Purchasing Department Act remains unchanged. See *pp. 264* and *265*, and footnote 459, *supra*.

proper for its needs. The same thereupon becomes the standard or specification for such article insofar as the using agency in question is concerned.[479]

These statutory provisions relating to the Standards and Specifications Committee are entirely unsatisfactory in their present form. The section permitting a using agency to exercise a veto over any standard or specification adopted by the committee should be repealed.[480] The committee itself should be abolished and the State Purchase Commissioner made responsible for establishing standards and specifications. He will consult and advise with the using agencies that may be affected by his action, particularly the Highway Department and the Department of Institutions and Agencies, as well as with technical experts within or without the State employ. Little difficulty is anticipated for this arrangement. In the event of any disagreement between the Purchase Commissioner and any using agency regarding a specification, it has been suggested that the matter be certified to the Governor in writing, his decision to be final and binding.[481]

Stores:

The Supervisor of Purchase and Stores is in charge of the departmental stores located at Fernwood.[482] There are over 18,000 items in stock, valued at more than $250,000. A Storekeeper is in charge of a staff of six, but the responsibilities of that position are discharged by the Senior Stock Clerk, his chief assistant. The paper work is done by two men, a Senior Clerk, who maintains the in-and-out stock records, and a Stock Clerk who checks on deliveries and prepares the so-called "stock requests."

These stock requests are sent to the Supervisor of Purchase and Stores at the central office, where regular order request forms are made up and approved in the usual manner. A sufficient number of mimeo-

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[479] *R. S. 52:25-17* to *21.*

[480] *Cf.,* Burger and Graves, *op. cit., p. 17.*

[481] Princeton Survey report, *op. cit., p. 77.*

[482] These include a storeroom in the main building at Fernwood where automotive and equipment parts and supplies are stocked; a large building used for maintenance materials, supplies and equipment; a small building used for such items as rope, waste, lanterns, etc.; and part of another building where snow plow parts are kept. The Electrical Division has its own storeroom at Fernwood, and the Equipment Division maintains a storeroom at the Newark garage and small stores at other garages.

graphed copies of the detailed stock requirements are prepared to accompany the several copies of the order request form as well the copies of the detailed application form which is submitted to the Purchasing Department. After the Purchasing Department has bought the items requested and sent a copy of its purchase order to the Supervisor of Purchase and Stores, he makes up the usual copies of this order and sends the field copy and Division Auditor's copy to the Storekeeper.

As soon as the first delivery under the order has been completed, the Storekeeper checks off the items received on the Division Auditor's copy, notes that the balance of the order is listed on "back order" No.—, and sends the copy to the Supervisor of Purchase and Stores. These "back order" forms are used to list all items still remaining to be delivered under a purchase order, and are numbered. When some of the remaining items are delivered, the Storekeeper notes that fact on his first back order form, indicating that the balance of the items still due under the order is now carried on a new back order No.—, and sends the first back order to the Supervisor. This system of back orders is continued until all the items have been delivered. The Supervisor thus has constant information as to the status of the order. The back orders also inform him of the number of tank cars or containers at Fernwood, and how long they have been there, so that demurrage charges can be kept at a minimum through prompt returns.

A materials requisition system enables the Supervisor of Purchase and Stores to keep a careful check on departmental stores. Requisition slips for materials and supplies drawn from the Fernwood stores come in bound sets, and are serially numbered. Both the person issuing any item from stores and the one receiving it, sign the requisition slip. There are three types of charge-out slips:

1. Those used by highway employees at Fernwood in withdrawing automotive and equipment parts, which must be approved by the head of the Equipment Division or his authorized representative before the item requested is issued. The slips come in duplicate, one copy remaining bound in the book while the perforated copy is sent to the Supervisor who checks its serial number and passes it on to the Cost Accountant so that he may charge the item to the equipment or job on which it is used.

2. Those used for tools and supplies needed in the field. The foreman or supervisor in charge of the job in the field first prepares a "tool and supply requisition" in quadruplicate, which must be approved by the Division head or his authorized assistant. Copies are kept by the person in charge of the job and by the using Division; a copy goes to the Cost Accountant and the original to the storeroom. There a charge-out slip similar to the one described above is made, in quadruplicate. The original goes to the Cost Accountant, a copy remains bound in the book, and two copies are sent to the foreman in charge of the job, who receipts one and returns it to the storeroom at Fernwood.

3. Those used in connection with materials and supplies for the Electrical Division. The Supervisor of Purchase and Stores arranges for the purchase of such items as are needed by the Division, and it draws these materials from the departmental stores at Fernwood under a charge-out system exactly like that described above for automotive and equipment parts. The Electrical Division then stocks these items in its own storeroom, maintains its own stock records and uses a charge-out system of its own.

One of the storeroom staff is assigned to pick up shipments for the storeroom arriving at local freight stations, using a truck for this purpose. Deliveries from stores to jobs in the field are made by a Department truck that is going in that direction. If the tools or supplies are needed at once, the Equipment Division provides a truck and the using Division is charged for the service.

The Supervisor of Purchase and Stores maintains a perpetual inventory of the materials and supplies stocked in the Fernwood storerooms. The Bureau of Auditing and Accounting sends its men in once a year to take a complete physical inventory, and spot checks are made from time to time.

The departmental stores are well managed by the Supervisor of Purchase and Stores. The system used provides a constant and accurate check on purchases for and withdrawals from the storeroom, and also results in a proper distribution of charges to the using Division for materials and supplies taken from the storeroom.

It is recommended that the Supervisor of Purchase and Stores manage and control all departmental stores, including the Electrical Divi-

sion storeroom at Fernwood and the Equipment Division storerooms located in the Newark garage and other garages. This will centralize stores and inventory control and result in an even more efficient system than now exists.

Vendors send in their bills for materials and supplies on a standardized invoice. These bills are audited by the respective Division Auditors and approved by the Division heads where the goods sold have been used in the field, and by the Supervisor of Purchase and Stores where the items have been delivered to the Fernwood storeroom. The bills are then audited in the Bureau of Auditing and Accounting. Where the purchase has been made by the State Purchasing Department, the bill is then sent to its bookkeeping section where it is audited against the original purchase order issued by the Department. This is done by one of the three representatives of the Comptroller's office permanently stationed there. After auditing, the invoices are turned over to the Purchase Commissioner for his signature and for transmittal to the Comptroller for payment. Bills representing direct purchases made by the Highway Department are, after being audited in the Department, approved by the Chief Clerk and sent to the Comptroller for payment.

The Cost Accountant in the Bureau of Auditing and Accounting maintains a complete inventory record, and charges out against it. When materials and supplies are delivered to the Fernwood storeroom, he prepares punch cards for each item, indicating the unit price. As the requisition slips come through from Fernwood the card is punched to show into what Division or piece of equipment the goods went. By running the cards through the I. B. M. equipment that it rents, the Auditing and Accounting Bureau can readily charge out the items against each using Division or piece of equipment.

The Supervisor of Purchase and Stores arranges for the sale of scrap materials under annual contracts. After soliciting bids from as many people as possible, he presents his recommendation of the award of the contract for the approval of the Highway Engineer. Obsolescent material is sold from time to time to the person bidding the highest price.

A total of 4,300 purchase orders was placed during 1941, the State Purchasing Department handling 3807 purchases and the Purchase and

Stores Bureau making direct purchases in 493 cases. These orders represented a dollar value of approximately $1,526,329.97. The Supervisor of Purchase and Stores handled 3064 order requests, 1289 of which came from the Maintenance Division and 731 from the Bureau of Purchase and Stores itself.

Mail Room and Office Boys:[483]

The Supervisor of Purchase and Stores is in charge of the Highway Department mail room, located in the basement of the State House Annex. The departmental mail is picked up at the post office before the start of business daily and again at 11:00 a. m. and 2:00 p. m. It is brought to the Annex where it is opened and sorted by the office boys. Envelopes containing reports and time books are sent directly to the Divisions, unopened. Letters that may be answered are recorded in a book before being distributed. These letters are numbered serially, starting each month. When the letters are answered, a copy of the reply bearing the original serial number is sent to the mail room. These copies are bound. Outgoing mail is taken to the post office after office hours. The Supervisor of Purchase and Stores handles the purchase of stamps and keeps the master stock in his possession. As stamps are needed, they are perforated with the letters "SHD" and used in the mail room. No accurate check is kept on the stamps used. Only a small part of the time of the six office boys is devoted to the mail room, their main duty being to act as intra-office messengers.

There is a central mail room in the State Capitol building which serves the various State agencies located in the State House and Annex. The mail room maintained by the Highway Department should be abolished and the departmental mail handled through the State House post office.[484] It is also recommended that a check be made to determine whether the number of office boys now employed is warranted.

Mimeograph and Printing Room:[483]

The Supervisor of Purchase and Stores is also in charge of the mimeograph and printing room of the Department. The amount of

[483] See *p. 53, supra.*

[484] Cf., National Institute of Public Administration report, *op. cit., p. 81.*

duplicating and printing work done has increased considerably during recent years. Four employees turn out a large number of forms and letterheads, as well as mimeographed material that includes minutes of meetings, specifications and lists of materials to be used in connection with purchasing, reports of all types, and publicity releases. The available equipment consists of two electric and one manual mimeograph machine, a Multilith, a Ditto machine, an electric Graphotype machine, a small printing press, an Addressograph, and other incidental equipment and supplies. The material for the various jobs is obtained from the State Purchasing Department warehouse and is charged back to the respective using Divisions.

There is a serious lack of space in the mimeograph and printing room. More adequate quarters should be provided in view of the amount and quality of the work done.

The Supervisor of Purchase and Stores is responsible for the stockroom in the Annex basement where stationery and other supplies are kept for the entire Department. Each division is charged with the supplies drawn for its use.

Central Files:[485]

Many of the files and records of the Highway Department are stored in an entirely unsatisfactory manner.[486] Two outstanding examples are the records of the Auditing and Accounting Bureau, which have overflowed into the corridors outside the Bureau offices on the second floor of the Annex, and the extremely valuable files relating to real estate acquisitions that are kept in the Annex basement. The situation respecting the latter is especially serious, because they are in danger of loss, damage or destruction. When these files were transferred to their present location, the job was done in such a manner that it sometimes takes days before a file can be found. Steps should be taken at once to secure adequate and safe quarters for the departmental files and records.

Although most Department records eventually find their way to the central files, it should be required that all plans, records and cor-

[485] See *p. 54, supra.*

[486] See *p. 32, supra.*

respondence be sent promptly to the central file room, except for such plans and records as are absolutely necessary to the current work of a particular Division or Bureau. At the present time, the Maintenance Division keeps its own files, but the Chief File Clerk gets a large number of its records through the Highway Engineer who sends his copies to the central file room. The same is true for the Equipment and Transportation Division and the Electrical Division. The Real Estate Division keeps its own blueprints, and so does the Survey and Plans Bureau in the Construction Division.

There has been some discussion in the past of establishing a comprehensive central file system. Nothing was done about the matter—probably because of the lack of space. If proper facilities were provided, it would be possible to bring together in one place all the files of the Department, other than such active files as happen to be in use in the several Divisions. These files could be arranged by Divisions and Bureaus. They would be properly edited, indexed and, where deemed advisable, bound. In the case of any Division or Bureau handling plans, its plan files could be placed next to its general files. Properly managed, this centralized system of departmental files and records would result in a very efficient and useful arrangement. A certain amount of duplication of plans and records could probably be eliminated.

There is need for a practical consolidation of many of the plans and records now found in the central file room and in the various offices of the Highway Department. This will result in a saving of space as well as in bringing together under one cover such items as properly and logically belong with each other. Many of the relatively inactive files of the Department, including minutes of meetings, County Aid and Township and Borough Aid records, have been brought together, arranged and bound during the past year under a W. P. A. project. This work should be continued throughout the Department wherever possible, until a maximum consolidation has been effected.

Attention is particularly called to the possibility of consolidating the real estate files, so as to include for every section of each route, the files of the Real Estate Division, Supervisor of Titles, Title Officer, and Legal Division. This project was once started, but was discontinued upon the order of the Highway Engineer.[487]

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[487] See *p. 66, supra.*

Public Relations:

There is a clear lack of proper public reporting of the work of the Highway Department. This deficiency is of long standing and is in contrast to the public relations programs carried on by progressive highway organizations in other States.[488] Serious consideration never seems to have been given to the need of fostering a real public understanding of the Department's problems and activities through a sound and sustained program of public relations.[489]

The present public relations program of the Department, such as it is, is limited to newspaper releases, road condition reports, the distribution of road maps, and the rather circumscribed activities of the Engineer of Special Design. The former Confidential Clerk to the Highway Commission used to handle publicity for the Department. When the Highway Commission was abolished, the Commissioner assigned him to a nebulous position in the Administration Division, but permitted him to retain his by then incongruous title. The Commissioner appointed a Confidential Assistant of his own and undertook to inform the public of the work of the Department through mimeographed publicity releases and occasional statements. Within recent months a part time publicity man has replaced the Confidential Assistant.

The Engineer of Special Design, whose duties have been described elsewhere,[490] is also under the Commissioner. The educational program which he has tried to develop with limited assistance and encourage-

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[488] The Michigan Highway Department is a leader in this field. The importance of a sound public relations program was emphasized by the present Highway Commissioner of that State at the annual meeting of the American Association of State Highway Official in 1938. Kennedy, *op. cit., pp. 10* and *11*. He pointed out that such a program can help sell the story of the highway planning surveys, further public safety educational work and encourage recreational travel, among other things. The Michigan public relations division has an importance status in the highway organization; experience has proved that it "has brought excellent results in public understanding and public support of the highway job." See *pp. 158* and *159, supra.*

[489] In an unpublished section of the National Institute of Public Administration report, John W. Follin declared that "unfortunately, the story of the State Highway accomplishments has not been told to the taxpayers. The Department has issued no reports of its work for popular consumption nor emphasized, to the extent warranted, the significance of its major projects. The Department should pursue a wholesome program to inform the public of its work—not for the glorification of the members of the Highway Commission or of its major executives—but to herald properly the State's outstanding accomplishments and to account for the large sums placed under its trusteeship." *Minutes of the Abell Commission, op. cit.;* minutes of September 23, 1930, *p. 29.*

[490] See *p. 43, supra.*

ment, has stressed the safety features in highway design and lighting evolved in recent years. He has prepared a film on this subject and shown it to audiences around the State. He has also prepared pictures and other exhibits relating to highway work, and given lectures on certain aspects of the highway program. Occasionally, he makes models and drawings of proposed construction for publicity purposes.

The Head Clerk in charge of the so-called Statistical Bureau in the Administration Division, prepares the Department's monthly reports on road conditions for the use of newspapers, automobile clubs and other interested persons and bodies.[491] At the direction of the Highway Engineer he also puts together what is known as the "annual report" of the Department. This consists of a bound set of mimeographed (and sometimes typewritten) reports prepared by the several Division and Bureau heads.

The State highway organization issued a printed annual report from 1894 to 1922. In 1923 the present type of annual report made its first appearance. It can make no claim to completeness, clarity or interesting content. It does not include every Division and Bureau report; an examination of the annual reports since 1923 shows that one or more reports are missing in each volume.[492] There was never a report made by the Highway Commission, nor has there been any by the Highway Commissioner since 1935. In some years not even the Highway Engineer made a report; when he did, it was often sketchy.

There is no evidence whatsoever of any attempt to edit the reports submitted for inclusion in the annual volume. They lack proportion, each Division and Bureau head writing as much or as little as he pleases. No effort has been made to achieve a proper internal arrangement of the annual report. Clarity and interest are entirely lacking.

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[491] See *p. 54, supra.* Although nominally responsible to the Chief Clerk, the Head Clerk is subject to the direction of the Highway Engineer. He maintains a card record system relating to the various features of the State Highway System, including mileage, road dimensions, type of pavement, cost figures, travel lanes, etc. From these records he is able to prepare such statistical studies as the Highway Engineer may call for from time to time.

[492] The annual reports since 1927 are more complete than the earlier volumes. However, the Administration Division is represented by only the financial report of the Bureau of Auditing and Accounting until 1940, when the Purchase and Stores Bureau report is included for the first time. Reports of the Real Estate, Laboratory and Equipment Divisions are lacking for single years. In some cases, the Division or Bureau report is missing because it was never rendered.

The explanation for all this lies in the fact that the report has never been intended for public consumption. It is addressed to the head of the Department. Only 10 copies are prepared, and these are distributed to the Governor, Highway Commissioner, Highway Engineer, State Library, and a few departmental officials. An examination of the printed reports of over 40 States reveals few instances of highway reporting as bad as New Jersey's. The bound volume prepared by the State Highway Department is a prime exhibit of bulky, undigested and uninteresting reading matter.

The plan of reorganization proposed for the Department contemplates the setting up of a Public Relations Bureau under the chief administrative officer.[493] Its first duty should be the development and preparation of a printed annual report covering the work, finances and problems of the Department in a clear, understandable and interesting manner. There can be no objection to detailed mimeographed or typewritten reports for intra-departmental use and reference. The Legislature and the public, however, are entitled to as interesting an account of the work of the Department as it is possible to assemble. There are outstanding examples of such reports issued by highway departments elsewhere, presenting an effective and comprehensive picture of highway work to the public at large.

All Division and Bureau heads, as well as the chief ranking Department officials, would be obliged to contribute to the annual printed report. The head of the Public Relations Bureau would be responsible for the proper editing, publication and distribution of the volume.[494]

Practically no reports dealing with special features of the Highway program have been issued by the Department.[495] Important projects

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[493] See *p. 43, supra.*

[494] The State Librarian has the duty, subject to the approval of the Governor, of examining, editing and preparing appropriate indexes of all official reports presented by any official, institution, board, commission or department of the State, and of determining what parts, if any, and the number of copies of such reports that shall be printed. No official report may be printed unless so examined and edited by the State Librarian and approved by the Governor. *R. S. 52:14-20.* A provision still remaining on the statute book directs that reports approved for printing "shall be printed in the compact style of the annual report of the State Geologist for the year 1893"! *R. S. 52:14-21.*

[495] The report of the State Highway Engineer to the Highway Commission, recommending a comprehensive State highway system for the State of New Jersey in accordance with Senate Concurrent Resolution No. 3, was published in 1926. The Electrical Division prepared a report on its safety lighting program in 1940 for general distribution (*Oh Say Can You See?*).

like the Skyway (Route 1 Extension), the George Washington Bridge approaches, and the Rockefeller Memorial Highway (Route 40) beautification; developments in highway design; research work carried on in the Laboratory and in the field; problems faced by the Department, such as needed improvements to the State Highway System, or the advisability of taking over the secondary road system—these are but a few of the subjects that could be dealt with in special publications of the type suggested. These should prove of interest not only to those in the highway field but also to the public at large.[496] It is recommended that the Public Relations Bureau undertake to issue such publications from time to time.

In fact, the Department should strive constantly, through newspaper releases, motion pictures, exhibits, lectures, radio talks, and other appropriate means to give the public a clear picture of its work and problems in building up and maintaining the highway system. At present, the public has no real conception of the work of the Highway Department; the Legislature is scarcely better informed.[497] The highway picture has been given to them piecemeal, in meaningless fragments. The accomplishments for any one period, current problems, contemplated programs, needs of the future—these are unknown territory to almost everyone outside the Highway Department, and, if the truth were known, to a large number of those within the organization.

Good reporting will bring its own rewards. It will make for better understanding and dissipate the suspicion now existing in the minds of the public regarding the Department. If nothing else, it will give to the people of the State a clear and rounded account of what is going on in highway work, what it is costing, what value they are getting from the highway program, and what problems the future holds.[498]

The proposed Public Relations Bureau will carry on an information service intended to furnish the public with such information as

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[496] Testifying before the Abell Commission, one of the members of the State Highway Commission declared that lack of publicity was the cause of the public and the Legislature not knowing the reasons for the greatly increased cost of the 1927 highway system or the connecting link (Skyway). *Minutes of the Abell Commission, op. cit.,* minutes of September 9, 1930, *pp. 54* to *56* and *63* to *64.*

[497] So fundamental a fact as the amount of money administered by the Department annually is almost always misstated. The figure commonly used is $50,000,000; the actual figure for expenditures and commitments in recent years has been under $30,000,000, except for 1939 when it just exceeded that amount. See Schedule 2, *p. 187, supra.*

[498] *Cf., Minutes of the Abell Commission, op. cit.,* minutes of September 23, 1930, *p. 61.*

it wants or needs for the fullest and safest utilization of the State Highway System. It will keep the public informed about road conditions through newspaper and radio channels, and through regular bulletins having wide distribution. It will seek to encourage travel promotion by means of tourist information. In this connection, the Bureau will prepare and distribute road maps and other pamphlets relating to the roads of New Jersey and the many recreational, historic and scenic areas of New Jersey through which they pass.[499]

In addition, this Bureau will carry on a continuous and varied campaign of safety promotion in cooperation with the Motor Vehicle Department and the State Police. The object will be the prevention and control of traffic accidents by encouraging safe driving and giving warning against practices and conditions which create special hazards. Radio, motion pictures, newspaper releases, and lectures before organizations and school bodies will be especially effective in promoting this traffic safety program.

Finally, the Public Relations Bureau would continue the present work of the Statistical Bureau and prepare statistical studies needed in connection with the work of the Department or for public relations purposes.[500]

Summary of Administrative Functions:

The various functions discussed in this section dealing with the work of the Administration Division will be distributed in accordance with the plan of reorganization proposed in chapter III.[501]

The Finance Bureau will continue to handle the general accounts, auditing and cost accounting; prequalification of contractors; insurance; and the preparation of the budget, financial reports, all payrolls and statistical analyses (financial), in addition to all matters of a fiscal nature. The Office Management Bureau will be in charge of all

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[499] This work would be carried on in cooperation with the New Jersey Council, created by *R. S. 52:9C-1*, of which body the State Highway Commissioner is a member. The purpose of the Council is "to advertise the agricultural, educational, industrial, recreational and residential advantages of the State of New Jersey."

[500] The proposed Finance Bureau, however, would continue to be responsible for statistical analyses of a financial nature.

[501] See *pp. 156* and *157*.

personnel administration, except the preparation of payrolls; purchase and stores, the central files, all printing and reproduction work, the storeroom in the Annex basement, the handling of departmental mail, the supervision of the office boys, and the letting of contracts for construction work. The duties of the Public Relations Bureau have been outlined in detail above. These Bureaus would be in charge of the chief administration officer, as would the Land and Legal, Highway Planning and the Plant and Equipment Bureaus, whose functions will be discussed below.[502]

LEGAL DIVISION[503]

There is a very close relation between the work of the Legal Division and that of the Real Estate Division. Most of the time of the personnel of the former Division is taken up with title searching and reading, real estate settlements, condemnation cases and specific performance suits. It is significant that the salaries of counsel assisting the General Solicitor who heads the Legal Division, as well as of the Supervisor of Titles and the Title Officer and their respective staffs, are charged to the payroll of the Real Estate Division.

The desirability of combining the work and personnel of these two Divisions has been recognized in the past, and attempts made to effect a consolidation. These failed because the officials involved could not agree upon the method of consolidation or because the friction existing among them made impossible a fair trial of any such arrangement.[504]

Where two functions are so closely interrelated, personal considerations should not be allowed to stand in the way of a reorganization proposed in the interests of economy and efficiency. Accordingly, it has been recommended[505] that a Land and Legal Bureau be established under the principal administration officer of the Department, which

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[502] See *pp. 371* and *563, post.*

[503] See Appendix B for discussion of the relationship of the Highway Department to the Courts of New Jersey.

[504] See *pp. 26* to *28, supra.* The Princeton Survey report, *op. cit., p. 205,* pointed out that the heads of the Legal Division and the Division of Appraisals and Negotiations agreed that the two organizations could be consolidated, but could not agree upon the method to be used. This was in 1932.

[505] See *p. 156, supra.*

would take over the duties of the Real Estate Division and Legal Division, as well as the work of the Special Engineer now reporting to the Highway Engineer and the disposal of excess real estate.

General Solicitor:[506]

The General Solicitor has been one of the chief aides of the Highway Commissioner, along with the Highway Engineer and Chief Clerk. He is responsible for the legal work of the Department. His position is protected by a special tenure act passed in 1939 for which there seems to have been little justification.[507] This tenure protection is unique in the Department. It would seem that if any protection is to be afforded the General Solicitor it should be by placing his position, as well as those held by counsel assisting him, in the classified Civil Service.[508] The 1939 act should be repealed.

Legal Assistants:

The legal staff assisting the General Solicitor consists of six counsel appointed by the Attorney-General, together with the Workmen's Compensation and Claims Clerk, who is in the classified Civil Service.[509] The latter is a full-time employee at a salary of $2,940. The six assisting counsel are on a part-time basis, one receiving $6,000, four $5,000, and one $4,000 a year. At the time the present General Solicitor was appointed to the Department late in 1930, the legal staff consisted of an Assistant Attorney-General, acting as full-time counsel to the Department, assisted by five counsel, including the new appointee. The volume of legal work was great; the 1927 State highway program

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[506] See *pp. 57* and *58, supra*, for the status and duties of the General Solicitor.

[507] The General Solicitor states that the act was passed in order to create the position of legal administrator in the Highway Department on a full-time basis, and that tenure was afforded so that it would be attractive to one desiring to make a career of the job. He was Chief Counsel to the Department at the time. His predecessor in that position received $15,000 a year until 1934, when it was reduced to $8,000. Upon his retirement in 1936, the position was offered to the present General Solicitor by the Commissioner who stated that he could not restore the former $15,000 salary but suggested the possibility of increases from time to time. The appointment was accepted on a *full-time* basis at $7,500, and this was increased to $9,000 in 1937. Immediately after the passage of the 1939 act, the Commissioner appointed the Chief Counsel to the new position at $12,000 a year. See, *Minutes of Meetings of the State Highway Commissioner,* minutes of August 4, 1936 and July 11, 1939.

[508] *Cf.,* Princeton Survey report, *op. cit., p. 235.*

[509] See *pp. 58* and *59, supra.*

was then in full swing. Condemnation work, for example, was so heavy that it often became necessary to call in special attorneys on certain projects, such as Route 21 through Newark, or the George Washington Bridge approaches. In 1932 Governor A. Harry Moore insisted that the number of Assistant Attorneys-General in the various departments be reduced. Due to the intervention of the Attorney-General, four assistants were left in the Highway Department because of the volume of condemnation work. The Foran Commission eliminated the use of special attorneys outside the Department, but increased the staff of assistant counsel to six, the present number, although the amount of legal work had already dropped off considerably.

The volume of condemnation proceedings and other legal work arising out of the acquisition of real estate for highway purposes, has decreased steadily since 1931. This is demonstrated by the figures set out in Schedule 3 on page 289.

Workmen's compensation proceedings and damage claim cases have become increasingly important during the past few years. This work has been performed largely by the Workmen's Compensation and Claims Clerk,[510] so that the duties of the six counsel assisting the General Solicitor have not been increased thereby. An examination of the reports of the Legal Division shows only one new category of legal work during recent years. This is the preparation of electrical agreements for execution by municipalities and counties involving highway lighting and traffic signals, and the approval of these agreements after execution. This is a relatively minor addition to the work of the Division, the agreement form being fairly standard.

In view of the greatly decreased work of the Legal Division during the past few years there has, therefore, been no justification for the number of counsel carried on the Department payroll. It is recommended that their number be reduced to two, or at most three, in addition to the General Solicitor and the Workmen's Compensation and Claims Clerk, these men to serve on a full-time basis and to receive salaries commensurate with the duties and responsibilities of their positions.[511] The exact number of counsel will be determined in the light of an analysis of the work of the Division.

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[510] See *infra.*

[511] *Cf.,* Princeton Survey report, *op. cit., pp. 204* and *205.* A part-time counsel, at a salary of $5,000, assisted by an attorney who devoted half his time to other duties in the Chief Clerk's office, tried 120 condemnation cases in one year in the mid-1920's.

The cost of operating the Legal Division decreased after 1931. However, it has gradually increased since 1936, as shown by the following figures:[512]

Operating Cost and Salaries, 1931-1941

Year	*Total cost*	*Salaries*	*Condemnation awards approved during year*	*Percentage of cost to awards*
1931	$382,927.65	$64,120.58	$4,323,068.51	8.85%
1932	227,575.51	62,461.92	1,530,326.68	14.87
1933	87,283.13	50,028.82	864,616.46	10.09
1934	92,296.28	46,543.97	781,379.58	11.81
1935	92,581.84	47,564.18	338,277.78	27.37
1936	66,769.45	46,377.94	213,654.97	31.25
1937	68,490.65	50,048.30	165,138.88	41.47
1938	69,986.61	52,306.18	140,652.98	49.76
1939	72,598.58	54,755.53	100,618.57	72.15
1940	93,407.34	56,820.12	83,543.72	111.81
1941	88,443.38	55,291.59	[513]	

In terms of the total condemnation awards approved, the cost of operating the Legal Division increased from 8.85% to 111.81% in the decade from 1931 to 1940. Since 1933, salaries have constituted the major part of this cost.

The General Solicitor tries, insofar as is practicable, to route the work of the counsel assisting him. Such time as they give to the legal work of the Department is taken up almost entirely with court appearances. The paper work, such as the preparation of the petitions in condemnation, and details like arranging dates for the appointment of condemnation commissioners, are taken care of by the clerical personnel in the Division office. Counsel first appear in court on the day the condemnation commissioners are to be appointed.

The practice of engaging special attorneys to handle condemnation cases, as in the early 1930's, has been almost completely done away with since 1935. Only one has been employed for that purpose in the past few years.

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[512] *Source:* New Jersey State Highway Department, and *Annual Reports, 1931* to *1941.*

[513] Figures for 1941 are not available.

Schedule 3

NEW JERSEY STATE HIGHWAY DEPARTMENT

LEGAL DIVISION

Work Arising Out of Real Estate Acquisitions, 1931-1941

Year	*Settlements during year, after condemnation begun*	*Condemnation awards during year*	*Settlements after awards and before appeal trials*	*Appeals tried*	*Cases Pending*	*Specific performance suits disposed of*	*Deeds approved*	*60-year titles approved*
1931	127	470	60	64	193	82	2392	1000
1932	64	231	61	44	106	15	1517	569
1933	15	133	32	24	75	5	810	332
1934	64	176	37	14	156	39	570	270
1935	23	66	19	22	101	1	406	220
1936	44	74	26	15	104	3	583	327
1937	18	52	15	8	105		368	131
1938	22	48	14	2	124		711	368
1939	18	37	8	4	100		786	321
1940	26	31	7	4	127		764	312
1941	15	52	3	3	36	3	621	314

Source: New Jersey State Highway Department Annual Reports, 1931-1941

Supervisor of Titles:[514]

The work of the Supervisor of Titles begins as soon as it has been decided to construct or improve a certain route. The Senior Right-of-Way Agent who heads the Real Estate Division informs him as to what parcels are to be acquired, and provides him with the necessary maps and descriptions that have been prepared by the Survey and Plans Bureau. The office assistant of the Supervisor of Titles maintains a report of search work in progress. Where an agreement has actually been entered into with the owner to acquire his property, or condemnation proceedings are about to be started, the particular parcel or parcels involved are marked for "action" and given preference by the searchers working in the field. Twenty-year searches are made where the appraised value is less than $750; a sixty-year search is prepared for all other parcels.

The Supervisor of Titles makes a progress report on the work of his office to the Highway Engineer and the General Solicitor weekly. If any question arises in connection with this work, he takes it up with the General Solicitor. The office assistant prepares all deeds, releases and other instruments for the Title Officer (*infra*) that may be required for clearing the title.

Whenever necessary, the Supervisor of Titles has his assistants in the field obtain such information concerning owners of record or the description of the property in question, as the Survey and Plans Bureau may inquire in connection with the preparation of the right-of-way plans.

There has been considerable friction between the Supervisor of Titles and the Title Officer since 1926, when the former, as chief of the "Right-of-Way Legal Division," was placed over the latter, then known as the Right-of-Way Agent.[515] The two-way split in title work dates from that time and was crystallized into its present pattern in 1933 when the Chief Counsel to the Department issued an order directing that the Supervisor of Titles handle all title search work, and the Title Officer be responsible for reading all searches and supervising the details connected with real estate settlements.

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[514] See *pp. 59* and *60, supra.*

[515] See *p. 27, supra.*

The work of these two officers is so closely interrelated that common sense dictates that one man supervise all title work and settlements. An assistant would be in charge of the searchers in the field. This would result in closer coordination and a more efficient handling of title work. Under the present arrangement, a search may be handed in to the Supervisor of Titles which the Title Officer subsequently finds deficient in certain respects. Delay and waste motion result. It is recommended that in the reorganization leading to the proposed Land and Legal Bureau, one man be placed in charge of all title work and settlements, and that he be assisted by a full-time employee charged with supervising the men in the field.

The present Supervisor of Titles gives only part time to his position, which is classified as a full-time job. The Department is entitled to the full-time services of a title search expert. It is recommended that the position of Supervisor of Titles be abolished under the proposed plan of reorganization and that the present duties of the position be transferred to the person who will assist the officer in charge of all title work and settlements.

Title Officer:[516]

When a title search has been completed, it is handed to the Title Officer. The Assistant Civil Engineer attached to his office checks the description, and if it is found to be correct the title search is read and all exceptions and doubtful matters noted. The Title Officer resolves all doubtful items at once. The exceptions are listed by the Title Examiner on a settlement sheet and must be removed before settlement. All instruments necessary to accomplish this end are prepared by the office assistant to the Supervisor of Titles. A Settlement Clerk then sends these instruments out to the proper parties for execution, with a covering letter stating what has to be done.

After the exceptions have been removed, the abstract of title is brought to the Title Officer, who checks it. If he finds it satisfactory, he then signs the title certificate.[517] Twenty-year title certificates are signed by the Title Officer alone; sixty-year title certificates are signed

[516] See *pp. 60* and *61, supra.*

[517] The Comptroller requires a responsible signature before he will issue his warrant. Until 1929, the procedure was to type out a complete abstract of title which the Title Officer and the Attorney-General signed. This made for much unnecessary work and so it was arranged with the Comptroller and the Attorney-General that a title certificate might be used.

by both the Title Officer and the General Solicitor. After approving the title certificate, the Title Officer sends it, together with an original and duplicate of the voucher approved by him, covering the price of the property to be acquired, to the Chief Auditor and Accountant. A duplicate of the certificate is retained by the Title Officer. The Chief Auditor and Accountant then audits the voucher for payment and sends the original, together with the title certificate, to the Comptroller, retaining the duplicate voucher for his records. The Comptroller has a check prepared and forwards it to the Chief Auditor and Accountant who hands it to the Title Officer. He attaches the check to the duplicate of the title certificate and turns the matter over to the Chief Settlement Clerk. Before any money is paid over, the deed must have been executed and delivered by the owner, recorded, and a continuation search made. Many settlements are made at the central office, but often, in order to expedite matters, the Title Officer sends a Settlement Clerk to the owner or his attorney, where settlement is made and the money distributed.

The Department never takes title subject to an encumbrance except in the case of an easement that has been given to a public utility. In all other cases, the encumbrance is reported to the Senior Right-of-Way Agent in charge of the Real Estate Division, who recommends condemnation proceedings. Where the owner has signed an agreement to sell but refuses to convey, and the title is found to be clear, the Title Officer recommends to the General Solicitor that suit for specific performance be instituted.

Once the parcel has been acquired, the Title Officer arranges the title file in proper order, numbers each page, and perforates the sheets on a machine to which he alone has the key. This is to prevent papers being added to or abstracted from the file,—a not uncommon experience in the past.

No special assistants are employed in connection with the reading or approval of titles.

The Title Officer renders a weekly report to the Highway Engineer on the work of his office. He also makes an annual report dealing with the operations of the Title Bureau.

Schedule 4 on page 293, shows the work and operating cost of the Title Bureau (the Supervisor of Titles and the Title Officer) for the ten-year period from 1931 to 1941, inclusive.

Schedule 4

NEW JERSEY STATE HIGHWAY DEPARTMENT

TITLE BUREAU

Work and Operating Cost, 1931-1941

Year	*Cases Closed*	*Amount*	*20 year searches*	*60 year searches*	*Continuation searches*	*Titles read*	*Instruments prepared*	*Operating cost of Bureau*	*%*
1931	2392	$11,317,890.50	962	1751	3924	2831	4151	$283,056.05	2.50
1932	1630	3,991,325.61	486	878	2594	1588	2677	215,939.57	5.41
1933	859	1,484,407.17	446	626	1475	975	1317	128,135.46	8.63
1934	648	1,185,401.55	426	485	1588	1031	1221	91,257.12	7.69
1935	512	1,419,435.30	384	394	1572	783	742	76,022.28	5.35
1936	624	1,035,418.00	379	262	1469	899	1047	79,424.33	7.67
1937	421	1,300,573.95	388	215	956	629	655	89,269.54	6.86
1938	651	1,465,431.25	530	304	1535	1034	1218	99,057.16	6.76
1939	743	1,962,500.00	458	307	1411	799	1157	102,145.93	5.20
1940	692	3,182,000.00	447	390	1362	849	1229	97,830.16	3.08
1941	620	2,461,406.82	482	374	1272	728	903	100,337.24	4.07

Source: New Jersey State Highway Department

Workmen's Compensation and Claims Clerk:[518]

The provisions of the Workmen's Compensation Act of New Jersey were extended to include public employees in 1931.[519] The broad interpretation given the statute by the Labor Department and the courts, and the increasing number of compensation claims filed against the Highway Department, pointed to the need of a more systematic and scientific handling of the whole problem. A series of conferences between the General Solicitor and the present Workmen's Compensation and Claims Clerk led to the establishment in 1936 of a separate office to deal with compensation matters and to carry out the procedure that had been decided upon of examining all laborers, whether applicants for a job or already in the service.[520]

This system of medical examinations has proved beneficial not only to the Department but to the workers as well. It has lowered the amount of compensation payments. Men who have been with the Department for some time and can no longer perform the heavier tasks assigned them, have been placed where there is less likelihood of injuries that may result in disability payments under the statute. Moreover, many employees in the service who had been unaware of possessing any physical defects, have had such defects called to their attention, so that in many cases they have taken steps leading to a partial or permanent cure, or at least been more careful in their work.[521]

The procedure followed in connection with medical examinations has already been described. The system should be continued, but it should be administered by the Personnel Officer in the proposed Office Management Bureau.[522]

The Workmen's Compensation and Claims Clerk should be integrated more closely with the regular legal staff under the General

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[518] See *p. 59, supra.*

[519] *P. L. 1931, c. 355,* supplementing *P. L. 1911, c. 95; R. S. 34:15-43.*

[520] The Superintendent of Maintenance had recommended medical examinations for highway laborers and the employment of trained investigators in his 1935 report. *New Jersey State Highway Department Annual Report, 1935,* report of the Maintenance Division. During 1937, the first year in which the system of medical examinations was in force, 1324 laborers in the Department were examined. Of these, 316 were affected by some sort of disability. At least 120 of them should have been removed from the departmental rolls forthwith, had it been possible to do so.

[521] Statement by Highway Commissioner E. Donald Sterner, April 23, 1941.

[522] See *pp. 254* and *255, supra.*

Solicitor at a salary commensurate with the many duties of his full-time position.[523] His office, now located in the building opposite the State House Annex, should be moved into the central offices of the Legal Division where the General Solicitor, to whom he is directly responsible, is located. Some of the varied duties now discharged by the Workmen's Compensation and Claims Clerk might be distributed among the other members of the legal staff. At present he not only has to carry the responsibility of compensation work and the collection of claims, but has been assigned to a large number of minor miscellaneous tasks.[524]

The Workmen's Compensation and Claims Clerk keeps a permanent file of all medical examinations given. He also maintains a complete record of every employee injured in the course of his employment and of all matters pertaining to the accident and the consequences flowing therefrom.

When an employee is injured, he is obliged to make a report on a regular form, one side of which is to be filled out by his foreman. Upon receipt of this form, the Workmen's Compensation and Claims Clerk sends a medical and surgical report form to the employee's physician to be completed and returned. Where the illness is prolonged, the Workmen's Compensation and Claims Clerk is supposed to check the case from time to time as to the progress being made by the employee and whether he is receiving proper medical attention. It has been almost impossible to follow up these cases because of the lack of assistance. The Medical Director connected with the office died in

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[523] Since the time that this administrative study was made and the recommendation proposed, his salary of $2,940 has been increased to $3,600.

[524] These include investigations and reports in connection with the discharge and removal of employees from service; preparing for and attending hearings in connection with the dismissal of employees on charges, and in connection with showing cause why certain applicants should not be employed or reemployed; conducting investigations with reference to personnel matters; drawing releases and obtaining their execution, and approving releases as to form for other Divisions; investigations of liability for medical and hospital bills and adjusting such bills; legal memoranda; investigating maritime accidents involving State highway bridges; interviews between employees and insurance company representatives; preparing and mailing subpoenas; drafting bond forms and approving bonds as to form; injunction and specific performance suits; the administration of the first-aid kit system; drafting lease forms for the Maintenance and Equipment Divisions; checking Department insurance policy forms; and obtaining and examining searches in connection with storage, gravel and sand pit leases. *New Jersey State Highway Department Annual Reports, 1939* to *1941;* reports of the Legal Division.

1940 and has not been replaced. His services were valuable both in the examination of injured employees and in carefully following up compensation cases.

Despite the handicap of a limited staff, the system inaugurated in 1937 has resulted in a marked decrease in compensation costs. Conservative estimates show that by being a self-insurer, the Department is effecting a considerable saving over and above the premiums that it would have had to pay for adequate compensation coverage. The following figures show the reduction in compensation costs and the estimated saving in premiums:[525]

Compensation Costs and Savings, 1937-1941

Year	*Compensation and medical costs*	*Million man hours worked*	*Total cost per million man hours*	*Amount of saving over 1937*	*Estimated saving over insurance premiums*
1937	$42,767.54	4,697,789	$9,100.00		
1938	33,560.18	5,336,738	6,280.00	$15,004.13	$58,000.00
1939	31,729.95	6,458,041	4,910.00	28,039.17	96,830.51
1940	37,766.87	7,071,919	5,320.00	26,587.59	95,852.66
1941	26,591.86	6,112,266	4,350.00	29,029.76	100,373.44

An injured employee may engage the services of any physician or surgeon of his choosing. When the bill for these services is received, it is reviewed by the Workmen's Compensation and Claims Clerk. If it is not in accordance with the accepted standard of fees usually charged in such cases, the bill is returned and an adjustment sought.

The Workmen's Compensation and Claims Clerk also attends to the filing of all reports with the Workmen's Compensation Bureau, arranges for informal hearings and notifies the employee thereof, and if necessary asks for a formal hearing. He prepares for the latter hearings and attends them. Compensation proceedings that are taken to the regular courts are usually handled by one of the assistant counsel to the General Solicitor.

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[525] Reports of the Workmen's Compensation and Claims Clerk to the Highway Commissioner on the work of his office in connection with compensation, 1938-1939 and 1940. The total compensation and medical costs include all medical, hospital, temporary and permanent compensation costs, medical and physical examination costs, car and salary costs, and first-aid kit expenses. Accounts receivable have been deducted.

The figures for the amount of savings over 1937 are based upon the number of million man hours worked.

Where any highway equipment or structure has been damaged, a regular report of the accident is filed with the Workman's Compensation and Claims Clerk. If he is of the opinion that the party was negligent, he directs that a bill be prepared. The Electrical Division prepares its own bills, but the Workmen's Compensation and Claims Clerk attends to the bills of the Equipment Division. If the claim is not paid, he files suit and tries to collect the amount due.

The following figures indicate the increase in the volume of compensation and claims work:[526]

Claims and Compensation Cases, 1936-1941

Year	*Claims*	*Compensation cases*
1936	174	39
1937	123	297
1938	239	393
1939	223	549
1940	278	497
1941	392	464

Compensation cases cannot be adequately investigated or claims followed up as they should be under the existing arrangement. If this work is to be handled competently and efficiently, the request of the Workmen's Compensation and Claims Clerk for at least two investigators should be met.[527] This would mean continued savings to the Department in compensation cases and a better collection of damage claims.

REAL ESTATE DIVISION[528]

The Real Estate Division is headed by the Senior Right-of-Way Agent. It has already been pointed out that unlike other Division heads, he does not have the degree of independence and executive discretion that should go with a responsible position. He is, in effect, the assistant to the Highway Engineer in right-of-way work, and the latter makes

[526] The increase in compensation cases in 1937 is due to the fact that this was the first year that reports had to be filed for each injury.

[527] Since this recommendation was made, one full-time assistant has been added to his staff.

[528] See *pp. 37* to *61, supra.*

many of the decisions which normally should be made by a Division chief.[529]

Many of the operations formerly carried on by the Real Estate Division have been assigned to the Survey and Plans Bureau in the Construction Division.[530] For example, all right-of-way engineering and mapping work was transferred to that Bureau in the 1933 Foran Commission reorganization. The Real Estate Division is now limited to appraisals and negotiations.

The work of the Real Estate Division sometimes begins before the final line of a route is determined by the Survey and Plans Bureau. The head of the Division sends some of his Right-of-Way Agents to make preliminary appraisals for that Bureau in order that it may determine which of two or three possible lines will require the least expenditure of funds for needed right-of-way.

When the line has been decided upon, the Survey and Plans Bureau proceeds with the preparation of the construction plans. It also prepares the general property key maps and entire tract maps,[531] and these are sent to the Senior Right-of-Way Agent through the Highway Engineer. The Senior Right-of-Way Agent presents the general prop-

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[529] Appraisal and negotiation work was placed under the Assistant State Highway Engineer, who is now the Highway Engineer, by the Commissioner in 1935.

[530] Right-of-way work was handled in the Construction Division until 1929, when a Right-of-Way Division was created. On May 13, 1930, the work of this Division was divided between a so-called "Legal Division" and "Appraisal and Negotiations Division." The latter carried on extensive right-of-way engineering and mapping work. This included: (a) all preliminary investigations, right-of-way surveys, and collection of data for ownerships, maps and values, now handled by the Survey and Plans Bureau, but not to the same extent as the Appraisal and Negotiations Division did; (b) studies of all alternate locations and preliminary estimates of probable right-of-way costs, now under the Survey and Plans Bureau, with some collaboration by the Real Estate Division; (c) negotiation and condemnation maps, general property and right-of-way key maps, descriptions, etc., also under the Survey and Plans Bureau, collaborating with the Real Estate Division; (d) real estate record maps, the consolidation of which is the sole duty of the Special Engineer reporting to the Highway Engineer; (*p. 66*); (e) old road records and maps, now the responsibility of a Resident Highway Engineer in the Survey and Plans office (*p. 78*); and (f) arrangements for engineering testimony in condemnation cases, and the monumenting of rights-of-way, handled by the same engineer. See, also, *New Jersey State Highway Department Annual Reports, 1928* (report of the Office Engineer, *p. 58*), and *1932* (report of the Division of Appraisal and Negotiations, *pp. 77* and *78*).

The head of the Appraisal and Negotiations Bureau of the Real Estate Division had a force of 50 to 60 men assisting him in engineering and mapping work in the early 1930's. They were transferred to the Survey and Plans Bureau and some of them are still carried on the payroll of the Real Estate Division.

[531] See footnote 105, *p. 75, supra,* for a description of these maps.

erty key map to the Highway Commissioner with the recommendation that it be approved, "subject to such changes as may be necessary in order to conform with the construction plans as finally adopted and approved, and that authority be granted to negotiate for the acquisition of the necessary right-of-way." This recommendation of action is approved by the Highway Engineer and presented to the Commissioner at a meeting. His approval is certified by the Secretary (Chief Clerk), who notifies the Highway Engineer, Construction Engineer and Senior Right-of-Way Agent of the action taken. The latter then sends a memorandum to the Chief Auditor and Accountant, over the signature of the Highway Engineer, listing the project and the estimated amount that will be required for the purchase of the right-of-way, and requesting that he set up the necessary funds.

The practice now followed by the Real Estate Division is to have all properties appraised by its own Right-of-Way Agents or Negotiators. In the case of properties involving more than $500, however, two outside appraisers resident in the county where the property is located, are employed to make an appraisal.[531a] There is a list of such outside appraisers consisting of persons who have been approved for that work from time to time by the Commissioner. This list was established by the former State Highway Commission and has been added to considerably by the Commissioner.[532]

The Senior Right-of-Way Agent submits a memorandum to the Highway Engineer, indicating the approximate number of outside appraisals that will be required on the section of the route in question, and requests him to advise which appraisers he desires be used in connection with the project. The memorandum lists the approved appraisers for the county in which the property is located. The Highway Engineer checks their names on the memorandum, or verbally informs the Senior Right-of-Way Agent of his choice.

The Survey and Plans Bureau has meanwhile prepared additional copies of the general property key map and six copies of a blank form of agreement for the sale of the property which contains

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[531a] This system was initiated immediately after the Foran Commission came into office. *New Jersey State Highway Department Annual Report, 1933,* report of the Division of Real Estate Acquisitions.

[532] A check of those who have been used for outside appraisals since 1935 shows that few of the appraisers whose names appear on the lists of the former Highway Commission, have been employed by the Department.

an accurate description of the parcel or parcels to be acquired.[533] These are for the use of the Senior Right-of-Way Agent. He prepares a memorandum addressed to the Right-of-Way Agent whom he has assigned to the project, enclosing the original and a duplicate of the agreement to be used by him in negotiating for the various parcels of property indicated. This memorandum is signed by the Highway Engineer and a copy sent to the Supervisor of Titles, together with a copy of the agreement form, in order that he may proceed to make the necessary title searches.

At the same time, the Senior Right-of-Way Agent draws up a regular form of appraisal order for each of the outside appraisers chosen, directing them to proceed with appraising the properties listed. This order must be approved by the Highway Engineer, and is made in quadruplicate, the original going to the outside appraiser, and copies to the Auditing and Accounting Bureau, Real Estate Division and to the Right-of-Way Agent assigned to the route section. This agent delivers the appraisal orders, general property key maps and other necessary data to the outside appraisers. When they deliver their appraisals to the Real Estate Division office, a report of that fact is made to the Auditing and Accounting Bureau, a copy being kept by the Division and the Right-of-Way Agent involved. This report is used as a check list for bills sent in by the outside appraisers for services rendered.

Where the Right-of-Way Agent or Negotiator has been successful in getting the owner of the property to execute the agreement, the matter is presented to the Highway Commissioner for approval. A file is prepared consisting of a top sheet summarizing the departmental and outside appraisals, a complete report by the negotiator, copies of all the appraisals,[534] a map of the property, and the agreement itself. This file is accompanied by the usual Commissioner's action slip, signed by the Senior Right-of-Way Agent and the Highway Engineer, recommending that the Commissioner approve the agreement. The approval is given in open meeting and the Commissioner subsequently signs the agreement on behalf of the State. The Secretary

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[533] An original and copy are sent out to the owner, one copy goes to the Supervisor of Titles to be used in connection with title searching, two copies go to the Construction Division Engineer (sometimes one of these goes to the Engineer of Survey and Plans), and a final copy is kept by the Real Estate Division.

[534] Appraisals contain an affidavit which must be subscribed and sworn to by the appraiser.

then returns the file, together with a memorandum addressed to the Highway Engineer, advising him of the action taken by the Commissioner. Copies of the memorandum are sent to the Senior Right-of-Way Agent and General Solicitor.

Upon receipt of this notice, the Senior Right-of-Way Agent sends a form letter in the name of the Highway Engineer to the owner, enclosing the duplicate of the agreement which has been approved and signed by the Highway Commissioner, and stating that after the necessary investigation of the title has been made and approved, proper instruments for conveyance will be prepared and submitted to the owner for execution and delivery, together with a bill form. At the same time, the Senior Right-of-Way Agent sends a memorandum to the Title Officer notifying him of the Commissioner's action, to which is attached the executed agreement and other papers relating to the property. Copies of the memorandum are forwarded to the Construction District Engineer, and the Location Engineer in the Survey and Plans Bureau, together with copies of the agreement form, so that they may be apprised of the progress being made.

In some cases, where the Department thinks it advisable, the agreement provides that the owner may, at his expense, remove or cause to be removed all buildings or structures on the property to be acquired, before a certain date. If this is not done within the time limited, the State (Highway Department) may take possession of the property upon three days' written notice and cause the obstructions to be removed or demolished without any claims whatsoever for additional compensation or damage by the owner. The agreement also provides that if the owner removes the buildings and structures and replaces them in a satisfactory condition on his remaining lands outside the right-of-way line, payment of the purchase price may be divided, and the sum specified in the agreement to be paid on account of such removal, paid after the right-of-way has been cleared and the buildings or structures replaced, upon proper proof and releases satisfactory to the State being furnished. The balance of the purchase price, representing the amount to be paid for land and damage, is payable after delivery of the deed and approval of title. In cases of this type, proposals are received from builders for the removal and replacing of the buildings and structures on the land to be acquired, before the agreement is submitted to the Commissioner.

Both the successful bidder and the owner sign the acceptance form which appears at the bottom of the proposal.

At the proper time, the Senior Right-of-Way Agent sends a memorandum, signed by the Highway Engineer, to the Engineer of Survey and Plans requesting him to furnish a certificate stating whether the building on the parcel in question has been vacated or removed, and indicating the date before which this had to be done under the terms of the agreement. Such a certificate is forwarded by the engineer in the field, in duplicate, indicating whether the provisions of the agreement have been met. A copy is kept by the Real Estate Division and the original goes to the Title Officer for his records.

Mention should be made at this point of the practice of the Highway Department in obtaining a so-called "check appraisal" in addition to the appraisals made by the Right-of-Way Agent and the two outside appraisers. This is done when the appraisals vary from each other considerably, or when difficulty is experienced in getting the owner to execute an agreement, and further negotiation is deemed advisable before condemnation proceedings are recommended. Under such circumstances, a third outside appraisal is obtained. If it is then impossible to reach an agreement with the owner, the procedure about to be described is followed:

The Right-of-Way Agent gets together a file similar to that used in recommending the approval and execution of an agreement by the Commissioner. The file consists of a top sheet summarizing the appraisals, a complete report of the Right-of-Way Agent, the several appraisals made, and a map and description of the parcel. Attached to this file is a Commissioner's action slip, signed by the Senior Right-of-Way Agent and the Highway Engineer, recommending that the Commissioner authorize the making of an official offer in the sum designated, "and in the event of failure to accept or inability to locate owners, to acquire the property through condemnation proceedings." This slip states the reason why an agreement has not yet been reached. The Commissioner gives his approval in open meeting, and the Secretary returns the file to the Highway Engineer with a memorandum of the action taken by the Commissioner, copies of which are sent to the General Solicitor and Senior Right-of-Way Agent.

The Engineer of Survey and Plans is then requested to furnish a map of the parcel, to be used in the making of the official offer. The Senior Right-of-Way Agent sends a letter, together with the map, to the owner over the name of the Highway Engineer. The letter states the amount of the official offer and notifies the owner that unless his acceptance is received within ten days, or other satisfactory reply made, the rejection of the offer will be assumed and condemnation proceedings will, as matter of necessity, be instituted. If no agreement is reached, the Senior Right-of-Way Agent prepares a memorandum in the name of the Highway Engineer addressed to the Special Counsel in the Legal Division, enclosing all papers and information necessary for the institution of condemnation proceedings. Copies of the letter go to the Engineer of Survey and Plans, the Construction District Engineer, Title Officer, and the Right-of-Way Agent who handled the parcel.

Counsel then has the Survey and Plans Bureau provide him with the necessary map and description. He also requests the Title Officer to provide him with a memorandum of title so that he may be in a position to draft a proper condemnation petition. The petition and the map of the parcel which accompanies it are reviewed by the Senior Right-of-Way Agent before the Highway Engineer signs the petition on behalf of the State.

One of the Resident Highway Engineers in the Survey and Plans Bureau arranges for the necessary engineering witnesses to be used in the condemnation hearing.[535] The Senior Right-of-Way Agent cooperates with counsel in charge of the case by having the Right-of-Way Agent or Negotiator who handled the parcel appear at the hearing in order to give him all possible assistance. The agent is used as a witness for the State in an uncontested proceeding, but not very often where the case is contested. No adequate explanation for this failure to use the Right-of-Way Agent in all cases has ever been presented. His testimony would be of real value in establishing the State's case.

After the condemnation commissioners make their award, the trial attorney recommends whether the award should be accepted or an

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[535] See *p. 78, supra.*

appeal taken. In the former case, a Commissioner's action slip is prepared by the Senior Right-of-Way Agent, signed by the Highway Engineer, and presented to the Commissioner for approval, the complete file of all papers relating to the matter, including the award of the condemnation commissioners and the recommendation of the trial attorney, being attached. After the Commissioner has taken official action, the Secretary notifies the Senior Right-of-Way Agent, who sends the papers to the Title Officer as in the case of an approved agreement.

Where there is an appeal to a jury from the award of the condemnation commissioners, the Real Estate Division cooperates with the Legal Division at the trial in the same manner as at the hearing before the commissioners. After the jury trial, the trial attorney recommends that its award be approved or an appeal taken to the Court of Errors and Appeals. The same procedure is followed then as in the case of the recommendation concerning the award of the condemnation commissioners.

Following his appearance at any condemnation hearing or trial, the Right-of-Way Agent or Negotiator makes a complete report on a regular form of what transpired at the hearing, including a summary of the testimony given by the owner's and State's witnesses. This report accompanies the file sent to the Commissioner when he takes action on the award.

Complete records are kept by the Real Estate Division from the time the general property key map is received from the Engineer of Survey and Plans. This map is filed by the Right-of-Way Investigator under the proper route and section in the Division's map file. As each agreement or award is approved by the Commissioner the parcel in question is outlined in red. Parcels involved in condemnation proceedings still pending are outlined in black. This provides a convenient method for quickly determining the status of the right-of-way acquisitions on the particular section.

As soon as the Survey and Plans Bureau sends in the blank agreement forms, the Investigator prepares a card for each owner. These are kept alphabetically. The card file is used in order to determine the parcel or parcels that have been acquired, or are in

the process of being acquired from a particular owner, and is especially useful where inquiry is made regarding acquisitions from a named person.

The Division maintains four large loose-leaf record books, known as "right-of-way books", which contain sheets covering each route and section in the State Highway System. When the blank agreement forms are received, the Right-of-Way Investigator makes an entry for each parcel showing the parcel number, name and address of owner, area of parcel, and date when the parcel was referred to the Right-of-Way Agent for negotiation. Subsequent entries are made at each step of the proceedings leading to acquisition, so that the Senior Right-of-Way Agent can tell at a glance the status of every parcel.

The Division also keeps an account of the amount of the funds originally set up for a project that have been obligated. As each parcel is acquired, the Right-of-Way Negotiator who acts as the administrative assistant to the Senior Right-of-Way Agent, notes the amount involved on his record. In this way, the Division is in a position to determine whether it is keeping within the amount originally earmarked for the project.

A permanent file is kept of all important papers relating to each parcel acquired.[536] These files are not adequately protected, so that the possibility of altering or removing records is always present. That advantage has been taken of the situation will be shown hereafter.

Outside appraisers are paid at the rate of $15 a parcel, except that in the northeastern, metropolitan area of the State, and occasionally in the area in and around Camden, from $25 to $100 is usually paid for each parcel appraised. In the case of industrial appraisals, or those involving property of a special nature, the fee paid may range as high as $5,000. The amount paid for appraisals during the last three years has been $23,491.63 (1939), $38,504.50 (1940) and $22,948.50 (1941).

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[536] Papers not required by the Real Estate Division are sent to the Title Officer. It should be noted that the files of the Real Estate Division, Title Officer and Legal Division duplicate each other to a large extent in real estate matters. A practical consolidation of many of these records could be effected. See *p. 279, supra.*

In condemnation cases, appraisers testifying in behalf of the State usually receive from $50 to $100 a day.

The following figures show the total number of parcels acted on by the Commissioner each year during the period from 1931 to 1941, inclusive, and the number and percentage of original agreements, compromise agreements after an official offer has been authorized and before condemnation proceedings have been instituted, and the net condemnation cases pending at the close of the year. Of these pending cases, a number are, of course, completed during the following or subsequent years by agreement reached with the owner. Others must proceed to condemnation. Accordingly, the total number of cases settled by original and compromise agreements would be increased if the cases settled in subsequent years by agreement with the owner were included.

New cases acted on, 1931-1941

Year	*Total new cases acted on*	*Original agreements*		*Compromise agreements*		*Net condemnation auth.*	
		No.	*Percentage*	*No.*	*Percentage*	*No.*	*Percentage*
1931	2224	1516	68.17	263	11.82	445	20.01
1932	1102	842	76.41	71	6.44	189	17.15
1933	864	586	67.83	72	8.33	206	23.84
1934	1003	625	62.31	144	14.36	234	23.33
1935	580	402	69.31	40	6.90	138	23.79
1936	579	364	62.86	87	15.03	128	22.11
1937	622	453	72.83	53	8.52	116	18.65
1938	877	692	78.91	78	8.89	107	12.20
1939	725	590	81.38	49	6.76	86	11.86
1940	893	650	72.79	92	10.30	151	16.91
1941	554	377	68.05	44	7.94	133	24.01

Schedule 5 on page 307 shows the work of the Real Estate Division in the period from 1931 to 1941. It clearly reflects the falling off in the size of the highway program. The early years show a continuation of the very heavy volume of work brought about by the adoption of the 1927 State Highway System.[537] The "original

[537] See *p. 10, supra.*

Schedule 5

NEW JERSEY STATE HIGHWAY DEPARTMENT

REAL ESTATE DIVISION

WORK OF THE DIVISION 1931 - 1941

Year	Original Agreements No.	Original Agreements Amount	Compromise agreements on new authorizations No.	Compromise agreements on new authorizations Amount	Compromise agreements on old authorizations No.	Compromise agreements on old authorizations Amount	Awards or settlements subsequent to awards on new authorizations No.	Awards or settlements subsequent to awards on new authorizations Amount	Net condemnations pending on new authorizations No.	Net condemnations pending on new authorizations Amount	Total cases actively worked on during year No.	Total cases actively worked on during year Amount	Total operating cost	Percentage
1931	1516	$3,665,503.90	263	$1,237,840.17	157	$2,909,487.48	131	$1,907,535.81	314	$1,009,102.38	2381	$10,729,469.74	$ 284,097.41	2.64
1932	842	1,094,337.64	71	203,332.72	98	462,662.54	72	38,566.53	117	560,202.25	1200	2,359,101.68	182,184.74	7.72
1933	586	635,166.67	72	219,940.50	38	111,617.15	23	20,559.30	183	269,050.84	902	1,256,334.46	128,141.71	10.19
1934	625	837,631.24	144	266,658.52	43	114,735.75	67	76,998.81	167	263,024.08	1046	1,559,048.40	91,257.13	5.85
1935	402	685,559.37	40	374,569.81	19	103,013.50	18	22,664.00	120	178,317.82	599	1,364,124.50	95,761.87	7.02
1936	364	484,703.78	87	295,538.35	43	175,481.00	42	43,269.63	86	126,410.05	622	1,125,402.81	76,479.82	6.79
1937	453	830,104.94	53	106,560.70	25	32,175.63	13	19,939.70	103	126,340.27	647	1,115,121.24	88,448.80	7.93
1938	692	1,646,098.45	78	403,142.77	35	115,778.35	21	20,130.00	86	104,171.59	912	2,289,321.16	98,296.89	4.29
1939	590	1,616,932.76	49	85,891.41	32	67,845.55	2	2,900.00	84	155,310.10	757	1,928,879.82	99,021.98	5.13
1940	650	1,402,295.11	92	411,257.96	56	288,130.15	6	2,987.50	145	209,797.67	949	2,314,468.39	121,753.06	5.26
1941	377	1,488,510.62	44	98,175.20	37	163,591.10	12	12,160.75	121	180,722.07	591	1,943,159.74	106,634.09	5.48

Source: New Jersey State Highway Department
Real Estate Division

agreements" refer to those arrived at through negotiations with the owners by representatives of the Division, the agreed purchase price being at or near the Division's own figure. "Compromise agreements" refer to those reached after an official offer was authorized but before any condemnation proceedings were instituted. "New authorizations" are official offers authorized during the year in question, while "old authorizations" refer to those authorized in previous years. "Awards" refers, of course, to condemnation awards.

The schedule does not show awards, or settlement subsequent to awards, on authorizations made in previous years. Since these cases involved relatively little work by the Division in the year the awards or settlements were approved, they are not included in the exhibit.

An over-all picture of the number of cases acted upon each year, the total operating cost of the Real Estate Division (appraisals and negotiations), Title Bureau (title searching, title examination and settlement), and the Legal Division (excepting the Title Bureau) can be obtained from Schedule 6 on page 309. The percentages indicated are based on the total number of parcels acted on in each year by the Commissioner, or by the Highway Commission before April 30, 1935, when it was abolished. This total is made up of three categories.

(1) Parcels acquired under agreements—(a) original agreements, (b) compromise agreements after official offers authorized during the year and before condemnation begun, and (c) compromise agreements after official offers authorized in preceding years and before condemnation begun.

(2) Parcels acquired under condemnation awards, or settlements subsequent to awards—(a) on current year authorizations to condemn, and (b) on authorizations made in previous years.

(3) Parcels to be acquired under condemnations authorized during current year and pending at end of year (net condemnations).

The value of these parcels is arrived at by adding the actual amount paid for the parcels acquired under categories (1) and (2) to the total of the official offers made for parcels in category (3).

NEW JERSEY STATE HIGHWAY DEPARTMENT

TOTAL CASES ACTED ON AND OPERATING COST 1931 - 1941

APPRAISALS AND NEGOTIATIONS, TITLES AND SETTLEMENTS, AND LEGAL DIVISION

Year	Total cases acted on, including net condemnations authorized		Total cost Real Estate Division Title Bureau		Real Estate Division Negotiations		Title Bureau			
	Number	Amount	Legal Division	Percentage	& Appraisals	Percentage	Titles & Settlements	Percentage	Legal Division	Percentage
1931	2657	$13,145,002.44	$ 950,081.11	7.23	$284,097.41	2.16	$283,056.05	2.15	$382,927.65	2.92
1932	1483	3,850,861.83	625,699.82	16.24	182,184.74	4.73	215,939.57	5.60	227,575.51	5.91
1933	1037	2,100,391.62	343,560.30	16.35	128,141.71	6.10	128,135.46	6.10	87,283.13	4.15
1934	1182	2,263,429.17	274,810.53	12.14	91,257.13	4.03	91,257.12	4.03	92,296.28	4.08
1935	707	1,679,738.28	264,365.99	15.73	95,761.87	5.70	76,022.28	4.52	92,581.84	5.51
1936	694	1,295,788.15	222,673.60	17.18	76,479.82	5.91	79,424.33	6.12	66,769.45	5.15
1937	703	1,260,320.42	246,208.99	19.53	88,448.80	7.02	89,269.54	7.08	68,490.65	5.43
1938	949	2,409,844.14	267,340.66	11.09	98,296.89	4.07	99,057.16	4.11	69,986.61	2.90
1939	798	2,026,598.39	273,766.49	13.50	99,021.98	4.88	102,145.93	5.04	72,598.58	3.58
1940	978	2,395,024.61	312,990.56	13.06	121,753.06	5.08	97,830.16	4.08	93,407.34	3.90
1941	638	2,369,376.07	295,414.71	12.46	106,634.09	4.50	100,337.24	4.23	88,443.38	3.72

Source: New Jersey State Highway Department
Annual Reports, 1931 - 1941

The total number of parcels authorized for condemnation which were pending at the end of the years 1937 to 1941, inclusive, as well as the number of open cases never acted on, are as follows:[538]

Total Parcels Authorized for Condemnation Pending, 1937-1941

Year	*Previous years* No.	*Previous years* Amount	*Current year* No.	*Current year* Amount	*Total* No.	*Total* Amount	*Open cases*
1937	30	$446,318.06	103	$126,340.27	133	$572,658.33	365
1938	60	426,354.62	86	104,171.59	146	530,526.21	501
1939	63	457,573.78	84	155,310.10	147	612,883.88	403
1940	49	427,817.69	145	209,797.67	194	637,615.36	566
1941	92	449,633.17	121	180,722.07	213	630,355.24	500

With the marked decrease in the work of the Legal Division, and an available staff of six counsel, there seems little reason why the number of condemnations pending should have been allowed to increase during the past five years. A certain carry-over of cases into the next year is inevitable, but diligence on the part of the legal staff should have kept the back-log of condemnation proceedings at an even level, or actually reduced it. It would also appear that ten years is a sufficient time in which to have disposed of a single case authorized for condemnation in 1932. This case has tied up $400,000 earmarked for its acquisition.

Disposition should also be made as promptly as possible of the open cases that have never been acted on. Their number is out of proportion to what it should be; in 1933, immediately after the peak in the highway program, these cases totalled only 735.

Appraisal Procedure:

An examination of the files of the Real Estate Division was made in the course of the Governor's highway investigation during the summer of 1941, for the purpose of surveying all right-of-way transac-

[538] *Source*: *New Jersey State Highway Department Annual Reports, 1937* to *1941,* reports of the Real Estate Division. One case carried in those authorized for condemnation and still pending is Parcel No. 31 on Route 21, section No. 2, Newark, on which an official offer of $400,000 was authorized in 1932.

tions involving over $2,000 consummated during the administration of the Highway Commissioner (April 30, 1935 to July 1, 1941). The original tabulation by the staff of the Governor's Examiner in charge of the investigation, was based upon a total of 849 cases. This tabulation revealed that where members of the Legislature or other politically well-connected attorneys were employed, the outside appraisals, and particularly the so-called "check" appraisals, were prevailingly greater than the Department's appraisals, as were the prices actually negotiated and paid; and that where the owners were not thus represented, both the actual prices and the outside appraisals were for the most part fairly well in line with the Department's appraisals.

This tabulation, as well as the hundreds of cases covered by it, were the subject of a series of extended public hearings in which the entire system of the appointment of appraisers, the making of appraisals, and the determination of prices to be paid to owners, was thoroughly reviewed. These hearings indicated that certain revisions and corrections of the original tabulation would have to be made. Accordingly, 184 cases were eliminated,—30 by reason of duplicate examinations of the title files, 57 cases by admission of the witnesses presented by the Governor's Examiner, and 97 representing right-of-way acquisitions for which, according to statements made by the General Solicitor representing the Department at the hearings, consideration in addition to money had been given. This left 665 cases, and these served as the basis of a revised tabulation made by a firm of certified public accountants. The corrected tabulation covered parcels acquired from owners who could be classified into seven definite groups:

Class I—Unrepresented owners, other than those in Class IV.

Class II—Owners represented by attorneys or agents without known political connections.

Class III—Owners represented by non-lawyer agents.

Class IV—Contractors and other persons having other business relations with the State Highway Department.

Class V—Owners represented by attorneys identified in politics.

Class VI—Owners represented by lawyers who, at the time of the hearings, were no longer members of the Legislature, but who had been members during the administration of the Highway Commissioner.

Class VII—Owners represented by members of the 1941 Legislature.

The revised tabulation reveals the following:

Class	*No. Cases*	*Percentage of prices paid to*	
		Average appraisal	*Department appraisal*
I	151	100.44	103.39
II	81	108.86	110.07
III	75	107.86	119.34
IV	28	105.98	124.01
V	191	113.90	124.09
VI	49	111.24	122.87
VII	90	117.14	127.75

The average appraisal noted in this tabulation is the average of the Department's appraisal, the two regular outside appraisals, and the "check" appraisal where one was made. It will be seen that the revised tabulation did not materially change the conclusions reached as a result of the original survey. Owners represented by members of the Legislature, former legislators, or attorneys identified in politics, and contractors or other persons having other business relations with the State Highway Department, obtained a price substantially in excess of the Department's appraisal. Owners who were not represented, or who were represented by attorneys or agents without known political connections, obtained a price reasonably in line with the average and departmental appraisals.

However, the evidence in the hearings showed that the contrast between the price paid in politically-influenced negotiations and that paid in cases negotiated without political influence, would have been even more striking had the appraisals which formed the basis for the above analysis been true appraisals, actually reflecting the value of the property in question. Investigation disclosed that the figures of many of the appraisals in the files had been raised. It was also shown that some of the alleged Department appraisals had never been made by the purported appraisers. Moreover, the "check" appraisals and other outside appraisals had in many cases been manipulated and influenced,

so that these appraisals raised the figure of the average appraisal used in the above revised tabulation.

As the hearings progressed, it soon became evident that three factors resulted in an improper influencing of right-of-way appraisals and negotiations: (1) the presence of outside persons ready and able to exercise influence for private ends; (2) persons in authority in the Department susceptible to such influence; and, except in isolated cases, (3) the existence of a system which made such influencing possible without detection and punishment.

The conclusion of the Examiner was that "We have found in the Right-of-Way Division of the Highway Department a system which not only permits, but encourages and openly invites, the improper exercise of outside influence on the negotiation of prices, facilitates abuse and disloyalty, and seems almost to have been devised for the very purpose of making such improper influencing possible and relatively safe from casual detection."[539]

Under the practice followed by the Department in recent years, of using two outside appraisers where the amount involved is over $500, it would seem that the Department would be only too willing to obtain the services of competent, qualified and trustworthy real estate experts. The system of maintaining a list of approved appraisers, however, defeats this desired end. Many of the appraisers used in connection with the cases that figured in the public hearings, were declared by reliable witnesses to be incompetent. Moreover, the very appointment of many of the outside appraisers, some of them admittedly competent, was the result of political influence. Instead of making an independent choice of qualified realtors for inclusion in the approved list of outside appraisers, the Commissioner allowed this function to be exercised by the legislators and political leaders of the counties where the appraisers would operate.[539a]

The Commissioner's approved list of appraisers, therefore, became a register of political appraisers—realtors acceptable to the politicians of the several counties. In many cases, the Department negotiated

[539] *Preliminary Report to Governor Charles Edison, op. cit., p. 3.*

[539a] Immediately after taking office, the Commissioner called for a list of appraisers used by the Department, particularly those in the habit of making unusually high appraisals. He also requested the names of lawyers and experts representing property owners in cases where awards seemed exhorbitant. *Minutes of Meetings of the State Highway Commissioner,* minutes of May 7, 1935. There is nothing in the minutes to show that effective use was made of this information, if it was in fact ever prepared.

with the very men who were responsible for the appointment of these realtors, for the purchase of property appraised by them. The Senior Right-of-Way Agent emphasized during the course of the hearings that the fundamental cause of excessively high appraisals and high settlements was to be found in the original appointment of these outside appraisers on a political basis. Not only did the Department consult political leaders in the appointment of outside appraisers for a particular section of road or a certain territory, but the policy of the Department extended to the appointment of an appraiser for a particular property in which the legislator or political leader who nominated the appraiser was personally and pecuniarily interested.

Under the system which has been in effect since the Highway Commissioner took office in 1935, a "check" appraisal is obtained whenever there is a wide variance between the Department's own appraisal and the outside appraisals, or when the owner of the property or his representative demands a price in excess of the existing appraisals. This system has resulted in a variety of abuses.[540]

The testimony at the hearings revealed that when it was decided to pay a politically-represented owner a price in excess of existing appraisals, the practice was to obtain a "check" appraisal from an outside appraiser amenable to suggestion from the proper source. These "check" appraisals were relied upon to justify the payment of the price already agreed upon. The policy adopted by the Highway Commissioner has been that no case is to be settled beyond the figures of the highest appraisal in the file. Conversely, a case may be settled within the highest appraisal in the file. Such settlements have been made, at or under the highest appraisal on hand, no matter when or how that appraisal might have been obtained. All that the Commissioner looked for was that the appraisal be under oath; the circumstances surrounding the making of the appraisal did not concern him.

The evidence further showed that a "check" appraisal was often obtained after the actual preparation and execution of the agreement of sale. When the Department was unable to get a "check" appraisal high enough to justify the settlement, it obtained "letters of recommendation" or even telephoned advices from one or both of the outside appraisers recommending a settlement at the price already arrived at.

[540] The General Solicitor conceded during the course of the hearings that the practice was unsound and opened the door to abuses.

It need hardly be said that a "check" appraisal made by a political appraiser, where the amount of the appraisal has been suggested to him ahead of time, and where the appraisal is used to justify a price already agreed upon, is entirely lacking in objectivity. Such an appraisal is not used to prove or clarify previous appraisals, but is a device for "covering up" agreements already made.

Not only does this system of "check" appraisals invite fraud and result in the payment of excessive prices for the particular properties involved, but it also results in the State paying large sums in another respect. What often happens is that after a Right-of-Way Agent has been successful in negotiating agreements at a fair price with a number of owners along a certain section of road, he encounters an owner who has been solicited or advised to employ a politically-connected attorney. This owner demands a price far in excess of the departmental or the regular two outside appraisals. A "check" appraisal is ordered which, as has already been indicated, often represents the price already agreed upon between the Department officials and the owner's representative. A high price is paid, and the payment is justified, as usual, by referring to the presence in the file of the "check" appraisal which is at or above the price agreed upon. The result is that owners who have willingly accepted the fair price offered by the Department are dissatisfied. But worse than that, the high price paid sets a new and unjustified standard of value for subsequent acquisitions in the neighborhood. The State is forced to pay prices beyond those that would have been paid had the Department relied upon the competence and ability of its own appraisers.

These "check" appraisals, with their resultant payment of high prices, embarrass the Department in condemnation proceedings involving land in the neighborhood of the parcels acquired under the appraisals. The appraisers are forced to testify to previous standards of payment, and this results in high condemnation awards.

The practice followed in the Department in the early 1930's before the Commissioner was appointed, was that when an owner asked a price in excess of the existing appraisals, the then head of the Appraisal and Negotiations Division did not seek a "check" appraisal at a higher figure in order to justify the payment of a higher price. Payments were based upon a careful study of the value of the property,

and if the head of the Division found it advisable, in order to avoid litigation, to go higher than existing appraisals, he took the responsibility of recommending the payment of a higher price on the basis of facts which he would set forth in a memorandum to the Highway Commission. The Commission accepted or rejected the recommendations in its discretion. There was no dodging of responsibility and no hiding behind the easily taken oath of a politically-appointed outside appraiser with his made-to-order appraisal.

The Department has sought to justify its payment of prices in excess of Department appraisals on the ground that, if forced to a condemnation proceeding, it faced the possibility of an award at an even higher figure. The Highway Commissioner has claimed that during his administration, condemnations had been reduced to less than five per cent. of the number of acquisitions. This is in error.[541] Even if the claim were true, it may fairly be said that the achievement—if it is an achievement—has been gained at the expense of the public treasury. The public hearings established beyond contradiction that condemnations were avoided because the Department in many cases paid what the owners demanded, using the device of "check" appraisals to justify its action.

The Examiner has pointed out that "the pretense of the dangers of condemnation creates a vicious circle: Under such a pretense, the Department admittedly settles claims at excessive figures, contrary to its judgment, and then their very settlement haunts the Department in its future settlements and condemnations."[542] Not only has the Department established unreal standards of value in negotiated settlements with owners who were politically represented, but its policy has encouraged owners to believe that the Department could be made to pay a high price if a proper attorney or agent were employed.

Appraisals were thus politically influenced from their very inception. In addition, as the public hearings showed, they were often falsified after having been made. This falsification took several forms: (a) the outright alteration of an appraisal by erasing and changing

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[541] The claim is questioned. The average for his administration is over ten per cent. This average is slightly better than that for the two years preceding his appointment, but is no better than the average maintained for the period from 1923 to 1932, inclusive.

[542] *Preliminary Report to Governor Charles Edison, op. cit., p. 37.*

figures; (b) adding an item to an appraisal without the appraiser's knowledge; (c) increasing the amount designated by the appraiser, without his knowledge or consent; and (d) inserting in the file an appraisal purporting to have been made by an appraiser, when in fact no appraisal was made by that individual.

These fraudulent practices "were made and followed at times upon the direct and immediate instructions of the superiors, and at times by the superiors themselves, and at times in pursuance of general policies or instructions established by the superiors; and some of these fraudulent practices were palpable and so open that they could not have escaped the Commissioner's knowledge."[543]

In some cases it was shown that there were two different appraisals of the same property made by the same outside appraiser, on the same date. This allowed the Department to select either one, depending upon whether or not a politician represented the owner. This flagrant practice, infrequent though it was, is further proof of the fact that outside appraisals are all too often completely lacking in objectivity or professional good faith, and that the oath of the appraiser is meaningless.

The effect of these outside appraisals, often made by incompetent appraisers, and many made by appraisers appointed because of political considerations, had a devastating effect on the morale of the Senior Right-of-Way Agent and the Right-of-Way Agents and Negotiators assisting him. They had no confidence in these appraisals, and did not consider them reliable or competent. Nonetheless, the Senior Right-of-Way Agent had no choice in the matter and had to accept the situation. The Right-of-Way Agents "came to consider their own appraisals as of little or no significance, since they knew that their superiors would disregard them and close deals without even considering Department appraisals, and on the basis of unreliable outside appraisals."[544]

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[543] *Ibid., op. cit., p. 14.*

[544] *Ibid., p. 20.* Called upon to testify at the public hearing, the Senior Right-of-Way Agent and his assistants unhesitatingly condemned the conditions and policies under which they were forced to operate. They found the practices established by the responsible heads of the Department intolerable. Their testimony clearly showed that their morale and confidence had in large part been destroyed in the face of a situation which they considered hopeless.

As the official actually responsible for the operations of the Real Estate Division, the Highway Engineer must take full responsibility for the practices outlined above. He had personal knowledge of many of the cases dealt with in the public hearings, and actually participated in some of them by bringing about settlements at the top price established by a "check" appraisal which he had recommended. He also played an important part in having certain appraisers placed on the approved list of the Department. Although there was no evidence that the Highway Commissioner had direct personal knowledge of the irregularities which have been mentioned, he was responsible for maintaining a system which permitted, encouraged and openly invited "the improper exercise of outside influence on the negotiation of prices," and which facilitated abuse and disloyalty. He sanctioned and approved the system, and knew, or should have known, that real estate negotiations were susceptible of influence by legislators and other politicians. If he did not know that appraisals had been falsified, it is because he left these arrangements to the Highway Engineer. In short, he surrendered his discretion and authority to that official.[544a]

From the testimony given by the members of the Real Estate Division, there can be little question that if the Senior Right-of-Way Agent had been allowed to exercise the executive discretion and responsibility that rightfully belongs to his position, there would have been a greater reliance placed upon the competent and qualified personnel of the Division, instead of upon outside appraisers and the evil-producing system of "check" appraisals. However, little or no attention was paid to the Department's own appraisals in making settlements, and reliance was too often placed upon the highest outside appraisal, regardless of the merit of the case, especially where political leaders or attorneys were involved.

In view of the fact that responsibility for appraisals and settlements was actually exercised by the Highway Engineer in many of the cases under attack in the hearings, there was no place for effective objection or argument by the head of the Real Estate Division and

[544a] When the Commissioner took office in 1935 he protested against certain high prices paid for right-of-way and insisted that the fullest publicity would be given thereafter to cases where the prices appeared exhorbitant, including the owner's name and appraisal, the Department appraisals; in condemnation cases, the names of the lawyers and experts involved, the names and addresses of the condemnation commissioners making high awards and the names of the appraisers setting high values; and the price finally paid. See *Minutes of Meetings of the State Highway Commissioner,* minutes of May 10, 17 and 21, 1935. Shortly thereafter he warned owners against dealing with those claiming that they could get them better prices, and urged them to deal directly with the State. Minutes of July 2, 1935. The whole publicity policy dropped out of sight within a few months.

his Right-of-Way Agents. A significant feature of the entire situation was the fact that the Special Engineer, who had formerly headed all appraisal and negotiation work, had been shifted to another building and denied all access to the records or operations of the Real Estate Division for the past six years, by order of the Highway Engineer. The policies and procedures that had been established and enforced when this official was in charge of real estate acquisitions, were in large part disregarded during the administration of the Highway Commissioner. The reliance that had been placed upon departmental appraisals and realistic values under the system formerly in force, found little place in the new order of things.

There can be only one conclusion in the light of this record. The entire appraisal procedure followed by the Highway Department is in need of radical revision. The present list of outside appraisers should be discarded, and the existing system of outside appraisers abolished entirely.

Appraisals serve three useful purposes in negotiating voluntary settlements of right-of-way prices: (1) they guide the Department in determining how much may fairly be paid without resorting to condemnation proceedings; (2) furnish a check on the discretion to be exercised in that regard by the Highway Commissioner, and (3) serve as a means of demonstrating to owners and their representatives that the price offered for a particular parcel is not arbitrary, but is based on a careful analysis of all elements of value and damage involved. In the large majority of cases, all three purposes are fully accomplished by the appraisals of the Department's own Right-of-Way Agents. Those now with the Department are experienced and able, and are generally recognized as fully competent and qualified to appraise the value of the land to be taken for highway purposes and the damages, if any, to the remaining property. Moreover, they are not subject to local or political influence.

These departmental appraisals would in all cases serve as the solid foundation for a realistic study of the fair price that should be paid to an owner. In this way, each case will be dealt with strictly on its merits. Department appraisers should be permitted at all times to consult departmental construction engineers and other Department specialists in cases calling for specialized knowledge.

In any case in which the negotiator and the head of the proposed Land and Legal Bureau believe that it may be advisable to settle at a

price in excess of the Department appraisal, the latter should be given the discretion of consulting an outside expert. This man should be an outstanding, fully qualified and reliable realtor or property analyst of the vicinity in which the property to be acquired is located.[545] The Right-of-way Agents would consult him regarding values in the neighborhood and prices obtained at recent sales of similar property, and in order to obtain such special information as he would be in a position to supply regarding the parcel or parcels in question by reason of his local residence and experience.

The consultant would be appointed by the Commissioner at the time he approved the plans for the section of the route and authorized negotiations. The appointment would be upon the recommendation of the head of the Land and Legal Bureau, and would be made only after the Commissioner had thoroughly checked the qualifications and reliability of the proposed consultant. Compensation would be on a *per diem* basis. The amount of time for which payment would be made would be that covering actual services rendered, and would be authorized by an order approved by the head of Land and Legal Bureau, before the work starts.[546]

On properties where the estimated cost will exceed $1,000, the consultant may be requested to prepare a definite appraisal when, in the judgment of the head of the Land and Legal Bureau, such an appraisal is necessary or advisable.[547] The appraisal would be made only on order of the Bureau chief, at a rate of compensation fixed by the Commissioner. The parcels to be appraised would be listed individually on the appraisal order.

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[545] It has been suggested that the realtor consulted be a member of the American Institute of Real Estate Appraisers, or equal.

[546] This recommendation, as well as those relating to appraisers which follow, are those adopted by the State Highway Commission on December 20, 1932. See, *New Jersey State Highway Department Annual Report, 1932,* report of the Division of Appraisal and Negotiations, *pp. 79* and *80.* The procedure was recommended by the head of the Appraisal and Negotiations Division, now the Special Engineer in the Department. This plan was the result of his long and varied experience in right-of-way appraisal work during the preceding decade and resulted in a considerable saving in appraisal costs and in more efficient and economical procedures. It had actually been in use for a full year before the Commission adopted the proposal. *Ibid., pp. 2* and *3.* The Princeton Survey report adopted the appraisal procedure advised by the head of the Division of Appraisal and Negotiations and made it part of its recommendations. It approved the policy of relying more upon the regular appraisers of the Department and the employment of fewer outside appraisers. *Op. cit., pp. 204* and *205.*

[547] Such appraisal will usually be ordered where circumstances indicate to the negotiator and the head of the Land and Legal Bureau that a voluntary agreement cannot be reached on the Department's own figures, and that condemnation proceedings will in all probability have to be started.

The Highway Commissioner would, on recommendation of the head of the Land and Legal Bureau, and where he deemed such action advisable, designate a qualified and trustworthy appraiser familiar with values in the locality, from whom an additional appraisal would be secured. This would be done only in the case of properties where the determination of values is quite involved and controversial. Appraisals would be made only after the Land and Legal Bureau chief approved the appraisal order. Any additional appraisals beyond the two referred to would be secured only in exceptional cases, and upon special authority from the Highway Commissioner in each case.

Departmental Right-of-Way Agents and Negotiators would in all cases make complete studies of all properties as assigned or directed by the head of the Land and Legal Bureau. Their appraisals would be made absolutely independently and irrespective of whether other appraisals were secured or not.

All appraisals should be made on standard forms drawn up to reflect the experience of the Department in its years of real estate acquisition work, as well as the best experience in the field. They should contain a complete and clear statement of all factors relied upon in determining the value of the land to be taken and the damage to the remainder, and should, wherever it is deemed necessary, indicate those factors not considered as having any proper bearing on the appraisal but which might possibly be put forward by the owner as a reason for obtaining a higher price. All forms should be signed and sworn to by the appraiser, and bear the actual date when the appraisal was made.

In the event of condemnation proceedings, the chief of the Land and Legal Bureau would designate the Right-of-Way Agent, Negotiator or other member of his staff to testify in the case and assist counsel. He would likewise designate one or both of the appraisers who had previously appraised the property. Such special witnesses and appraisers as might be required at the condemnation hearing or trial, would be secured by him, but only upon special authority and approval of the Highway Commissioner in each case. The Commissioner would fix the fee to be allowed to such witnesses.[548]

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[548] Payments for testimony of special witnesses and appraisers were fairly liberal in the past. These fees should be kept below the level of $50 per day. *Cf.*, Princeton Survey report, *op. cit., p. 204.*

Insofar as possible, appraisals of industrial property and property having a special character (*e.g.,* quarries, nurseries, etc.), should be made by departmental engineers or by engineers or specialists in other State departments and agencies. Where this cannot be done, such appraisals by established experts should be secured by an appraisal order signed by the head of the Land and Legal Bureau and approved by the Highway Commissioner in each case.

This plan of appraisal procedure, like everything else connected with the work of real estate acquisitions, depends on the integrity, ability and efficiency of the head of the Land and Legal Bureau, and on the cooperation he receives from the Commissioner. His will be the responsibility for preventing any recurrence of the deficiencies, bad practices and political influence that have characterized right-of-way work since the day the Foran Commission took office in August 1933.

Since the appraisals made by the Department's own men lie at the very heart of the recommendations that have been made, the head of the Bureau shall, in every case where the price to be paid the owner exceeds these appraisals by a relatively substantial margin, state in writing to the Commissioner all the facts relied upon to justify the payment. This statement, signed by the Bureau chief and supported by a complete report of the Right-of-Way Agent or person who negotiated the agreement, shall accompany the agreement when it is sent to the Highway Commissioner for his approval and signature. The Commissioner will also have before him all the appraisals and other information pertaining to the case.

All files relating to real estate acquisitions should be kept under strict central control and supervision to eliminate the possibility of loss, destruction or alteration. The existing disorder and unsafe location of the title files, and the apparent ease with which papers in the appraisal files can be altered, added or removed, points to the need of immediate remedial action. Steps should be taken at once to insure the safety and integrity of the real estate files—in fact, of all departmental records, plans and files.

Condemnation Procedure:

Excessive condemnation awards have been one of the main reasons for the high cost of right-of-way in the past. Those in charge of real estate acquisition work have complained of this fact year after year.[549] Except for the Scott Commission, which in 1931 tried to correct the situation by preparing a bill and having it introduced in the Legislature, neither the Foran Commission nor the Highway Commissioner made any determined effort to check excess condemnation awards through remedial legislation.[550] Despite criticisms of the condemnation system by Department officials, and the public notoriety of the awards made in certain outstanding cases, the Legislature never took action in the premises.[551]

The root of the evil lies in the fact that under the 1927 act establishing a State Highway System, the Department is obliged to proceed in condemnation under the Condemnation Act of 1900.[552] Under this act, the compensation to be paid the owner is determined by a commission of three "disinterested freeholders, residents of the county where the land or property to be taken is situate," appointed by a Supreme Court Justice or Judge of the Circuit Court of the county.[553] At the time and

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[549] See, for example, *New Jersey State Highway Department Annual Reports, 1925* (preliminary report of the State Highway Engineer, "Right-of-Way"); *1927* (report of the Office Engineer, *p. 6*); *1930* (report of the Division of Appraisal and Negotiations, *p. 9*); *1931* (*Ibid., p. 9*); *1932* (*Ibid., pp. 12* to *16*). *Cf.,* Princeton Survey report, *op. cit., p. 196.*

[550] A complete revision of the condemnation law was proposed by Highway Commission Chairman Scott, who had a bill drafted which was Assembly Substitute No 202 in the 1931 Legislature, See *New Jersey State Highway Department Annual Report, 1931,* report of the Division of Appraisal and Negotiations, *pp. 110* to *119;* and see Appendix C. The provisions of this bill will be considered, *infra.*

[551] The entire procedure on condemnation was criticized and a method for its improvement suggested in the course of the Legislature's own investigation of the Highway Department made by the Abell Commission. *Minutes of the Abell Commission, op. cit.,* minutes of March 24 and April 22, 1930. *Cf.,* Princeton Survey report, *op. cit., p. 202,* which termed the inaction of the Legislature "incredible." The 1931 act (*P. L. 1931, c. 365*) amending the condemnation law under which the Highway Department must proceed, resulted in no fundamental changes or improvements.

[552] *P. L. 1927, c. 319, s. 111* (now *R. S. 27:7-22*), gave the State Highway Commission the power "to acquire any lands or rights therein by gift, devise, purchase, or by condemnation according to the procedure contained in [the Condemnation Act of March 20, 1900, *P. L. 1900, c. 53,* now *R. S. 20:1-1* to *36*] * * * The State Highway Commission shall have the right and power to enter upon and take property in advance of making compensation therefor in any case where it cannot acquire land or other property by agreement with the owner, whether by reason of disagreement as to price, or the legal incapacity or absence of the owner, or his inability to convey valid title, or by reason of any other cause. In any such case, upon the said Highway Commission exercising this right and entering upon and taking land in advance of making compensation therefor, it shall present a petition, and proceedings shall be had to fix the compensation to be paid to the owner, as provided in the said act * * *."

[553] *R. S. 20:1-6.*

place fixed in the order appointing them, the condemnation commissioners meet to view and examine the property, and to make a "just and equitable appraisement of the value of the same, and an assessment of the amount to be paid by the petitioner for the land or other property and damage [thereto], as of the date of the filing of the petition and order thereon."[554] After the commissioners have made their report, the court allows such costs, fees and expenses of the commissioners, clerks and other persons performing any duties under the act as it thinks proper, and these are to be paid by the petitioner.[555]

Either party may appeal from the award, in which case the condemnation is tried before a struck jury in the Circuit Court. The jury assesses "the value of the land or other property taken and the damages sustained."[556] Appeals from jury awards are to the Court of Errors and Appeals, but only on points of law and not on the amount of the award.

This statute, which may have been suitable at the turn of the century, is outmoded, unscientific and entirely inadequate for present day needs. Its defects are so patent that the failure of the Legislature to enact a suitable law in its stead is incomprehensible. Just how much this legislative inertia has cost the State is a matter of conjecture. That the amount runs into many hundreds of thousands of dollars is universally conceded by those who have studied the problem. Some have even ventured to place the figure at a few million. Excessive awards by commissions and juries, a variety of expenses that must be incurred in specially preparing for condemnation, and fees paid witnesses, attorneys, commissioners and jurors, make up part of this total.[557] But

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[554] *R. S. 20:1-9.*

[555] *R. S. 20:1-14.*

[556] *R. S. 20:1-16, 20* and *22.*

[557] *Cf.,* Princeton Survey report, *op. cit., p. 198.* In 1931 and 1932, the head of the Appraisal and Negotiations Division analyzed the total average cost per parcel (exclusive of the price paid the owner) where settlement was by agreement, or where condemnation had to be resorted to. In both cases, engineering, mapping, appraisal and negotiation expenses ($121) and title and settlement costs (also $121) were, of course, the same. In the case of condemnations, the average cost was increased by $919 to a total of $1,164, representing $122 for preparing the necessary data, $192 for clerical, court and other expenses, $190 for appraisers' testimony in court, $250 for trial attorneys, and $165 for condemnation commissioners. In case of an appeal to a jury, the extra expense increased beyond $919. *New Jersey State Highway Department Annual Report, 1931,* report of the Division of Appraisal and Negotiations, *p. 81.* The average figures for 1932 were $115 for appraisals and negotiations, $139 for titles and settlements, and $590 extra due to condemnation ($85 for preparation, $149 for clerical, court and other costs, $110 for court witnesses, $145 for attorneys, and $101 for commissioners). This reduction was directly due to the efforts of the Division head who had the full cooperation of the Highway Commission in that year. *Annual Report, 1932, p. 96.* A similar analysis is not readily available for recent years.

one must also take into account the extra sums that the State has so often paid in the past to avoid additional condemnation costs, where the owners demanded high prices because they knew of the awards that might be obtained in condemnation proceedings.[558]

Under the Condemnation Act of 1900, the only qualification demanded of the commissioners is that they be "disinterested freeholders." Those who have dealt with condemnation commissions have all too often found them anything but "disinterested." Commissioners have shown favoritism, exhibited prejudices, and in some cases been openly antagonistic to the State.[559] It must be remembered that the members of these commissions are themselves property owners, and in many cases neighbors of the person owning the parcel to be acquired in condemnation. Commissioners are often interested in politics, if they are not, in fact, leading actors on the political scene. Except where a realtor sits on the commission, the members have no particular knowledge of real estate values. Moreover, their determinations are usually colored by the fact that the State is assumed to have a very large and deep purse.

Condemnation commissioners are normally *ad hoc* bodies that meet to fix the compensation for a single parcel, make their report, and disband. The experiences of other States with *ad hoc* condemnation commissions have been just as unsatisfactory as New Jersey's. A glaring defect in the 1900 act is that the findings of the commissioners are not reviewed by the court. There is no check on their tendency to overvalue property. If the court were required to review their findings and confirm the award, the worst abuses might be corrected to some extent.[560]

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[558] As has been pointed out, the Highway Department has in some degree been responsible for the condemnation award situation because of its improper use of the system of outside and "check" appraisals since 1933.

[559] *New Jersey State Highway Department Annual Report, 1930,* report of the Division of Appraisal and Negotiations, *p. 10.* The head of the Division reported that "commissioners openly antagonistic to the State were named and acted in case after case even though their awards were notoriously excessive. There were cases where attorneys and agents representing owners of adjacent properties or of properties in the immediate vicinity, and openly antagonistic to fair settlements, have acted as condemnation commissioners. Realtors who have represented the owners and made appraisals for them against the State have been placed on condemnation commissions on the very cases in which they acted as appraisers for the owners."

[560] *Cf.,* Princeton Survey report, *op. cit., p. 197,* which notes that "even with that check, the commissioners are inclined to be prejudiced, they are not sufficiently skilled to appraise property themselves, and they fail to sift the evidence presented to them. This is the situation even where one commission handles all the condemnations involved in an improvement."

The experience of the Highway Department in condemnation cases that have been appealed to a jury has been somewhat better, but only in comparison to the awards made by the condemnation commissions.[562] The jury awards themselves are greatly in excess of the Department's average appraisals which serve as a basis for voluntary agreements with owners in over 80% of the cases. Juries, too, are inclined to favoritism and prejudice, and their deliberations are undoubtedly conditioned by the thought that the State is well able to pay the owner a price better than the one offered.

There can be no question but that one of the important factors in bringing about excessive awards in condemnation is the failure of the 1900 statute to define adequately the method for determining the just compensation that is to be paid the owner. This has been pointed out repeatedly by those who have had to face condemnation commissions and juries, as well as by those who have studied the operation of the Condemnation Act.[563] The lack of specific provisions in the law as to the factors which may properly be considered in arriving at a "just and equitable" appraisement of the value of the property to be taken and the damage done to the remainder, has deprived commissioners and juries of an accurate guide in making their awards.

Courts have declared that "just compensation" represents the market value of the property where the whole property is taken, and the difference between the value of the entire property and the value that remains when only a portion thereof is taken. Nevertheless, condemnation commissioners and juries have found little difficulty in awarding sums in excess of the market value of the entire property when only a portion of it was taken, by considering various technical items of theoretical but non-existent damage and totalling them. Where buildings were partly or even slightly involved, and the buildings could and actually were moved back on the remaining property of the owner,

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[562] The only available statistics are those for 1931 and 1932. In 1931, the average of the awards by juries in 63 cases that were appealed was 163.21% of the adjusted appraisals of the Department, as against an average of 185.38% of the awards by commissioners. *New Jersey State Highway Department Annual Report, 1931,* report of the Divisions of Appraisal and Negotiations, *p. 80.* In 1932 the average of the jury awards in 40 cases was 163.98% of the adjusted appraisals, compared to 192.47% for the awards by commissioners. *Annual Report, 1932,* report of the Division of Appraisal and Negotiations, *p. 94.*

[563] See, for example, *New Jersey State Highway Department Annual Report, 1930,* report of the Division of Appraisal and negotiations, *p. 9;* Princeton Survey report, *op. cit., p. 198.*

condemnation bodies have often added the full value of the buildings to the value of the land taken in making their award. Awards have reflected speculative elements which had no rightful place in the considerations of the condemnation commission or jury. On the other hand, no weight has been given to special benefits that may have been conferred upon the remaining property because of the highway improvement.

One of the recommendations repeatedly made in order to improve the position of the Highway Department in condemnation cases, was that the Department be given authority to proceed under chapter 295 of the laws of 1920. This act is no longer available, having been repealed in 1938.[564] Under the 1920 act, a Justice of the Supreme Court, sitting without a jury, determined the amount of damages to be paid the owner after a full hearing. He could, in his discretion, appoint three commissioners to view the lands and advise him as to the damages to be assessed, and the commissioners were to proceed under such directions and rules as were fixed by him. The Justice was to review their findings, but could accept, alter or reject them, and his review could be made with or without further hearings. His determination of the facts was conclusive, but an appeal could be taken to the Court of Errors and Appeals by writ of error on any question of law involved in the proceedings.

Although the 1920 act also failed to define "just compensation" accurately, it provided a far better method of condemnation than the 1900 statute. A single Supreme Court Justice, impartial and trained in the law, with a full knowledge of the elements which might properly be considered in determining the fair price to be paid to owner, was far more likely to make an equitable award than a condemnation commission or jury. The court could, if it wanted to, appoint a condemnation commission, but its findings were not binding upon it. The statutory provision for a review by the Justice of the commission's award would check any tendency on its part to over-value property, and constitute an effective obstacle to favoritism. The provision that the court's findings of fact were to be conclusive simplified the procedure.[565]

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[564] *P. L. 1920, c. 295,* as amended by *P. L. 1921, c. 180;* formerly *R. S. 20:2-1* to *18.* Repealed by *P. L. 1938, c. 103.* The suggestion that the State Highway Commission be authorized to proceed under the 1920 act was made as early as 1925. See the report of the Office Engineer, *New Jersey State Highway Department Annual Report, 1926, p. 38.* The recommendation was repeated in subsequent reports.

[565] *Cf.,* Princeton Survey report, *op. cit., pp. 196* and *202.*

Still another defect in the Condemnation Act of 1900 is the fact that the value of the property is to be fixed as of the time of the filing of the condemnation petition. Accordingly, where the State has entered upon the property and actually started work, or even completed the highway improvement before the filing of the petition, the value of the property at the time the petition is finally filed is much greater than when possession was taken. In many cases, the parcel in question may have passed through speculative hands, the price increasing with each exchange of ownership. By the time the petition is filed, the price may be many times more than the original value of the property.[566]

One other deficiency of the 1900 act should be mentioned. The State has no authority to compel the owner to move his buildings and structures back on his remaining lands. Counties now have that power in connection with highway work.[567] There is no reason why the State, as the sovereign, should not have the power enjoyed by a subordinate division of the government.

A recommendation that might be made is that the Highway Department seek legislation amending the 1900 act in order to eliminate its defects and to correct its deficiencies.[568] Besides setting up a stricter method for selecting condemnation commissions and juries and providing for a check upon their deliberations, particularly through a court review of their findings, the amendatory law should contain a definition of the "just compensation" to be paid the owner. The State should be empowered to compel the owner to move buildings back on his remaining lands. Consideration should also be given to changing the provision

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[566] Under the act providing for the acquisition of real estate for highway purposes by counties through County Highway Right-of-Way Commissions, the Board of Freeholders of the county files a resolution that it has passed providing for the proposed highway improvement, accompanied by a map of the improvement, with the Commission, and notices of the time and place of the hearing by the Commission are mailed to the owners. The award made by the Commission is based upon the condition of the property at the time of the mailing of the notices. *R. S. 27:16-57* and *60.*

[567] *R. S. 27:16-56, 60* and *61.*

[568] For recommendations as to the amendments to be made, see *New Jersey State Highway Department Annual Report,* report of the Division of Appraisal and Negotiations, *1930, (pp. 14* to *22)*; *1931, (pp. 100* to *104,* setting out the draft of a bill amending the 1900 act, and *pp. 108* and *109,* containing a draft of an act to amend the State Highway System Act of 1927, *P. L. 1927, c. 319)*; and *1932 (pp. 114* to *119,* repeating the recommendations contained in the 1930 report).

of the law regarding the time to which the fixing of the value of the property should be referred.

Rather than attempt to correct the 1900 Condemnation Act by amendment—a procedure which would in the end involve a complete recasting of that law—it is preferable that an entirely new condemnation act be sponsored by the Highway Department in the next session of the Legislature and every effort made to effect its passage. As the State agency most vitally interested in a condemnation procedure suited to present-day standards, and which will result in the saving of State funds, the Department has every right to insist on the enactment of such a law. It has been zealous about far less important matters in the past.

It need hardly be said that the Legislature is not without a responsibility of its own. Having sat by for so long without correcting a notoriously bad situation, its duty is to act on its own motion in the interests of the State without waiting for inspiration from the Highway Department.

The starting point for the proposed new legislation would be the setting up of a new condemnation machinery in place of the present unsatisfactory *ad hoc* condemnation commissions and juries. As a result of its study of the condemnation system under which the Highway Department operates, the Princeton Survey recommended the creation of a State Condemnation Commission to handle all condemnations of property by the State.[569] This body was to be *quasi*-judicial in character, its members appointed by the Governor for six-year terms on a staggered basis. Two members were to have engineering training or experience in land economics, and the third might preferably be an attorney.

This Commission would hold public hearings, receive the testimony of both property owners and the State, and make a record of the evidence presented and of its award. It would be authorized to view all property and request the owners or the State to present additional evidence. The Commission would hold its hearings in the county where the property was located and keep its records in its central office at Trenton.

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[569] Princeton Survey report, *op. cit., pp. 199* and *200.*

All voluntary agreements negotiated by any State department, together with the evidence on which the State's offers were based, would have to be submitted to the Commission for approval before becoming effective, thus providing an independent check on the price agreed to be paid. The Princeton Survey considered such supervision desirable and helpful, both from the point of view of those who had negotiated the agreement and the owner. It would forestall the defrauding of either the State or the ignorant property owner. Moreover, it would give the Commission information regarding sales that would be very useful to it in making condemnation awards in the same neighborhood.

Appeals from the awards of the Commission would be to the Supreme Court upon the record, and not to a jury as at present. If the court held that the award was not legal, the case would be sent back for a rehearing by the Commission.

This procedure, according to its proponents, would substantially reduce the cost to the State of acquiring property. The accumulated knowledge and skill of the State Condemnation Commission, and its detached position, would protect owner and State alike. It was pointed out that the Commission could readily handle the volume of work; the Highway Department had never condemned more than 400 parcels in any one year at the very peak of the construction program. Several parcels in the same locality and along the same right-of-way could be dealt with at one hearing. The Princeton Survey figured that expenses under the new arrangement would be considerably less than those under the existing system.[570]

The compensation to be paid the owner would be clearly defined by statute. "When the entire property is taken the compensation should be the market value before values in the region were affected by the imminence of the improvement. When part of a parcel is taken compensation should be the market value of the entire property before it was affected by the impending improvement, less the market value of the remainder after the *taking and improvement.* The condemnation commission should be specifically authorized to consider special benefits from the improvement in determining the total award. The Commission should also be directed to consider the possibility of moving build-

[570] *Ibid., p. 201.*

ings back on the lot, or of reconstructing them, and of continuing them in use. Damage to buildings should not be more than the sum of the cost of moving, the damage through moving, and the damage through a possibly less advantageous location."

It will be seen that this plan meets many of the criticisms made of the 1900 Condemnation Act. It provides a simple, direct procedure in condemnation, assures both the State and the owner of fair treatment, and presents many features worthy of adoption.

In its reply to the Princeton Survey Report, the Highway Commission had no criticism to make of the plan except that it questioned whether a single State Condemnation Commission would be able to handle the volume of agreements and condemnation cases presented each year. It also doubted whether the savings in administrative costs claimed for the plan could be realized.[571] The Highway Commission noted its own efforts of the year before to get the Legislature to pass a comprehensive and satisfactory condemnation act.

The bill thus referred to, prepared by Chairman Scott of the Highway Commission, has many excellent features. It has been reproduced in full in the Appendix for ready reference.[572] It differed in several fundamental respects from the Princeton Survey recommendations in that:

(1) The condemnation procedure proposed applied only to the State Highway Department.

(2) Seven regional condemnation commissions were proposed instead of one for the entire State. The State was to be divided into seven districts of three counties each. Upon petition of the Highway Commission, the Supreme Court Justice holding the circuit in or the Circuit Court Judge of the particular district was to appoint a "Right of Way Board" for the district consisting of three "reputable, fair, discreet and impartial freeholders," residents of the district, with no more than one member from each county. Each member was to serve until December 31st following his appointment, and might be reappointed by the court on formal request of the Highway Commission, or another

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[571] *Statement by the State Highway Commission on the Princeton Report, op. cit.*

[572] See Appendix C.

appointed in his place on petition of the Commission. Any member could likewise be removed on petition of the Commission. Compensation was to be at the rate of $50 a day.

(3) Appeal from the award of a Right of Way Board was to be to the Circuit Court of the county where the land was located. The court would then direct that a trial be held before a struck jury.

(4) No provision was made for the submission of voluntary agreements to the Right of Way Board for approval.

There is room for a real difference of opinion as to whether there ought to be one State-wide condemnation commission or several regional boards. It is felt that the Princeton Survey proposal is the better one. Whatever features are missing from the proposal can readily be supplied from the 1931 bill prepared by the Highway Commission and other sources.

It is therefore recommended that the new condemnation act provide for a single State Condemnation Commission of three members having full *quasi*-judicial powers, which will handle all condemnation of property by State agencies. The members will be appointed on a non-partisan and non-geographical basis by the Governor for terms of six years, so arranged that not more than one vacancy will occur every two years. Compensation shall be on an adequate and annual basis. The Governor shall have the power to remove any member for cause, after hearing, either on his own motion or on petition of any State agency. It is suggested that the personnel of the Commission consist of a licensed engineer, a counsellor-at-law and a person with a wide experience in land economics. The State Condemnation Commission will have its records and office at Trenton, and be given enough clerical help for the prompt expedition of its business.

The Commission shall make awards for all property taken or damaged by the State in exercising its power of eminent domain. It shall hold public hearings in the county where the property is located, and have the power to administer oaths to witnesses, and to compel the attendance of witnesses and the production of papers, documents and records by subpoena. It shall make and preserve a record of the evidence presented and of its award. The agreement of two members shall

be required for a decision. The Commission shall have the right to view the property and request either party to present additional evidence. To conserve the time spent in hearings, the State and the owner shall be required to present briefs prior to the date of hearing, setting forth their respective claims and supporting data. All parcels in the same locality and on the same route shall be dealt with in one hearing. Appeals from the awards of the Commission shall be to the Supreme Court, and that court shall review all questions of law and fact.

All voluntary settlements, together with the evidence upon which the State's offers are based, shall be submitted to the Commission before becoming effective.

The new legislation should include the following provisions, among others:[573]

1. The State agency shall adopt a resolution, stating the location and character of the improvement proposed to be made, and the real estate to be then taken therefor, sufficiently described to identify the land of each owner to be taken, and approving the map which shall accompany the resolution and directing that the real estate shown in detail thereon be acquired. The resolution and map shall be filed without delay in the office of the County Clerk in the county or counties where the lands are located. Public notice shall be given by posting signs conspicuously along the highway or by publication, as well as by written notice to the owners and occupants of the property at least twenty days before taking possession, of the intention of the State agency to take possession of the property and to make the improvement. The filing of the resolution and map, and the recording thereof as a *lis pendens*, shall constitute a notice of the pendency of the proceedings to acquire the lands shown on the map, and shall be good and sufficient notice to all persons subsequently acquiring any interest in the property.

2. Where agreements cannot be reached at the amounts determined by the State agency, or satisfactory title cannot be acquired, it shall refer the matter to the State Condemnation Commission, requesting a hearing within sixty days. Upon receipt of the notice of the

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[573] These are derived from the act proposed by the Scott Commission in 1931 (Appendix C), and proposals made by the head of Appraisal and Negotiations Bureau in his annual reports (see footnote 568).

time and place of hearing, the agency shall file a copy of the resolution and map with the State Condemnation Commission, showing the improvement and all the properties on which agreements have been reached and the amounts agreed to be paid for each; as well as the properties on which agreements have not been reached, the date possession was taken, a description of each of these parcels with such additional rights and interests as it may be necessary to acquire, and the names and addresses, if known, of the owner or owners and of all other persons having an interest therein. The agency shall also serve notice on each party in interest, at least fifteen days before the hearing, either personally or by leaving the same at his residence, if known, or if it is unknown or out of the State, by at least one publication in a newspaper published in the county where the lands are located, stating that the State Condemnation Commission will meet at the time and place specified to hear testimony as to the amount to be awarded for the taking of the lands and premises and interests therein. Proof of service of such notice shall be provided at the hearing.

3. The Commission shall view the ground and examine the briefs submitted before the hearing, and at the time and place fixed, hear the testimony of the parties and make its award in the form of a report for each parcel of land, except that more than one parcel may be included where the ownership is the same. It shall award fair and just compensation, after taking into consideration the elements specifically mentioned in the following paragraph. Value and damages shall be fixed as of the time of the adoption of the resolution under which the State agency determined to make the improvement and/or acquire the property. Where prior possession was taken, the value and damages shall be fixed as of the date of taking possession. The award shall constitute the whole sum to be paid for each parcel of land, and no attempt shall be made to apportion or distribute it among the various interests involved.

4. In awarding fair and just compensation for the lands and interests acquired, the Commission shall give full consideration to the following factors:

(a) The value of the land or other property to be taken.

(b) The damages, if any, to the land remaining by reason of the taking.

(c) The purpose for which the land is to be taken.

(d) The special benefits, if any, conferred upon the remaining land by reason of the improvement; provided, however, that the allowance for such benefits shall in no event exceed the value of the land or other property taken and the damages.

(e) When the land was acquired, and whether the land was acquired by the owner or a building erected thereon, subsequent to the adoption of the map referred to above, or the notice given to the owner of the intention to acquire the property and make the improvement, or the taking of possession by the State. Where it can be clearly shown that the land was acquired specifically for sale to the State at an expected profit, or for the purpose of profiteering, the Commission shall have the right to base its award upon the fair market value previous to such purchase, providing it is not in excess of the value at the time of the adoption of the resolution, or, in cases where prior possession was taken, the value at the time the State took possession.[574]

(f) The removal of buildings or other obstructions wholly or partly on the land to be acquired, and the relocation thereof on the remaining land of the owner. Where such removal is practical and economical, the cost of removal and the resultant damage shall be taken into consideration instead of the full value of the buildings or improvements, where the cost and damage is less than such full value.

(g) Speculative elements shall be discounted as far as practicable.

5. Awards shall bear interest from the date the State took possession of the land.

6. In the case of an improvement by the State Highway Department involving only a change in the elevation of a curb legally and duly established by the proper authority having jurisdiction along the existing road or street, and no land is required to be taken from abutting owners, the damage, if any, to abutting property because of the change in the established grade shall constitute a taking of

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[574] A favorite device in the past has been for speculators, as soon as they heard of the possible improvement or construction of a route, to make successive "sales" of the property that would be needed for such improvement, at increasing prices. Another practice was to subdivide a large tract into lots in order to be in a position to demand subdivision prices from the State.

an interest in land, and owners thereof may be compensated under the act for their reasonable damage. Where no curb grade has previously been established, the Highway Commissioner shall be the sole judge as to the justice of any claim for damage due exclusively to the change of grade where no land or easement is taken, and may, in his discretion, allow such damages as he considers fair and just.

7. No taxes or assessments shall be levied against the lands to be acquired by the State agency as shown on the map referred to above, after a copy of the map and of the resolution declaring the intention to make the improvement has been filed with the board of assessors in each municipality of the county affected by the improvement, provided the map and resolution are filed before October 1st in each year, unless the State agency abandons the proceedings to acquire the land or any part thereof and so notifies the board of assessors in writing. The validity of taxes or assessments levied for the current year in which the map and resolution are filed, and the collection of such taxes or assessments for that year, shall not be affected. However, properties acquired or taken and shown on the map and in the resolution, shall not be subject to sale for delinquent taxes, and the officials of the municipality in which the lands are located may be required to furnish a release to the State from all taxes and assessments, the release to cover that portion of the property to be taken by the State, upon tender of the proper proportion of the taxes or assessments.[575]

Right of Way Engineering and Mapping:

Reference has already been made to the right-of-way engineering and mapping work carried on by the Real Estate Division prior to 1933, when it was known as the Division of Appraisal and Negotiations, and now transferred to the Survey and Plans Bureau in the Construction Division.[576] It has been suggested that all this work be transferred back to the Real Estate Division. A study of the suggestion leads to the conclusion that some of the functions should be reintegrated into the proposed Land and Legal Bureau.

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[575] *Cf.*, the recommendations made by the head of the Division of Appraisal and Negotiations to the Highway Commission, January 16, 1932, *New Jersey State Highway Department Annual Report, 1931,* report of the Division, *p. 98.*

[576] See *p. 298, supra.*

Since right-of-way surveys are so very closely tied up with the preparation of the construction plans, they should remain in the Survey and Plans Bureau. (This Bureau will be part of the Construction Bureau in the proposed plan of reorganization.) So should the preparation of the original real estate maps (general property key maps, general entire tract maps, and individual property maps) for negotiation and condemnation purposes. Field and engineering investigations relating to right-of-way acquisition and to complaints involving right-of-way matters should also be continued in that Bureau, cooperating with the Land and Legal Bureau.

The work of the Land and Legal Bureau will, for the most part, be concerned with property and property rights, and all things relating thereto. The Bureau can and should, therefore, carry out certain duties leading up to the making of the surveys and plans in the Construction Bureau. It should be responsible for all preliminary investigations and reports of ownerships and values, making such information available to the Construction Bureau for the preparation of plans and the determination of the most economical location of the route. These investigations will serve as a basis for the Land and Legal Bureau's own preliminary appraisals and estimates, final appraisals and condemnation testimony. The Bureau will also coordinate its operations with the Construction Bureau in the location of property lines and the investigation of existing road widths and road records. The head of the Land and Legal Bureau will collaborate with the survey and plan engineers in determining the most economical alternate locations of highways, and with the construction engineers during construction work insofar as adjacent properties may be affected or damaged.

The Land and Legal Bureau will further cooperate with the Construction Bureau in completing and checking the general property key maps, general entire tract maps and individual property maps. It will secure such maps and data as may be required preliminary to and in the making of appraisals and the conduct of negotiations, and in condemnation proceedings. It will prepare the descriptions, agreements and other documents used in or incident to its negotiations for the acquisition of property.

Old road records and maps, formerly the responsibility of the Division of Appraisal and Negotiations, are now handled by one of the Resident Highway Engineers in the Survey and Plans Bureau,

assisted by a Senior Draftsman.[577] Essentially, this work involves a search of the records in the county court houses around the State. The title searchers connected with the Title Bureau work in these record offices and are therefore in a position to help in completing the old road records and maps project. Since the Title Bureau will become part of the Land and Legal Bureau in the proposed reorganization, this Bureau should take over the project and bring it to a prompt conclusion.

The "consolidation of real estate plans" project should likewise be brought back into the Land and Legal Bureau. The Special Engineer in charge of this work is supposed to collect the blueprints of the construction key plan, construction plan-profile sheets, and the general property key maps, for each route.[578] The project would be a useful one if he had a group of draftsmen to help do the job. No assistants have been assigned to him.

A better project, but one which was stopped soon after it was begun by the Special Engineer, was the consolidation of the files of the Real Estate Division, Title Bureau and the rest of the Legal Division relating to each route and section. This should be reestablished in the Land and Legal Bureau. Such a consolidation would be of real value to the Department. When completed it would show the status of all right-of-way and real estate acquired, owned or sold by the Highway Department.

Disposal of Excess Real Estate:

The Land and Legal Bureau would be responsible for the disposal of all excess parcels of land no longer required by the Department, as well as the sale and removal of buildings on property acquired for highway purposes.[578a]

Competitive bids for the removal of buildings and improvements would be secured and the award made to the lowest responsible bidder.

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[577] See *p. 78, supra.* The work of collecting and classifying old road record data and returns began in 1925. *New Jersey State Highway Department Annual Report, 1926,* report of the Office Engineer, *p. 37.* The work progressed slowly, as shown by subsequent reports.

[578] See *p. 66* and footnote 530, *p. 298, supra.*

[578a] See *p. 40, par. 27, supra,* for the power of Commissioner to dispose of property not needed for State highways.

The Bureau would appraise all excess parcels of land as well as buildings that are to be sold. After advertising and the receipt of bids, the head of the Bureau would recommend that the award be made by the Commissioner to the lowest responsible bidder.

Right-of-Way Widths:

New Jersey does not place a maximum limit on right-of-way widths on either the State Highway System or the secondary system. This is in accord with the practice of most States.[579] Available money, the terrain through which the road will be constructed, the type of road based on volume of traffic, and many other factors, make it necessary that no maximum width be established.

The Department was either overly cautious or short-sighted in its right-of-way acquisition policy when building some of the main routes in the 1920's. The result has been that time and again it has had to go back and buy up extra width at greatly increased prices—values which the Department itself created in making the original improvement.

There was no lack of warning. The need of anticipating future requirements and buying wider rights-of-way was pointed out repeatedly by some members of the engineering staff. The 1926 report of the Office Engineer in charge of acquisitions makes the first reference to this matter. He recommended that consideration be given to acquiring 80 to 100-foot rights-of-way on the more heavily travelled routes.[580] The Department began to buy 75 to 80-foot widths on a rather limited scale in 1927, and by 1928 had arrived at the point of using an 80-foot width as a standard. A 100-foot right-of-way was acquired on Routes 25 and 26 (Trenton-New Brunswick-Newark).[581]

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[579] "A report on a Nation-wide Questionnaire Survey of Right-of-Way Experience and Procedure," State Highway Board of Georgia (Atlanta, 1940), mimeo. Of the 44 States reporting, 25 set no maximum width. The others reported as follows: 100 feet (2), 150 feet (2), 200 feet (6), 300 feet (2), 400 feet (4) and 500 feet (3). The minimum width most commonly fixed for primary roads in other States is 100 feet (19 States).

[580] *New Jersey State Highway Department Annual Report, 1926,* report of the Office Engineer, *p. 38.*

[581] One of the chief engineers of the Construction Division was of the opinion that no more than a 66-foot right-of-way was necessary on this important through highway.

The 1928 report of the Office Engineer stated that "right-of-way widths of eighty feet on any State Highways are not too wide".[582] The report reproduces a rather remarkable chart prepared and recommended by the same engineer and which he had included in his 1927 report.[583] This shows typical cross sections of roads—a standard 40-foot paved width on a 60 or 66-foot existing right-of-way, and a 56-foot width on an 80-foot right-of-way. It also showed cross-sections for "special" 100 and 120-foot rights-of-way "to be used on heavily traveled main highways and in metropolitan districts where feasible". These are *divided highways with a 10-foot center island* and 30-foot paved widths on either side.

By 1930 the Department had begun to realize the importance of acquiring sufficient widths for future developments. Eighty feet was the minimum to be secured, but 100 and 120-foot widths were not common.[584]

The past decade has revealed the mistakes of the preceding period. Important routes, built only a few years before, were found to be incapable of accommodating the increasing volume of traffic traveling to shore points and between the larger centers of population. The work of widening these highways and, in many cases, of converting them into dual highways began. The improvements were costly.

By the end of 1941 there were 246.1 miles of dual (divided) highways, 2.8 miles of six-lane undivided highways, and 3.3 miles of five-lane highways, on the State system.[585] Highway Department plans

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[582] *New Jersey State Highway Department Annual Report, 1928,* report of the Office Engineer, *p. 62* and *63.*

[583] *New Jersey State Highway Department Annual Report, 1927,* report of the Office Engineer, *p. 55* (chart).

[584] National Institute of Public Administration report, *op. cit., pp. 285* and *286.*

[585] *Source:* New Jersey State Highway Department. There are 504.3 miles of multi-lane Highways on the State Highway System, the balance being made up of 85.7 miles of four-lane and 166.4 miles of three-lane highways. These figures are based on actual travel lanes, regardless of width of pavement. Within the three-lane category, there is a large amount of 40-foot pavement which is not available for four traffic lanes due to parking, adverse grades, or sharp curvatures. There is also a large amount of 30- and 40-foot pavement on the two-lane roads which is not available for more than two traffic lanes for the same reason.

The United States Public Roads Administration has fixed 27 feet as the width of a three-lane pavement. Pavement widths of 27 feet and upwards on the New Jersey State Highway System total 697.4 miles.

show that 500 miles of highway on the State system are in need of dualization, the estimated cost being $103,150,000.[586]

Widening and dualization of existing State highways, and the planning of proposed highways on an adequate right-of-way width, is being conducted on a scientific basis through the use of traffic studies and traffic counts. It is unlikely that the construction engineers will repeat the mistakes of the earlier period. Rebuilding a large part of an existing system has been an expensive but unforgettable lesson.

The present status of right-of-way widths on the State system is shown by the following figures:[587]

Right-of-Way Widths

Width	*Miles*	*Width*	*Miles*
33′	3.5	110′	7.5
50′	93.1	120′	245.5
60′	28.0	130′	27.8
66′	570.6	135′	2.0
70′	3.6	140′	6.0
75′	22.3	150′	6.3
80′	305.5	160′	17.4
90′	35.7	180′	6.2
100′	113.0	250′	7.6

Of the 1501.6 miles of State highway included in this tabulation, 1062.3 miles (70.75%) have a right-of-way width less than 100 feet, the most common widths being 66 feet (38.01%) and 80 feet (20.34%); and 439.3 miles have a width of 100 feet or more, the most common

[586] New Jersey State Highway Department chart, "Status of Needed Improvement, as of January 1, 1942."

[587] *Source:* New Jersey State Highway Department. The mileages do not include bridges. Some parts of the system that were built by counties and municipalities, and which are unclassified because their exact width is not known, are also omitted from the tabulation.

of these widths being 100 feet (7.52%) and 120 feet (16.34%). The largest widths were acquired during the past decade.

The right-of-way width to be acquired on any primary road should, of course, be established on a sound engineering and highway planning basis. Some authorities have suggested the advisability of buying up right-of-way where future widening is considered necessary, although it is not planned to proceed with the improvement at once. This policy has its obvious limitations. It may be pursued where the real estate market is favorable and higher prices in the future are indicated. However, extreme caution must be exercised. The State must not tie up its funds for too long a time or the carrying charges on the investment will exceed the anticipated savings. There is, moreover, the bothersome question of maintenance. One proposal made in the past was that the Highway Department be authorized to make agreements with the owners of adjacent property to continue to use the unneeded portion of the right-of-way for agriculture and other purposes which do not involve the erection of structures.[587a]

Roadside Control:

The problem of roadside control has been with the Highway Department since the first important routes on the State system were built twenty years ago. At first merely vexing, the problem became increasingly serious with each passing year. It has now taken on challenging proportions.

The opening of a new route is the signal for a concerted rush to establish gasoline service stations, roadside stands, restaurants, and a hundred and one other business uses along the margin of the highway.[588] Vehicles turning in at business establishments or stopping on the shoulder of the road, and then eventually returning into the main stream of traffic, reduce the capacity and safety of the main highways.

[587a] Princeton Survey report, *op. cit., p. 203.* The suggestion thrown out by the Survey report that right-of-way needed for future widening might possibly be purchased in advance of actual use was rejected by the Highway Commission. *Statement by the State Highway Commission on the Princeton Report, op. cit.* This happened in 1933, when real estate prices were very low and many miles of the State system had to be widened.

[588] Until the statute taxing billboards and licensing outdoor advertising was passed in 1930 (*R. S. 54:40-1* to *19*), trunk highways were being turned into billboard boulevards. Since the statute exempts signs built on business premises, the situation is not yet under entire control.

Similarly, local streets and roads crossing major arteries bring delay, danger and traffic lights in their wake. Subdivisions spring up along important routes and result in still more street intersections. The general result is that a route like the one from the Holland Tunnel to Trenton—from the Newark Airport southward—intended as a safe express highway, "no longer deserves to be called either 'express' or 'safe'." [589] Route 4, which provides the westerly approach to the George Washington Bridge; Route 2, leading northwesterly from the metropolitan area to New York State, and Route 29, leading southwesterly from Newark, are among the outstanding examples of modern highways whose capacity and safety have been reduced by what have been termed the "shoestring" developments that have sprung up along the line of travel. The situation is particularly bad at traffic circles. These circles, which were intended to facilitate the prompt flow of traffic at important intersections and to promote safety, are magnets that attract a host of gasoline stations, restaurants and other enterprises.[589a]

In the case of certain highways, the roadside condition is so bad that the only possible solution is for the State to duplicate these expensive facilities by the construction of parallel routes on more modern lines. This is a simple but costly procedure. Much more difficult is the finding of some effective way to deal with existing highways that have already been spoiled or are subject to being blighted.

The problem of roadside control was recognized at an early date. Although many suggestions were made looking toward at least a partial solution, very little was done about the matter. Thus, one Department official recommended in 1926 that legislation be passed giving the Highway Commission authority to regulate buildings and structures within a reasonable distance from the graded width lines of the State highways, the width on each side of these lines "to vary from a minimum of ten or fifteen feet to provide sidewalk space, to a possible maximum of fifty feet. It may be that such laws, if passed, could be sustained under

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[589] "How Municipalities Can Aid in Roadside Control along State Highways," published by the Highways and Parkways Committee of the New Jersey State Chamber of Commerce (Newark, 1940), *p. 3.*

[589a] See, *New Jersey State Highway Department Annual Report, 1940,* report of the Maintenance Division, where the Superintendent of Maintenance recommended that on future traffic circles rights-of-way be acquired with the special provision that there be no access from abutting properties. See, also, his annual report for 1939, in which he notes the deterioration in the appearance of highways because of roadside stands, gasoline stations, etc. The lack of clear-cut and readily enforceable laws to prevent highway encroachments and control roadside developments, stood in the way of effective action by the Maintenance Division.

the police powers of the State".[590] In 1927, the same official proposed that if such legislation was not feasible, an effort be made to get the various municipalities along the respective routes to pass building ordinances fixing the building limits along State highways running through them. (A plan attached to his annual report showed probable uses and dimensions of various widths of State highways and the building lines to be used.[591]) A similar recommendation was made in subsequent years.[592]

The Princeton Survey report likewise recommended the establishing of building lines to control new construction within the limits of future right-of-way where it was evident that greater widths would be necessary. It argued that this did not amount to an appropriation of property requiring payment to the owner. It was pointed out that "The Legislature has already conferred this power to protect mapped streets upon New Jersey municipalities. There is no reason why it should be less with the State as a whole".[593]

There is a forward-looking suggestion thrown out in passing in the pages of the Abell Commission report. It spoke of trunk highway improvements being planned in such a manner that marginal highways could be provided, separated from the main highways by planted areas.[594]

Some of the methods which might be used in New Jersey to effect roadside control through the cooperation of municipalities and counties are described by Harold M. Lewis in a study prepared for the Highways and Parkways Committee of the New Jersey State Chamber of Commerce.[595] These methods are summarized here:

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[590] *New Jersey State Highway Department Annual Report, 1926,* report of the Office Engineer, *p. 38.*

[591] *New Jersey State Highway Department Annual Report, 1927,* report of the Office Engineer, *p. 8,* and chart following.

[592] See, for example, *New Jersey State Highway Department Annual Report, 1931,* report of the Division of Appraisal and Negotiations, *p. 98.* The head of the Division also recommended legislation providing for control by the State of the issuance of permits by local municipalities to individuals, corporations, etc., for construction within proposed right-of-way limits after surveys had been made and plans approved by the Highway Commission. He further recommended legislation prohibiting municipalities from approving plans for development or subdivision of tracts over which highways were laid out, without the consent of the Highway Commission. The power of the State to do this has been questioned.

[593] *Op. cit., pp. 202* and *203.*

[594] *Op. cit., p. 286.*

[595] "How Municipalities Can Aid in Roadside Control along State Highways," *op. cit.*

1. Cooperation by municipalities under the zoning power given them by statute.[596] Where zoning ordinances and maps exist, they should be re-examined "to bring the extent of business zones into reasonable conformity with what their requirements are likely to be within the next few years, and to examine particularly the distribution of these zones along the main highways". Such business zones "should be concentrated at strategic points, and even at such points should be designed so that they lie on one side of the main highway, preferably served from cross streets or parallel streets rather than from the main highways themselves".[597] Communities not having a zoning ordinance should adopt one, especially where they are crossed by an important State or county highway.

The desirability of a moderate setback line in a business district, to permit vehicles to unload or park off the main roadway, is recognized as in the interest of safety and general welfare along important routes. Similarly, substantial setback lines are desirable in residential areas along such routes, to keep residences away from noises and fumes generated by fast-moving traffic. A minimum building setback line of ten feet from the right-of-way is suggested for business uses. In residential zones, a fifty-foot setback is considered desirable on main State routes, although this would possibly have to be reduced in developed areas where many existing buildings are nearer the right-of-way.

2. Cooperation by municipalities and counties in controlling subdivisions adjoining main routes. Municipalities have the power to control subdivision plats involving new streets or highways by setting up a local planning board under the Municipal Planning Act.[598] Under this statute the governing body of the municipality may, by ordinance, create a local planning board and authorize it to adopt regulations governing the subdivision of land within the boundaries of the munici-

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[596] *P. L. 1928, c. 274; R. S. 40:55-30* to *51.*

[597] "How Municipalities Can Aid in Roadside Control along State Highways," *op cit., p. 7.* The author found that almost every zoned community had much more area in its business zones than could ever be used for that purpose. An analysis made in 1938 showed that in 21 North Jersey communities, the average of the excess zoned for business amounted to 172% of that developed for such purposes.

[598] *P. L. 1930, c. 235; R. S. 40:55-1* to *21.*

pality and to approve plats for such subdivision.[599] The success of a planning board in controlling a subdivision depends in the first instance upon its adoption of a suitable set of subdivision regulations. Given these, effective control can be exercised over real estate developments bordering upon important State highways.

County planning boards are provided for under the County Planning Act of 1935.[600] County Boards of Freeholders are authorized to create a county planning board which has the power to make and adopt a master plan for the physical development of the county. Any local authority in the county having the power to approve plats (the local planning board, if so empowered; otherwise the local governing body), is required to submit a copy of a proposed plat to the county planning board for review before taking final local action thereon. Although final authority remains with the local agency, a county planning board can do much to prevent objectionable layouts that might otherwise unfavorably affect the State or the county highway system.[601]

3. The laying out of park strips along main highways. Such strips may be included as part of the control of subdivision plats. Another method of establishing park strips is for the local planning board to lay out certain bordering areas as proposed park lands in its master plan, particularly where the highway adjoins land that is not well suited for building purposes or where it passes through scenic areas that should be preserved. The necessary land could be acquired either by the municipality, or by the county as part of the county park system.[602] Developers might find it advantageous to dedicate park strips to the municipality, thereby increasing the value of their remaining land.

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[599] A survey made in 1939 showed that there were 64 local planning boards in the nine northeastern counties of New Jersey. Half of them had been given jurisdiction over subdivision plats by the local governing bodies. "Defects of Existing Subdivisions Suggest Need for More Effective Control," Regional Planning Association, Information Bulletin No. 46 (1939). Comparatively few of the 32 planning boards used their powers effectively.

[600] *P. L. 1935, c. 251; R. S. 40:27-1* to *11.*

[601] The Bergen County Planning Board has done outstanding work in this connection. Its report on "Procedure and Regulations for the Subdivision of Land" (Hackensack, 1938) contains constructive suggestions for preventing undesirable layouts.

[602] Park strips have been established through local initiative along Route 4 in Bergen County. These strips add to the beauty and value of the adjacent residential developments. In 1939 four Bergen County and two Passaic County municipalities joined to protect Route S4-B by obtaining a parkway effect along the highway. This is to be done through the exercise of the planning and zoning powers of the municipalities. New subdivisions will be required to provide park strips of a minimum width of twenty feet on either side of the State's right-of-way. Houses adjoining the strips would face on service streets running parallel to the highway.

Just as the State Highway Department has, during the past few years, made every effort to obtain the cooperation of municipalities and counties in its safety lighting program along important routes and at main intersections, so the Department should do everything in its power to get these agencies to cooperate in a program of roadside control. It is true that a great deal has already happened along the main highways that cannot be undone, but a large field for action in the future remains. A campaign of education is indicated. Properly conducted, much of the utility and safety, as well as the beauty of the main routes on both the State and county highway systems, can be preserved.

In recent years, other States, seeking some effective method of roadside control, have developed the idea of parkways and limited access highways.[603] "Parkway" has been defined as "a State highway especially designed for fast moving passenger vehicles and with special treatment in landscaping and planting along its borders which borders may also include recreational features such as pedestrian paths, bridle trails, overlooks and picnic areas." A "limited access highway" is defined as "a State highway especially designed for through traffic over which abutters have no easement of light, air, or access by reason of the fact that their property abuts upon such way."[604]

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[603] Westchester County, New York, has many parkways of outstanding beauty and usefulness. Connecticut has developed the famous Merritt Parkway and the freeway known as the Wilbur Cross Highway.

[604] "How Municipalities Can Aid in Roadside Control along State Highways," *op. cit., p. 16;* text of a proposed act providing for the acquisition and development of limited access highways and parkways. See Appendix D. The Connecticut act (1939 supplement to the General Statutes, *c. 80, s. 427e*) defines "parkway" as "any trunk line highway receiving special treatment in landscaping and marginal planting, which shall be especially designed for, and devoted exclusively to, the use and accommodation of noncommercial motor vehicle traffic, and to which access may be allowed only at highway intersections designated by the highway commissioner and designed by him so as to eliminate cross traffic of vehicles." This act further defines a "freeway" as "any trunk line highway which shall be designed to separate through, high-speed, noncommercial motor vehicle traffic from all other types of traffic by the use of independent traffic lanes. Connection between local traffic and through traffic lanes shall be provided at intervals in the discretion of the highway commissioner." The Connecticut statute authorizes the Highway Commissioner, as an adjunct of any parkway or freeway, "to lay out and construct highways and drives, to be designated as service highways, to provide access from areas adjacent to a parkway or freeway and to provide for the restriction or elimination of cross traffic on such parkway or freeway, when he shall deem the same to be necessary in the public interest." The Highway Commissioner is further authorized "to purchase or take any land or buildings or rights in land necessary or required for the lay-out, alteration, extension, widening, change of grade, or improvement of such parkways, freeways or service highways in the same manner as provided in the general statutes in the case of trunk line highways."

Parkways and limited access highways are obviously the most desirable way of dealing with the problem of roadside control.[604a] The possibility of constructing such highways should be given careful consideration in the Department's planning of future routes. Parkways are recommended in the case of rural areas and relatively sparsely settled territory. Although limited access highways in populated districts are expensive, their advantages will in many cases justify the cost.

The whole question of parkways and limited access highways resolves itself into a problem in highway economics and good highway planning. It is recommended that appropriate legislation be enacted providing for the acquisition and development of limited access highways and parkways. A draft of such an act has already been prepared by the Highways and Parkways Committee of the New Jersey Chamber of Commerce.[605]

Regulation of Attorneys and Agents:

The investigation into the affairs of the State Highway Department, particularly in connection with real estate acquisitions, indicates the need of regulating the activities of legislators and other persons where the business of the Department is concerned. The theory of such regulation is that those in a position to wield possible influence or to acquire confidential information regarding the affairs of the Department, should not be allowed to negotiate with the Department.

The Federal Government has such a statute relating to Congressmen and to Federal officers and employees.[606] Other States have

[604a] The American Association of State Highway Officials adopted a resolution at its 1940 convention recommending "that legislation be sought in every State giving the State Highway Departments the authority to purchase or condemn the right of access from abutting property and to make and enforce zoning regulations on lands abutting on State highways."

[605] See, Appendix D.

[606] A bill patterned after the Federal statute dealing with this subject was submitted by a member of the Legislature on November 13, 1941. However, he was refused permission by the majority leader to introduce the bill. The bill was much broader in terms than the legislation recommended above. It provided that: "Whoever, being elected a Senator or member of the House of Assembly of the State of New Jersey, shall, after his election and either before or after he has qualified, and during his continuance in office, or being the head of a department, or other officer or clerk in the employ of the State of New Jersey, shall directly or indirectly, receive or agree to receive, any compensation whatever for any services rendered or to be rendered to any person or corporation, either by himself or another, in relation to any contract in which the State of New Jersey is a party or directly or indirectly interested before any department, bureau, or officer whatever shall be fined not more than $10,000 and imprisoned for not more than two years, and shall moreover, thereafter be incapable of holding any office of honor, trust or profit under the Government of the State of New Jersey."

enacted similar legislation. It is recommended, therefore, that a law be passed providing that no member of the Legislature should, during his term of office, and no officer or employee of the Highway Department should either during his employment or within two years thereafter, act as agent or attorney, either with or without compensation, with respect to the voluntary settlement of any claim against or the negotiation of any agreement or other transaction with, the Department, or intercede or participate in any such settlement or negotiation.

Although in the case of officers and employees of the Department, the foregoing may be accomplished by regulation or a required express agreement to that effect, a statute is considered the most effective method of achieving the desired end.

CONSTRUCTION DIVISION

Routes:

The Legislature has long followed the practice of designating the routes that were to be built on the State Highway System.[607] Only two exceptions to this policy have been found. In 1912, the Legislature authorized the State Highway Commission to establish a State Highway System, directing only that it consist of a comprehensive scheme of routes "which shall be ultimately a continuous or intercommunicating system of improved State highways through the State", the length not to exceed 1500 miles.[608] The other exception is the blanket authority given to the State Highway Commission in 1917, and since continued in the Commissioner, to "lay out routes in continuation of, connecting with, or in addition to the routes" designated by the Legislature.[609]

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[607] Laws laying out routes are found in the earliest statute books. In 1909, the Legislature directed the Commissioner of Public Roads to prepare a map, under the direction of the State Highway Commission, for an "Ocean Highway" from Atlantic Highlands to Cape May. It took similar action in 1911 regarding the "Delaware River Drive" from Trenton north to the New Jersey-New York boundary, and two years later supplemented this law by providing for the extension of the road southward from Trenton to Cape May.

The Legislature laid out a State Highway System of 15 routes in 1917, and described the routes by their respective terminal points, certain intermediate points being indicated. It similarly designated routes added to the system during the decade following. It continued designating the routes when it set up the 1927 revised State Highway System, and thereafter. See *pp. 4, 8* and *10, supra.*

[608] See *pp. 4* and *5, supra.*

[609] See *pp. 8, 10* and *35, supra.*

The Legislature has not consulted the Highway Department in designating the routes on the State Highway System except in a limited number of instances.[610] Whether a particular route was necessary or advisable from the point of view of sound highway economics and planning, seemed to be of little concern to the lawmakers. Engineering and financial studies were not called for, or sought. It would appear, therefore, that local pressures alone accounted for a good number of the legislated routes.

The result is that there are routes on the legislated State Highway System that never will be built. Some are unnecessary. Others are unsound from the engineering point of view. Some would be so expensive that their construction is unwarranted.

The outstanding example of what happens when the Legislature assumes to designate what routes shall be built, is the 1927 revised State Highway System.

The 1917 system was 679 miles long. The Legislature immediately began to add routes, so that the legislated system was 1459 miles at the close of 1926.[611] The entire system and the method in which it had been pieced together came under general attack. The Governor, certain legislators, a Commission on Motor Vehicle Taxation which reported in 1925, and the public, were very critical.[612] In an attempt to correct the situation, the Legislature requested the State Highway Commission "to study the highway problems of the State and suggest a more comprehensive system, classifying same as primary and secondary roads, and give approximate estimated costs of constructing each of said roads that has not been constructed".[613]

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[610] Investigation indicates that the highway engineers were not consulted on any of the routes legislated during the past ten years.

[611] The Legislature added one route of 36.07 miles in 1920, and made minor extensions to the system in 1921 and 1922. When the $40,000,000 bond act of 1922 was passed to complete the construction of the State Highway System, it then comprised of 16 routes with a mileage of 728.273 miles. After the bond act was passed, the Legislature made the following additions to the system; 1923—10 routes, totaling 315 miles; 1924—1 route of 60.7 miles; 1925—6 routes, totaling 215.16 miles; and 1926—8 routes, totaling 140.04 miles. Thus, there were 41 routes legislated by the end of 1926, totaling 1,459.173 miles, of which 878.811 miles had been taken over by the State Highway Commission. *Report of the State Highway Engineer to the New Jersey State Highway Commission, 1926, op. cit., pp. 11* and *12.*

[612] Princeton Survey report, *op. cit., p. 165.*

[613] Senate Concurrent Resolution No. 3, February 8, 1926.

The report presented to the State Highway Commission by Highway Engineer W. G. Sloan was a document revealing an intimate knowledge of highway planning and economics. Traffic studies and an analysis of the financial resources of the State, as well as a careful estimate of probable future needs, were the foundation of the report. Its clarity and comprehensive, far-sighted treatment of the subject, merited all the praise that was bestowed on the author.

The Highway Engineer recommended a system of 1881 miles, consisting of a primary mileage of 1247 miles (23 routes and the "terminal routes" in the metropolitan, Trenton and Camden areas), and a secondary mileage of 634 miles (22 routes). The total estimated cost of completing this system as recommended was $163,345,800, of which $33,104,100 represented the construction cost of the secondary routes.[614] He estimated that $24,000,000 would be available from certain sources, leaving a balance of about $139,500,000 to be funded. He further proposed that a 12-year program be adopted in which the construction was to be carried out.[615] He suggested that an $80,000,000 bond issue be made available for construction work over a period of five years, at the rate of $16,000,000 a year beginning with the year 1928.

The Sloan plan represented the first effort made in New Jersey to deal with its highway problems on a broad scale. It was daring in its scope. The report was given general circulation throughout the State, being distributed to legislators and State, county and municipal officials.

The State Highway Commission held a series of conferences with interested parties, particularly with Freeholders, county engineers and officials of the larger municipalities, who were invited to file memoranda setting out their views. Although approving of the plan generally, county officials pressed for additions to the system traversing their respective counties and urged that there be no distinction drawn between primary and secondary roads.

The report finally made by the Highway Commission to the Legislature proposed a State Highway System of 1915.5 miles, con-

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[614] *Report of the State Highway Engineer to the State Highway Commission, op. cit., pp. 26* to *29*. The author recommended that the secondary routes be constructed on the basis of the State paying two-thirds of the cost and the counties one-third.

[615] The report contains details of this 12-year program, laid out in three 4-year periods, with a complete funding program and proposed construction program for each year. *Op. cit., pp. 30* to *36*.

sisting of primary roads only. It recommended that there be no classification of State highways into primary and secondary routes, and that the entire cost of construction and maintenance be borne by the State. This system was to consist of 45 routes, together with the routes comprising the so-called Metropolitan, Camden and Trenton Terminals. The estimated total cost of the system proposed by the Highway Commission was $190,375,800. Crediting funds anticipated from other than State sources, this amount was reduced to $174,275,800 net.[616] The Highway Commission suggested that the financial program be arranged in such manner that the work of constructing the proposed system could be accomplished within twelve years.

Instead of laying down a definite construction program in the manner that the Highway Engineer had, the Commission stated that it was impossible to do this "so far as the order and sequence of the construction of the several routes is concerned." It wanted to be left free to construct the routes at such time and in such manner as it deemed necessary.[617] In making this suggestion, it was departing from the more orderly and reasoned concept of highway planning which the Highway Engineer's report exhibited. Apparently the arguments made by county officials, who urged the construction of routes in their counties during the first of the construction periods recommended by the Highway Engineer, rather than in a later period, had had their effect.[618] It is also to be noted that in addition to adding 34 miles to the total system recommended by the Highway Engineer, and dropping the secondary system idea, the changes made by the Highway Commission in the plan that he had proposed increased the total cost by $27,000,000. Approximately $25,000,000 of this increase was for additions made in the metropolitan section around Newark. The Commission made no recommendation as to the method of financing.

The Highway Commission's report to the Legislature was obviously a long step away and down from the plan proposed by its Highway Engineer. It lacked the clarity, definiteness and sound planning of the latter. However, it proved to be vastly superior to the plan finally adopted by the Legislature.

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[616] *Report of the State Highway Commission of the State of New Jersey to the New Jersey State Legislature of 1927, op. cit., pp. 18 to 20.*

[617] *Ibid., p. 21.*

[618] The arguments made by the county representatives are noted in the report of the Highway Commission. *Ibid., p. 4.*

By the time the legislators were done with the plan proposed by the Commission, the total mileage was reduced from the 1915.5 miles recommended to 1842 miles legislated. Without seeking the advice of the Highway Engineer or the Highway Commission, the Legislature dropped 478 miles and added 405 of its own. In the metropolitan area alone, it took 54 miles out of the recommended metropolitan system and substituted 146, or 92 miles more. The net increase in this part of the State was balanced by a net decrease in the rest of the State, so that in the end, the Legislature managed a reduction of 73 miles from the system recommended by the Highway Commission.[619]

What happened, of course, was that politics took the place of engineering research and constructive planning. Most of the legislators were voting their local interests first,[620] so that the 1927 revised State Highway System was a product of compromise, trading, and all the other devices familiar to legislative halls on such occasions. The Highway Commission had already materially revised the Highway Engineer's program, which was based upon long and careful engineering, fiscal and planning studies. In short, the action of the Legislature amounted to a thorough manhandling of the entire plan.

In order to pay for the revised system, the Legislature provided sources of revenue that, according to estimates made at the time, would furnish about $165,000,000 in the next seven years. A $30,000,000 bond issue was authorized and this, together with a two-cent gasoline tax, the excess of the State road tax, and allotments from motor vehicle fees, were considered sufficient to produce the $165,000,000 in the period from 1927 to 1933, inclusive.[621]

The Abell Commission hearings soon revealed that the additions made by the State Highway Commission in the metropolitan area of

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[619] *Minutes of the Abell Commission, op. cit.,* minutes of September 8, 1930, *pp. 64* and *65;* testimony of the Construction Engineer.

[620] One of the members of the 1927 Legislature testified before the Abell Commission that he had asked for added routes for his constituents, and that the Legislature had tried to keep the mileage of the revised State Highway System under the recommendation in the Sloan report in order to impress the public. *Minutes of the Abell Commission, op. cit.,* minutes of September 9, 1930, *p. 77.* He further testified that although an $80,000,000 bond issue had been proposed by the Highway Engineer, some of the legislators thought a $60,000,000 issue advisable, but finally reduced the amount to $30,000,000. The program, therefore, was financially unstable from the start. *Ibid. p. 74. Cf.,* Princeton Survey report, *op. cit., p. 42,* which speaks of "the manner in which the comprehensive highway plan was adopted in 1927." And see, *p. 170,* where the report speaks of the "extremely costly projects" in the metropolitan area introduced by the Highway Commission and the Legislature, "apparently in considerable part as a result of local suggestion and pressure."

[621] National Institute of Public Administration report, *op. cit., p. 275.* And see *p. 11, supra.*

the State, and the further addition of 92 miles of roads in that section by the Legislature, had placed a tremendous financial burden on the State. The Construction Engineer testified that although $35,224,056 had already been spent or committed on the 1927 system, $269,535,519 was still needed to complete the work. This made a total cost of $304,759,575, or $114,363,775 more than the estimated cost of the program recommended by the Commission. He stated that the increased cost was due to the action of the Legislature.[622] The estimated cost per mile of the system proposed by the Highway Commission was $99,000, and of the one legislated, $165,254. Changes in standards of width, curvature and grade; abandonment of intersections; viaducts, and other expensive improvements explained the increased costs. An example cited was the elaborate construction at Fort Lee (the George Washington Bridge approaches). The original plan of the Highway Engineer contemplated no such layout.[623]

The Highway Auditor testified that, based on a total cost of $304,000,000 and taking into account estimated revenues up to and including 1935, the Highway Department would still be lacking $90,000,000 of the money needed to complete the 1927 system. It would take a full four years beyond 1935, estimating revenue at the rate of $25,000,000 a year for construction purposes, to finish the work.[624] The conclusion of the Abell Commission report was, that based upon the then (1930) mileage and needs only, the completion of the State Highway System was in sight within eight or nine years, and with it the prospect of meeting the growing highway needs.[625]

One or two observations should be made about the 1927 system. In the first place, the system failed to incorporate 34.3 miles of the old 1917 system. This mileage, therefore, is not officially a part of the State system, although the Department maintains these roads year after year.[626] It is recommended that the Legislature definitely declare

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[622] *Minutes of the Abell Commission, op. cit.,* minutes of September 8, 1930, *pp. 64* and *65.*

[623] *Ibid., pp. 67,* and *69* to *71.*

[624] *Minutes of Abell Commission, op. cit.,* minutes of September 23, 1930, *p. 10.* The Auditor estimated that even with the $65,000,000 bond issue that was being proposed, the program would still be about $23,000,000 short.

[625] National Institute of Public Administration report, *op. cit., p. 277.*

[626] *Minutes of the Abell Commission, op. cit.,* minutes of September 8, 1930, *p. 64;* testimony of the Construction Engineer. And see *Ibid.,* minutes of September 30, 1930, supplemental report of the Examiner; and *R. S. 27:6-2.*

what it wants done with these routes which are now ghost members of the system.

The cost of the 1927 system was increased to a considerable extent because of the very broad power given the State Highway Commission of laying out "routes in continuation of, connecting with, or in addition to the routes" specified.[627] The Commission proceeded to lay out and construct a connecting link between Routes 1 and 25. This link, never mentioned in the 1927 system, included the world-famous Pulaski Skyway, at a level of 135 feet above the rivers and territory which it spanned.[628] The project, according to the Abell Commission Examiner, cost approximately $20,000,000. The general public had no notice of this addition to the 1927 system, legal though it was, and none was given the Legislature.

It has already been mentioned that some of the routes designated by the Legislature never will be built. The Highway Department was obliged to recommend to the Legislature that certain routes be amended in order to bring them into accord with actual needs and sound engineering principles. In a very few cases, the Department suggested that a route be legislated because it was vitally needed.[629]

The Legislature has continued to designate the location of State routes during the past decade. The Highway Department has not been consulted as to whether such routes are needed, or whether they are the best and most economical routes. According to Department figures, there were, as of January 1, 1942, 637 miles on the legislated State

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[627] The Attorney-General advised the Highway Commission on May 5, 1927, that the provision "gives the State Highway Board (*sic*) power intelligently to connect up the constituent parts of the system, even though such connection depends upon the exercise of the power of the Board, rather than the specific directions of the statute itself."

[628] *Minutes of Abell Commission, op. cit.*, minutes of September 9, 1930, *pp. 60* to *62*. One of the Highway Commissioners admitted that there had been a lack of publicity concerning the project. *Ibid., pp. 51* to *53*, and *pp. 63* and *64*.

Three ultimate plans for the connecting link had been studied embodying, respectively, a high-level route, a low-level route (which would have meant drawbridges), and a tunnel. The United States War Department would give its approval only to the high-level structure. The Highway Commission considered the Skyway as justified for another reason. It reduced the cost of operation to the highway user because it eliminated the loss of time that low-level drawbridges entailed. *Statement of the State Highway Commission on the Princeton Report, op. cit.*

[629] An example is Route S-3, running westward from Route 3 in East Rutherford, connecting with Route 2 in Rutherford, and continuing toward Clifton and connecting with Route 6.

Highway System still remaining to be taken over, the estimated cost of which, if built, will be $213,210,000.[630]

As long as the Legislature insists upon deciding where State highways shall be built, real highway planning becomes an impossibility. Under this system, the total highway needs of the State cannot be considered as a rounded whole. The opportunity for log-rolling is always present, and the need for a particular highway is determined not so much on the basis of engineering and planning factors, as on sectional interests.[631]

This discussion of highway routes underlines the validity of the second of the four principles enunciated in Chapter III of this report:[632] "The Legislature should concern itself only with the establishment of basic laws which will permit of the exercise of proper administrative discretion on the part of those to whom responsibility for operating the State Highway System has been delegated." The highway authority, rather than the Legislature, should determine the location of highway routes. Such determination should be based upon a comprehensive and detailed study of all data and factors relating to the subject, and should be made only after a full and public hearing held by the Highway Commissioner. Whether a road shall be built, whether it should be along one route or another, and the time when it should be constructed, are all administrative questions that should be left to the decision of the officials and engineers of the Highway Department. They have the background of knowledge, the available research facilities, and the skill to determine such matters. The control of the Legislature lies in its power to appropriate funds for construction purposes—a proper function—and not in attempting to decide highly technical questions like the location of routes.[633]

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[630] New Jersey State Highway Department chart, "Status of Needed Improvement, as of January 1, 1942."

[631] The Legislature has not only designated the routes to be built, but has undertaken to assign numbers to them. This has introduced confusion into the system. There are two routes numbered 55, and two numbered 56. *R. S. 27:6-1.* The Legislature finally admitted that the system "is not now numbered in such manner as to most efficiently guide the traveling public." It directed the Highway Commissioner to study the numbering of the various State routes and authorized him to change the numbers of any or all routes within six months after the passage of the act, the new numbering to become effective on and after January 1, 1942. See *New Jersey State Highway Department Annual Report, 1938,* report of the Maintenance Division, calling attention to the confusion in numbering and recommending that the Legislature authorize the Department to renumber existing highways and assign numbers to future legislated routes.

[632] See *p. 146, supra.*

[633] *Cf.,* Princeton Survey report, *op. cit., p. 42.*

The Legislated State Highway System:

As of January 1, 1942, the legislated State Highway System mileage totaled 2301.4 miles. The actual operating mileage of the system—the mileage "taken over"—amounted to 1680.5 miles.

The growth of the legislated and operating mileage of the State system since January 1, 1931, is shown by the following figures:[634]

Legislated and Operating Mileages, 1931-1942

Year	*Legislated system mileage*	*Operating system mileage*
1931	1887.9	1405.3
1932	1887.9	1534.7
1933	1887.9	1549.5
1934	1887.9	1570.2
1935	1904.5	1594.7
1936	1904.5	1660.2
1937	1909.8	1657.7
1938	1948.0	1657.3
1939	2172.1	1662.4
1940	2244.1	1680.3
1941	2253.6	1679.7
1942	2301.4	1680.5

The present operating system consists of 1553.2 miles of permanent type pavement (92.5%), 99.5 miles of non-permanent pavement (5.9%), and 27.8 miles of road graded and drained preparatory to paving (1.6%). It will be seen that the percentage of permanent type pavements is very high. Standing alone, this would place New Jersey among the leading States of the nation insofar as the permanent character of its highways is concerned. However, the figure must be considered in connection with the character of the county and municipal road systems, which will be discussed under the section dealing with State Aid. Other States have taken over a large number of county and township roads into their main systems; if these were abstracted

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[634] *Source:* New Jersey State Highway Department. The figures are as of January 1 of each year.

from the figures for the respective States, the percentage of their permanent pavements would undoubtedly be quite high and place them in the same category as New Jersey.

The following schedule shows the mileage of pavement types to be found on the State system:[635]

Pavement Types, 1942

Type	*Mileage*	*Totals*
Concrete	1,371.4	
Asphalt block	6.7	
Stone block	8.1	
Brick	1.6	
Bituminous concrete—permanent	165.4	1,553.2—permanent type
Bituminous concrete—non-permanent	37.4	
Macadam	29.2	
Gravel	32.9	99.5—non-permanent type
Graded and drained—preparatory to paving	27.8	27.8
Grand Total		1,680.5

Thus, 81.6% of the State system consists of concrete pavement, an unusually high figure.

Of interest are the figures relating to the mileage of the State Highway System considered by counties, both legislated and that which has been taken over:[636]

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[635] *Source:* New Jersey State Highway Department. The figures are as of January 1, 1942.

[636] *Source:* New Jersey State Highway Department. The figures are as of January 1, 1942.

NEW JERSEY STATE HIGHWAY SYSTEM

Mileage by Counties, 1942

County	*Legislated*	*Taken over*	*Per cent. taken over*
Atlantic	187.9	127.8	68.0
Bergen	138.8	84.5	60.9
Burlington	147.5	123.7	83.9
Camden	94.8	74.3	78.4
Cape May	76.6	66.9	87.3
Cumberland	81.2	64.0	78.8
Essex	83.1	35.6	42.8
Gloucester	125.5	97.1	77.4
Hudson	45.0	17.8	39.6
Hunterdon	106.3	80.5	75.7
Mercer	102.1	61.5	60.2
Middlesex	137.0	112.7	82.3
Monmouth	185.5	151.3	81.6
Morris	142.1	91.7	64.5
Ocean	158.6	116.1	73.2
Passaic	56.9	34.1	59.9
Salem	71.3	70.6	99.0
Somerset	93.6	75.6	80.8
Sussex	106.5	68.5	64.3
Union	80.2	48.6	60.6
Warren	80.9	77.6	95.9
Total	2,301.4	1,680.5	73.0

It will be noted from the above that the heavily populated metropolitan counties, like Bergen, Essex, Hudson, Passaic and Union in the northeastern part of the State, and such relatively well settled counties as Mercer and Camden, have the smaller percentages of mileage taken over. This is readily understandable in the case of the metropolitan counties because of the hight cost of construction due to expensive right-of-way, design factors, and other considerations.

The most recent analysis made by the Department of needed improvements on the *legislated* State Highway System shows that 1263 miles are in need of improvement at an estimated cost of $347,930,000. This figure is broken down as follows:[637]

[637] New Jersey State Highway Department chart, "Status of Needed Improvement, as of January 1, 1942."

NEW JERSEY STATE HIGHWAY SYSTEM

Status of Needed Improvements to Legislated System

	Dual highway		*Reconstruction*		*To be taken over*		*Totals*	
	Mi.	*Est. cost*	*Mi.*	*Est. cost*	*Mi.*	*Est. cost*	*Mi.*	*Est. cost*
Atlantic	43	7,200,000	19	3,180,000	57	10,290,000	119	20,670,000
Bergen	45	8,670,000	9	2,200,000	56	23,120,000	110	33,990,000
Burlington	7	1,300,000	10	950,000	25	4,300,000	42	6,550,000
Camden	44	8,510,000	6	420,000	23	3,690,000	73	12,620,000
Cape May	1	250,000			11	2,700,000	12	2,950,000
Cumberland					16	2,200,000	16	2,200,000
Essex	24	11,050,000			51	52,810,000	75	63,860,000
Gloucester	39	6,100,000	4	300,000	30	4,650,000	73	11,050,000
Hudson	11	4,540,000	1	100,000	26	26,420,000	38	31,060,000
Hunterdon	19	3,620,000	2	350,000	27	4,930,000	48	8,900,000
Mercer	9	1,560,000	3	380,000	43	8,450,000	55	10,390,000
Middlesex	20	3,200,000	13	1,050,000	19	5,230,000	52	9,480,000
Monmouth	94	14,950,000	7	700,000	38	11,640,000	139	27,290,000
Morris	42	7,780,000			48	10,000,000	90	17,780,000
Ocean	20	5,500,000	1	200,000	44	6,170,000	65	11,870,000
Passaic	15	2,920,000	7	2,400,000	27	7,520,000	49	12,840,000
Salem	5	800,000	9	850,000	4	180,000	18	1,830,000
Somerset	14	3,650,000	10	650,000	18	1,780,000	42	6,080,000
Sussex	10	1,950,000	16	2,100,000	37	4,600,000	63	8,650,000
Union	26	7,100,000	1	100,000	29	20,100,000	56	27,300,000
Warren	12	2,500,000	2	170,000	8	1,900,000	22	4,570,000
Totals	500	103,150,000	120	15,570,000	637	213,210,000	1257	331,930,000
Proposed additions to State Highway System (Not included in above summary)							6	16,000,000
Total needed improvement to State Highway System							1263	347,930,000

For the metropolitan area in the northeastern part of the State alone the figures are:[638]

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[638] *Source:* New Jersey State Highway Department. The figures are as of January 1, 1941.

NEW JERSEY STATE HIGHWAY SYSTEM

Status of Needed Improvements and Additions to Legislated State Highway System (Northern Metropolitan Area)

Type of improvement	*Mileage*	*Cost*
Proposed additions to State Highway System, from the intersection of Route 3 and Lincoln Tunnel Approach Road in North Bergen, to Route 10 in Kearny to serve traffic originating in or west of Newark with extensions to the westerly end of the Skyway in Newark, to afford more direct connections to the South and West	6	$ 16,000,000
Divided highways	141	39,685,000
Reconstruction	20	4,370,000
To be taken over	182	129,830,000
Totals	349	$189,885,000

Highway Planning:

For many years, New Jersey's main problem was to lay down and construct with as much speed as possible the main highways so vitally needed to handle the traffic passing over its roads. Little consideration was given to the more basic problem of highway planning. Highway Engineer Sloan seems to have been the one official who fully appreciated that the planning of a system must precede the execution of a highway program. His plan was broadly conceived and showed real vision. The trail which he tried to blaze has not been followed.

This is not to say that the Highway Department's engineers have not given careful thought to the laying out of particular routes during the past decade. Many engineering and traffic studies preceded the building of each road. The result has been that the main highways of recent years are far superior to those built just after the adoption of the 1927 system—in the line adopted, design, integrity of construction, and in many other ways. However, the special attention that may be given individual routes is not a substitute for the comprehensive and detailed planning that must control the development of a system.[639]

Highway planning has become a very important feature of State highway work all over the nation during the past few years. The

[639] For a general treatment of the need for fact-finding and basic planning in highway work, see Bateman, *op. cit., c. XVIII.* See, also, Princeton Survey Report *op. cit., pp. 176* to *180,* where the creation of a Public Works Planning Commission was recommended; and "Nation-Wide Highway Planning," by J. T. Barton, *National Municipal Review* (November, 1937), *pp. 528-530.*

Federal Government, more than any other agency, is responsible for this very desirable and very much needed program.

Highway planning projects were carried on in a few States before the Federal Government officially came on the scene. Under the Hayden-Cartwright Act of 1934, it was provided that "With the approval of the Secretary of Agriculture, not to exceed 1½ per centum of the amount appropriated to any State, under sections 1 and 4 of this Act may be used for surveys, plans, and engineering investigations of projects for future construction in such State, either on the Federal-aid highway system and extensions thereof or on secondary or feeder roads."[640] Similar provisions are to be found in acts passed by Congress in 1936, 1938, and 1939.[641] The Bureau of Public Roads (now the Public Roads Administration of the Federal Works Agency) has been most active in establishing highway planning surveys in every State and seeing to it that their work was carried through to a prompt and successful conclusion.

The planning survey is the heart of any highway program and is an absolute and fundamental consideration. The State of Michigan leads the nation in this respect, and has managed to present its results in a variety of effective ways to the public and to the Legislature.[642] In New Jersey, the State-wide Highway Planning Survey, which is under

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[640] *48 Stat. 993, s. 11.* Section 1 approved the sum of $200,000,000 for the purpose of increasing employment by providing for emergency construction of public highways and other related projects, to be apportioned by the Secretary of Agriculture, in accordance with the provisions of the National Industrial Recovery Act, *48 Stat. 200, s. 204,* approved June 16, 1933, among the several State highway departments. Of this amount, not less than 25% of the amount apportioned to any State was to be used on secondary or feeder roads. Section 4 appropriated the sum of $125,000,000 for the fiscal year ending June 30, 1936, and a like sum for the fiscal year ending June 30, 1937, for the purpose of carrying out the provisions of the 1916 Federal Aid Act, as amended.

[641] The Act of June 16, 1936 (*49 Stat. 1519, s. 9*) amended the wording of the Hayden-Cartwright Act slightly by providing that the 1½% fund could be used for "surveys, plans, engineering, and economic investigations of projects for future construction" in each State on the Federal Aid highway system and the extensions thereof, or on secondary or feeder roads. The Act of June 8, 1938 (*52 Stat. 633, s. 10*), which, like the 1936 act, amended the 1916 Federal Aid Act, used similar language, as did the Act of July 19, 1939 (*Public—No. 195—76th Congress, chapter 328—1st session*). The Federal Highway Act of 1940, (*Public—No. 780—76th Congress, chapter 715—3rd session*), passed September 5, 1940, provided (*s. 14*) that "The Commissioner of Public Roads, in cooperation with the State highway departments of the respective States, is hereby directed to investigate the service afforded to traffic, population, and lands by all highways of each State, as determined by State-wide surveys for the purpose." He was to report to Congress on the progress of classifying highways into groups of similar service importance.

[642] See, for example, *A Comprehensive Plan for Motorways in Detroit,* Michigan State Highway Department (Lansing, 1941).

the Survey and Plans Bureau of the Construction Division, has been carrying on the same type of work as surveys in the other 47 States. Its program is rapidly approaching completion.[643]

The survey has concerned itself with the three major elements of the highway problem: the physical plant, the use of this plant by motor vehicles, and the supporting fiscal structure. Because of the preponderantly local significance of urban streets, studies of plant and traffic were limited to rural areas. Studies in the three fields indicated have been carried forward by the inventory, the traffic, and the financial branches of the Survey. Although these three branches have worked in separate fields, their investigations have been so directed that a correlation of their findings will produce an accurate picture of the State's present and future highway needs, and a sound factual basis for meeting those needs as fully as the State can afford.[644]

The purpose of the inventory branch of the Survey is to make the first complete inventory of all rural public roads—primary, secondary and local—and to make a determination of road mileage, surface types and condition, together with the economic development of the territory served. The field work was divided into four major operations:

1. An automobile log, made by driving over all public roads, measuring their lengths with a calibrated odometer, determining their locations and types, with measurements and descriptions of surfaces and structures.

2. A hazard inventory conducted with special equipment for determining locations, measurements and descriptions of sharp curves, steep grades, short sight distances, narrow and low bridges, etc., on all main roads.

3. A grade crossing study including surveys for all railway grade crossings, rural and urban, detailed by kind, type, amount

[643] See, *pp. 78* and *79, supra,* for an outline of its work. At the time the State-wide Highway Planning Survey was studied late in September 1941, the original survey started in 1938 was within one year of completion. Maps of thirteen counties were finished and available for distribution by the end of 1941. The various parts of the fiscal survey were not entirely completed, nor were the various phases of the travel survey. The Federal law provides that the survey be a continuing one. About $385,000 of Federal and State money has been spent.

[644] *Biennial Report of the Highway Commissioner of Connecticut* (Hartford, 1940); report of the State Manager of the Highway Planning Survey, *p. 110,* whose description of the work of the Survey is summarized herein. See, also, *Seventeenth Biennial Report of the State Highway Commissioner of Michigan* (Lansing, 1938), *pp. 114* to *122;* and *New Jersey State Highway Department Annual Report, 1940,* report of the State-wide Highway Planning Survey.

of highway and rail traffic, and problems involved in the elimination or reduction of hazards.

4. A culture record including an inventory of farms, dwellings, stores, factories, schools, churches, parks, etc., and the type of roads and other transportation facilities serving them.

The products to be obtained from these operations will include complete highway and transportation maps of the State and the subdivisions of the State, and will show public roads by type, with the cultural elements served by each, incorporated and unincorporated places, rail lines, airways, school and other bus routes, postal routes, etc., and tabulations of the pertinent factual data. For the first time there will be an accurate and complete record of all public rural road mileages in New Jersey, adequately mapped.

The purpose of the financial survey is to give analyses of sources of highway funds, the place and purpose of highway expenditures, cost of highways, and direct use benefits to the traveling public. The four major operations comprised in this survey are:

1. The fiscal study. To provide an analysis of sources and kinds of highway funds and of highway expenditures by State, counties, municipalities, towns, etc., and a comparison with amounts expended for other public functions.

2. A road study. To obtain (by interviews with representative motor vehicle drivers) a determination of the amount and purposes of the total annual traffic on New Jersey roads and the relative use of various highway systems by type of vehicle and residence of owner.

3. A motor vehicle allocation study. To obtain (by the distribution of questionnaires to owners of motor vehicles) for each type of vehicle, a determination of situs of ownership (*i. e.*, rural or urban), age of vehicle, average annual mileage, gasoline consumption, registration fees, gasoline taxes, etc.

4. A road life study. To determine (by an analysis of Highway Department records) the probable average service life of each type of road surface, probable necessary future highway construction and reconstruction, and the annual cost of each type of surface.

The products to be obtained from these operations of the financial survey include analytical reports of the kind, amount and source of

receipts, and the kind, amount and purpose of expenditures, classified by governmental units and by road systems; urban and rural use and support of roads; and estimates of the probable life expectancy of various surface types, future highway costs, and required revenue yields to maintain an adequate highway system.

The traffic survey is designed to make an exhaustive determination of the volume, type and distribution of traffic on primary, secondary and local road systems. The six major operations comprised in this survey are:

1. Key station count. To provide basic traffic counts at selected primary road intersections, scheduled to give 24-hour counts, distributed throughout the year, and for each day of the week.

2. Blanket count. To provide a large number of short count stations to supplement and extend the key station data.

3. Automatic recorder. These are permanent installations of the "electric eye" to obtain automatically continuous long-time traffic counts for determining trend and patterns of seasonal, hourly, and other variations.

4. Loadometer. These are truck and bus recording stations operated in conjunction with key stations and are for the purpose of recording weight, capacity, kind, origin and destination, length of trip, commodities or passengers carried, etc.

5. Pit scale. A limited number of bus and truck weighing and measuring stations designed to give a high degree of accuracy and detail as to loading practices, size, type, tire equipment, make, year, model, etc.

6. Special origin and destination. Studies designed to secure from interviews with road users at selected points, a determination of the need for re-routing, by-passes, express highways, cut-offs, etc., and potential use of such improvements, if made.

The following products will be secured from these operations of the traffic survey: records of volumes of traffic on primary, secondary and local roads, including classifications by type of vehicle, urban and rural ownership, origin and destination, weights of trucks and busses, and commodity movements, as well as complete traffic maps by States and counties.

This great research project is being conducted under the general direction of the Chief of the Division of Information of the Public Roads Administration. It was established because of the recognized need in all the States for more basic information on which to formulate future plans for highway improvements. The intent and purpose was to substitute facts for guesswork, long-range planning for hand-to-mouth highway programs.

From the point of view of the highway administrator there are three primary questions which must be answered in planning a long-range highway program: (1) What are the present road facilities in the State? (2) In what ways and to what extent are these facilities inadequate for present needs and how must they be modified to fulfill future needs insofar as can now be foreseen? (3) What will be the financial requirements for a program found to be desirable, and will these requirements be met? There is an additional question to be considered by the Legislature: What are equitable bases for obtaining the necessary funds and for apportioning them among the several classes of roads?[645]

In seeking answers to these questions, the Highway Planning Survey is building a foundation of factual data on which the Highway Department, as well as the Governor and Legislature, may formulate plans for future highway construction and reconstruction. It is designed, in short, to yield complete information concerning the present state of the highways of New Jersey; the volume, kind and distribution of traffic; the adequacy of existing highways and bridges; the annual cost of adequate highways; the extent of use of the various systems by motor vehicle owners in various classifications; and the sources and uses of available highway funds, all to the end that a justifiable program for future highway improvement may be developed.

At the present time the Highway Department has no comprehensive, long range plan. It never has had one. Its programs are on a year-to-year basis, and are formulated annually as the time approaches for submitting the schedule of estimated revenues and road program

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[645] *Biennial Report of the Highway Commissioner of Connecticut, op. cit., p. 111.*

to the Governor on October 15.[646] The Highway Commissioner and Highway Engineer frankly admit that there is no plan looking beyond the next twelve months. Their explanation is that it is impossible to formulate a three-year or five-year, or any extended program because of the uncertainty as to what the Joint Appropriations Committee may do.

This begs the question. If, as they agree, highway planning is a basic consideration and a necessary condition precedent to highway building and improvement, then the Department should long ago have undertaken a factual study of the kind now being conducted by the Highway Planning Survey. The State has invested well over $500,000,000 on its own primary system and in helping finance a large part of the secondary system.[647] A program of almost $350,000,000 of needed improvements on the legislated State system lies on the desks of the Highway Commissioner and Engineer. The desperately complex problem of adequately providing for traffic in the metropolitan area stares them full in the face.

The man-power and technical ability to do the job are present. The will to do is not. There is a real question whether the Commissioner and the Highway Engineer have really been interested in planning. Although the State-Wide Highway Planning Survey has been carrying on a very large number of traffic surveys of various kinds, the Electrical Division has been allowed to continue its independent traffic checks, using from 100 to 250 "laborers" in doing this work.[648] There has been no real attempt by the Division, which is directly responsible to the Highway Engineer, to cooperate with the State Manager of the Survey or to use the data so carefully gathered by his staff.[649]

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[646] *Cf.*, Princeton Survey report, *op. cit., p. 193* to *195.*

[647] A statement prepared by the Chief Auditor and Accountant shows that New Jersey has made the following expenditures and commitments from 1917 to December 31, 1941:

State highway construction	$346,648,140
State highway maintenance	60,566,994
State aid to counties	111,083,894
Township and borough aid	36,015,000
Total	$554,314,028

[648] See *p. 119, supra.*

[649] An additional sidelight is that the Traffic Engineer who, like the Planning Survey, is under the Survey and Plans Bureau of the Construction Division, has set up his own traffic counting machines. He sometimes uses Planning Survey information.

Again, the Commissioner is a member of the State Planning Board.[650] The chief duty of the Board is to prepare and perfect a master plan for the physical development of the State and "prepare and keep current a proposed long-term program of major state improvements." Among other things, it is directed to "advise with the various State departments and bureaus and with local authorities and individuals with a view to the coordination of all physical development plans, including plans for highways, airways and air terminals, parkways, parks, water supply development, flood control, land use, recreation areas and forest reservations that are related to an ordered and comprehensive development of the State." The Board is authorized "to make planning studies and surveys for the collection of data pertaining to * * * parkways, highways, traffic, transportation * * * and other matters involved in the physical development of the State or of any subdivisions thereof."

The Commissioner has attended very few meetings of the State Planning Board from the time he took office in April 1935. On some occasions he has sent a representative to its conferences. There is no evidence of an active cooperation in the work of this important body.

The State Planning Board was an adaptation of the Public Works Planning Commission recommended by the Princeton Survey report.[651] The primary duty of that Commission was to have been to investigate the need for and the economic advantages of any public improvement proposed for construction by the State. All proposals for public works emanating from the State departments, including the construction program of the Highway Department, would first have to be submitted to the Public Works Planning Commission for report. The Survey indicated a few of the benefits that would accrue to the Highway Department and State Highway System because of the work of the proposed Commission. They are worth noting here because they would also result from a real highway planning program undertaken by the Department itself:

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[650] Created by *P. L. 1934, c. 178; R. S. 52:21-1* to *11.* The Board consists of nine members appointed by the Governor by and with the advice and consent of the Senate. Four members are appointed from among the heads of the State departments, the remaining five being appointed from among the citizens of the State. The Board has met regularly and undertaken various studies. Those appointed to it from the State in general have been eminently qualified, able and interested citizens.

[651] *Op. cit., pp. 176* to *180.*

1. By revising the legislated State highway system in the light of a thorough analysis of population, commercial and industrial trends, further highway construction could be so placed and designed as to serve effectively over a longer period of time.

2. Under a comprehensive plan, the relative importance of various projects will become more evident, and factual support may be given the logical construction program.

3. By reframing the existing State Highway System on a broader factual base, the highways of the State may be classified with a considerable degree of certainty as major and secondary routes, parkways, etc. Under such classification, it should be possible to apply varying standards of construction with safety. Right-of-way widths and the width and thickness of paving could be reduced, and the maximum grade and degree of curvature increased on secondary routes and parkways, with resultant economies.

4. A comprehensive State plan should greatly lengthen the foresight of the Department both in the location of highways and construction types, the lack of which foresight has been a considerable element in construction costs.

5. By including park and parkway studies in the State plan, it should be possible to coordinate the State Highway System with future parkway development of both State and county jurisdiction. The incorporation of parkways in the future highway system of the State would result in improved service and ultimate economy.

6. A comprehensive State plan would tend to coordinate county and municipal plans, serving as a basic system to which local projects may be related.

7. With the State plan as a basis of cooperation, county and municipal authorities might assist in protecting State plan projects against the encroachment of land developments.

The reply of the Highway Commission to the Princeton Survey planning proposal was typical.[652] It attacked some of the criticisms which the Princeton study had made of its work, but its reply to the major charge that it had neglected its planning function[653] was singu-

[652] *Statement of the State Highway Commission on the Princeton Survey, op. cit.*

[653] Princeton Survey report, *op. cit., p. 193.*

larly ineffective. On the record and the facts, the charge was unanswerable. As for the recommendation of a Planning Commission, the Highway Commission stated that this meant the creation of just another agency with an expensive corps of engineers and assistants. It was "doubtful if any real economy would result." Planning boards were unknown in other states. The entire proposal rested on theory,—why hazard leadership in the highway field on a theory?

The Highway Commission never did discuss the real point at issue —which was highway planning—on its merits. Its own recommendation was that the traffic survey then being made in cooperation with the Federal Bureau of Public Roads, be examined by a committee of the Legislature in conjunction with the Department engineers so that information from both sources could be used in formulating a plan to revise the legislated system. This proposal is revealing. The Commission's idea of planning was a study of traffic counts. Nothing was said of road inventories, fiscal surveys and the great volume of varied research that goes to make up a worthwhile highway planning survey.

The attitude of the Highway Commission toward a broad planning of highway needs on a long-range basis has characterized the point of view of the responsible heads of the Department ever since. Their unwillingness to go ahead cannot be understood. The excuse that the Appropriations Committee of the Legislature has forced the Department to plan on a year-to-year basis is specious. Certainly the Department would be in a far better position if it could go to the public and to the Legislature with a well-rounded, long-term plan, setting out in schedule form the construction program for the next five years or more, and the annual fiscal requirements to meet that program. Everyone could then see the highway picture as a whole. At the present time, the people of New Jersey, including the Governor and Legislature as well as the Highway Department itself, have only a bits-and-pieces view of the existing highway plant and what is still required.

There can be no question that the responsible personnel of the Department could work far more effectively if a comprehensive highway plan were laid down. The existence of a solid foundation of fact would give the plan validity and eliminate most of the criticism that has existed throughout the State, particularly in the metropolitan northern area, concerning the work of the Department.

It is recommended, therefore, that a Highway Planning Bureau be set up under the chief administration officer in the proposed reorganization of the Department. It will carry on the work of the State-wide Highway Planning Survey in expanded form as a continuing program of the Department. In this way the vast amount of information already gathered will be kept currently complete, and new and special problems will be studied from time to time.[654]

The principal function of the Bureau, however will be to analyze and interpret its collected information in order to provide Department authorities with sound factual bases in making decisions regarding policies and operations.[655] The Bureau will, of course, cooperate very closely with the engineers of the Department. Its objective will be to achieve the progressive improvement of the State Highway System to a point where it will always be adequate to the current demands of traffic and the needs of the population.

There should be an immediate and complete review made of the legislated State Highway System for the purposes of sound revision and modernization. The Department itself always has a certain amount of information pertinent to such a review. The very large volume of significant data developed by the State-wide Highway Planning Survey will be of the greatest help in re-evaluating the system.

It has already been pointed out that a number of routes on the system, will never, and should never, be built. Others are in need of improvement. After the system has been reviewed in the light of the survey data, the schedule of needed improvements referred to above is certain to be changed considerably in scope and cost. A reference to this schedule will emphasize its staggering proportions. The "needed" improvements actually equal the amount spent by New Jersey on State highway construction from the time the Highway Department was created in 1917 to the end of 1941.[656]

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[654] Suggested problems for special study include the selection of a possible State secondary system; the relationships between pavement capacity, highway design, and traffic accommodations; time loss on highways; and the relation between accident occurrence and highway design, as well as roadside exploitation.

[655] Michigan established a Highway Planning Division to succeed its State-wide Highway Planning Survey in 1939. This marked the transition of the project from its fact-finding phase to its fact-using phase. *Eighteenth Biennial Report of the State Highway Commissioner of Michigan* (Lansing, 1940), *pp. 106* to *115.*

[656] Compare the schedule on *p. 360,* and the figures in footnote 647, *p. 367, supra.*

Clearly, the main problem facing the Highway Department today is the development of a long-term program of State highway construction. It is recommended that a highway planning program be undertaken and pursued with all possible vigor. The program will be based upon a careful study of the existing highway systems of the State, highway needs, and funds available. It will consider such matters as the present and probable future earning capacity of each road, potential economies in the cost of vehicle operation, safety factors, traffic movement, and the economic, recreational social, aesthetic, and educational advantages to be derived.[657] The order, type and extent of the improvements should depend upon a balancing of these factors.

Improvements would be planned to provide the type, kind and dimensions of facilities necessary for safe and convenient use by different volumes and kinds of traffic. They should be programmed in such a way as to make up for existing deficiencies and to meet the needs of estimated future traffic.

Since the rate and extent of improvement depends on the amount of funds available for the purpose, thorough investigation is required of the basis of highway support, the source and disposition of revenues and the estimated income. This involves consideration of the different types of highway taxes, the application of the revenue to various classifications of roadways, and the resulting balance between payments and benefits for different kinds of highway taxpayers.[658]

It is clear that there will be little highway construction during the present national emergency.[659] Highway work will be confined to maintaining the existing system. New construction will be limited to that which is needed in connection with the war program, or recognized as urgently necessary. It is recommended that if the reduction in highway construction at this time produces substantial uncommitted surpluses of highway funds, such funds should be built up into a reserve to meet the requirements of carefully planned post-war highway construction. One important manner in which this may be done is to make

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[657] One of the important matters to be considered in such a program will be the construction of parkways and limited access highways. See *pp. 347* and *348, supra.*

[658] See the discussion of highway cost allocation, *pp. 219* to *227, supra.*

[659] War was declared with Germany, Italy and Japan just as this study was drawing to a close.

right-of-way purchases along important routes in anticipation of later construction.[660]

With the sharp decline in highway construction during the prosecution of the war effort, the Department finds itself in a position for the first time since it was created in 1917, to sit back and re-evaluate the whole highway program. Time and men are now available to study the problem from every possible angle, and to do a first rate job of highway planning. It is unlikely that such an opportunity will again present itself for a long time to come.

The main plan should be prepared and perfected now. Once laid down, it will be a relatively simple matter to keep it up to date so that there will always be a long-term comprehensive plan for the highway authorities to carry out.

It is anticipated that the Highway Planning Bureau will cooperate to the fullest extent with the State Planning Board and with county, municipal and regional planning boards for the purpose of achieving a maximum orderly and coordinated physical development of the State and its subdivisions. This would increase the effectiveness of the highway projects and prevent possible waste of public money.

Highways are intimately related to the life of the community. Reference has already been made to the "economic, recreational, social, aesthetic and educational advantages to be derived" from proper planning. Highways must be planned with full cognizance of all areas of the public interest and welfare. They should be developed with a view toward protection of and service to these areas.[661]

The Annual Highway Program:

The provisions of the Budget Act require the Highway Commissioner, on or before October 15 in each year, to submit a road program to the Governor at the same time that he delivers the schedule of anticipated revenues available for highway purposes during the ensuing year. The road program must state the dedicated fund items and the general fund items separately, according to purposes, routes and sections of routes. It may include projects to be substituted for those in the principal program should it be found impossible or impracticable

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[660] See *p. 342, supra.*

[661] *Cf.*, Princeton Survey report, *op. cit., p. 180.*

to construct or carry out any one or more of the latter.[662] The Governor then reviews the road program, as well as the schedule of anticipated revenues, and formulates his budget recommendations thereon. He submits these recommendations to the Legislature along with his budget message.[663]

The construction program proposed by the State Highway Department for 1942 consists of 33 State projects, together with a Federal Aid highway beautification project and the State-wide Highway Planning Survey. The estimated cost of this program is $24,351,020. The list of projects submitted to the Governor as an alternate program consists of 40 State projects, involving an estimated cost of $79,080,000.[664]

The manner in which the annual highway program is put together points up the importance of a long-range highway plan based upon data secured through a continuing highway planning survey. The Commissioner considers all projects recommended or urged from any source. He then selects those he thinks should be built during the ensuing year. The annual program and the alternate list of projects are adopted by the Commissioner after consulting with the Highway Engineer.

Some of the projects undoubtedly represent those considered as most urgent by the Construction Engineer and his staff. Most of them, however, are the result of local pressures. County and municipal officials, civic organizations, and other interested individuals and bodies, constantly argue for the projects they feel should be built first. Their requests and demands are made by letter, phone, personal conference and visiting delegations. Those who are most insistent often manage to get their local projects considered ahead of others. There is no plan to control the choice of the Commissioner, nor one that he may refer to for the purpose of showing interested parties the priority (if any) to which a particular project may be entitled.

The best that one can hope for under these circumstances is that the choice of the Highway Engineer and the Commissioner will be controlled as much as possible by the immediate need for certain improvements. There is more than a suspicion, however, that other considera-

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[662] *R. S. 52:22-20(c)*; and see *pp. 194* and *195, supra.*

[663] *R. S. 52:22-20(d)*; and see *p. 195, supra.*

[664] *Budget Message of Governor Charles Edison, 1942, op. cit., pp. 472* to *475.* The projects on the principal program involved 19 different routes and a mileage of 56.7 miles. Those on the alternate list involved 28 routes and 161.6 miles.

tions brought about the selection of many of the projects included in the annual highway programs of recent years. Public hearings by the Governor's Highway Examiner might have elicited proof to substantiate this conclusion. Equally eloquent is the following schedule showing construction on the State Highway System during the term of the Highway Commissioner:[665]

State Highway Construction, 1935-1942

County	*New construction or reconstruction*	*Widening or dualization*	*Grading—preparatory to paving*	*Total*
Atlantic	1.680		7.165	8.845
Bergen	13.649	7.234	9.450	30.333
Burlington	18.131	21.927	1.838	41.896
Camden	1.804	3.256		5.060
Cape May	6.014			6.014
Cumberland	0.020			0.020
Essex	7.264	0.450	2.873	10.587
Gloucester	3.484	2.873	7.686	14.043
Hudson	4.124	1.809	0.476	6.409
Hunterdon	13.436	0.340	7.419	21.195
Mercer	4.021	14.751	5.156	23.928
Middlesex	20.990	37.598	2.675	61.263
Monmouth	30.838	3.231		34.069
Morris	16.842	0.695		17.537
Ocean	16.204			16.204
Passaic	8.097		7.306	15.403
Salem	4.635			4.635
Somerset	1.830	9.690	5.054	16.574
Sussex	3.331			3.331
Union	3.215	23.572	0.404	27.191
Warren	4.758			4.758
Totals	184.367	127.426	57.502	369.295

[665] *Source:* New Jersey State Highway Department. The figures are as of January 1, 1942.

Aside from Middlesex County, which benefited from the dualization and widening of Routes 25 and 26 and other projects, the two counties that enjoyed the largest construction programs in terms of mileage were Burlington and Monmouth.[665a] There were 30.838 miles of new construction or reconstruction in Monmouth during the period from 1935 to the end of 1941—the largest mileage in the State. Together with 3.231 miles of widening or dualization, there were 34.069 miles of construction work in Monmouth County in that period. In the case of Burlington County, there were 18.131 miles of new construction and reconstruction, the third largest mileage in the State, and 21.927 miles of widening or dualization. This, together with 1.838 miles of grading preparatory to paving, makes a total of 41.896 miles of State highway construction in that county.

There was probably urgent need for some of this construction, but it can hardly be said that all of the work was so pressing that it merited top rating ahead of construction in other counties. One need only examine the schedule on page 360 to realize that there is a large volume of needed dualization and reconstruction work in counties like Atlantic, Bergen, Camden, Essex, Gloucester, Morris and Union. At least part of the 637 miles of legislated State highways still remaining to be taken over and extending into every county of the state, merited equal attention with the work done in Monmouth and Burlington Counties.

The concentration of so much highway construction in the counties mentioned shows how the minds of the Highway Commissioner and Highway Engineer worked. The figures prove beyond contradiction that until the Department begins to operate under a considered plan which is grounded in the factors discussed heretofore, the annual road programs will continue to reflect decisions arrived at on other than sound planning principles.

Without such a plan, there can be no real direction to the highway program. The Department needs a plan for its own guidance. The Governor and the Legislature ought to have the benefit of one. Under the present system they have no standard by which to judge whether the annual highway program should be approved or rejected, in whole

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[665a] Burlington is the home county of the State Highway Engineer and Monmouth the home county of the Highway Commissioner.

or in part. As it is, they must depend largely upon the recommendation of the Highway Commissioner.

Surveys and Plans:[666]

Once the Legislature has passed the State Highway Fund Appropriations Act, the Department engineers are able to proceed with carrying out the annual road program. The extent to which it can be executed depends, of course, upon the amount appropriated for construction on the State Highway System. This amount has been set out as a line item in the State Highway Fund Appropriations Act since 1934.

Actually, the Survey and Plans Bureau does not wait until a route is included in an annual program before starting work on it. Studies begin as soon as the Legislature has designated the route for inclusion in the State Highway System—at least in the case of any route considered at all important and necessary. Some routes, as has been indicated before, are given no consideration because they are unnecessary or impractical from the very start. In studying a route, the engineers examine existing maps of the area and go over the ground. Aerial photographs are sometimes taken.

The route is considered from every angle: where the line is to run, what services the road is intended to give, the various features of design that ought to be incorporated in the construction plans, and similar matters. The Engineer of Survey and Plans discusses the more important aspects of the problem with his Location Engineers and with the Construction Engineer. His conclusions as to the route and type of road to be built are recommendations which he takes up with the Construction Engineer and, if necessary, with the Highway Engineer. In some instances, a public hearing is held before the Commissioner on the line which the route is to take before a final decision is reached.

The Engineer of Survey and Plans tries, insofar as possible, to delegate the detailed work and minor problems to his assistants, conserving his time for a consideration of major problems. His constant study of the State Highway System sometimes leads him to recom-

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[666] See *pp. 73* to *80, supra,* for the organization and duties of the Survey and Plans Bureau.

mend that a certain route be legislated because it is a necessary and logical link in the system. Thus, he initiated Route S-3, beginning on Route 3 in East Rutherford, extending westerly and connecting with Route 2 in Rutherford, and continuing in the vicinity of Clifton, where it connects with Route 6. This route was what is termed a "natural" from both the engineering and traffic points of view.

In the case of any legislated route considered of some importance, reconnaisance surveys are made under the direction of the Location Engineer after he has discussed the route generally with the Engineer of Survey and Plans. This work is done through the field offices of the Bureau where the survey forces collect all necessary data. The main line of a route is usually decided upon by the Engineer of Survey and Plans after the reconnaisance surveys are completed. In some cases a preliminary survey is also made before the route actually appears on an annual program. The final survey determining the exact line is made at the time the route is included in the program.[667] Stakes are driven and the final construction plans (contract drawings) are prepared in the field under the supervision of the Location Engineer. At the same time, the field forces prepare the general property key maps and general entire tract maps that go to the Real Estate Division to be used in connection with right-of-way acquisition.[668]

The Location Engineers are in daily contact with the Engineer of Survey and Plans regarding the work of the field forces. They keep in touch with the Office Engineer in order to discuss such problems as turn up on the job, so that when the final tracing is prepared, relatively few corrections will have to be made by him. Very often, the Office Engineer goes into the field with the Location Engineer

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[667] It is is not until the annual program is practically approved and the Legislature acts that the Location Engineers can get their field forces into full swing. Because of the fact that the Legislature does not pass the State Highway Fund Appropriations Act until June (see *p. 165, supra*), the engineers find the construction season full upon them. Time is at a premium. The result is that contractors do not begin their work until the next year on major projects. The back-log of previously authorized construction work and routine duties must be depended upon to carry the Department through the current season.

This is a prime example of the difficulties arising out of the Department's insistence upon the calendar year as a basis of operations. If its year were one with the fiscal year of the rest of the State it could plan its construction work and the balance of its program so that they would get the full advantage of the summer and fall seasons.

[668] See *pp. 298* and *299, supra*.

when the plans are about to be finished, in order to view the actual site.

The construction plans are reviewed and checked by the Office Engineer and his staff in Trenton who provide the final details.[669] These include coordinating the plans with the bridge plans prepared in the Bridge Bureau, arranging with utility companies for their installations and structures, etc. The field estimates of the quantities of materials required are also checked. Such supplementary specifications as are necessary to meet the particular requirements of the project are drawn up under the supervision of the Office Engineer and mimeographed. He also prepares the proposal forms that are used in bidding for the work.

The construction plans make provision for conduits to be used by the Electrical Division in making its installations. The Office Engineer checks any plans and specifications prepared by the Supervising Landscape Engineer for the beautification of new highways. Usually these plans and specifications come in subsequent to the construction plans and are reviewed generally to see that the landscape project is properly designed in relation to the other features of the highway and that the contract specifications are in proper shape.

It should be mentioned that the Survey and Plans Bureau does not prepare the plans for bridges. It provides the Bridge Bureau with a survey of the route, and stakes out the bridge site. The Bridge Engineer and his staff are responsible for the design of bridges and structures, and the preparation of plans and specifications for this work.

After the road construction contract has been let, the field men of the Survey and Plans Bureau set the stakes and make measurements for the contractors. At the close of a job, they make all measurements of the finished road. Whenever it is impossible for them to check a certain feature of the road (as, for example, a drain) the construction forces give them the necessary data.

Because of changes that naturally arise in the course of the execution of a road contract, it becomes necessary to revise the origi-

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[669] See *p. 74, supra.*

nal tracings of the construction plan. This is done in orange ink and the final plan is known as the "as built" plan. This plan and the final measurements made by the field staff are then checked by the Office Engineer and his assistants. This is done as a service to the Construction District Engineer in connection with the final payment under the contract.

The Office Engineer also checks the plans and estimates, prepares the supplementary specifications, and checks the quantities of materials used on the roads "as built" on regular Federal Aid highway projects, whether on or off the State Highway System.[670]

In cases where the Office Engineer does not agree with some matter relating to design, or an important problem arises in connection with the construction project, he takes up the question with the Location Engineer involved and, if necessary, with the Engineer of Survey and Plans.

Right-of-way plans prepared by the field forces of the Survey and Plans Bureau, are reviewed by the Assistant Office Engineer and his staff.[671] He checks the general property key maps as to accuracy, scaling, parcel areas, municipalities traversed, and other details. These plans are then checked against the construction plans for such matters as needed slope rights, drainage rights and other easements. If further information is needed, the Assistant Office Engineer contacts the Location Engineer and asks him to obtain the additional details from his field staff. The general entire tract maps prepared in the field offices are also checked, but in a general way.

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[670] Railroad grade crossing elimination work is a 100% Federal Aid Project (see *p. 72* and footnote 100, and *p. 177* and footnote 257, *supra*). The Federal Aid Engineer in the Construction Division is the liaison man between the Department and the Federal Government for all Federal Aid projects, whether regular, secondary road or grade crossing elimination. There are two kinds of projects: (1) on the State system, where the railroad company designs the structure if the highway passes under its line, and the Bridge Bureau designs the structure if the highway passes over the railroad; and (2) off the State system, where the railroad prepares the plans in all cases.

The Bridge Engineer reviews and checks the plans for structures. The Office Engineer checks the plans for road approaches. The contract is then advertised and let, and administered the same as any State highway project, the railroad supplying its own engineering and inspection services. The Office Engineer and Bridge Engineer respectively check the "as built" road and bridge plans.

[671] See *pp. 75* and *76, supra.*

After the general property key map has been checked, the right-of-way agreement is prepared. This is generally done by the Assistant Office Engineer and one of his assistants. The agreement includes an accurate description of the property to be taken and such additional easements as are required. The agreement is checked against the general property key map and is then sent, along with the map, to the Real Estate Division.[672]

When the Real Estate Division cannot acquire the desired property by agreement, and it becomes necessary to recommend the making of an official offer preparatory to the institution of condemnation proceedings, the Division requests the Assistant Office Engineer to prepare a special condemnation map covering the parcel in question. This is checked, insofar as possible, against information already in his possession. However, just before the condemnation petition is filed, two blueprints of this map are sent to the field office with a covering letter asking the engineer in charge to check on all buildings, structures, fences, hedges, etc. If the road is already under construction the engineer in charge of the project is contacted to see if the map meets actual construction requirements. When the map is returned from the field, appropriate corrections are made by the staff of the Assistant Office Engineer, the description is revised if necessary, and the map and description sent to the Legal Division.

Road Location:

The Highway Department is required by law to lay out routes "as short and direct as practicable between the points specified." Existing highways may be used whenever convenient, but the Commissioner has the power to lay out, open and improve new roads over acquired rights-of-way.[673] As already noted, he may also lay out routes in continuation of, connecting with, and in addition to the routes prescribed by the Legislature.[674]

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[672] See *pp. 299* and *300, supra.* The general property key map is corrected after the "as built" plan has been received. A duplicate tracing of the map is then prepared by the Assistant Office Engineer and sent to the Title Officer, who files it in the office of the county clerk in the county or counties where the land is located. A record of this filing is sent to the Assistant Office Engineer.

Where a road crosses a stream, a special map and special application form are prepared for use before the Board of Commerce and Navigation in obtaining a riparian grant on tidewater streams. The map shows the high and low water marks, channel, bridge clearance, etc. The Highway Department pays for these riparian grants.

[673] *R. S. 27:7-3.*

[674] *R. S. 27:7-2.*

The Commissioner may, after hearing, determine whether an existing route or a part thereof shall be taken over as a State highway. His determination may provide that certain indicated sections in a particular location not exceeding five miles are subject to change of route at any time thereafter, which change is limited to five years from the completion of the highway in its entirety as originally laid out. In such case, the indicated sections do not become permanently dedicated as a part of the State highway, and the Commissioner may alter the route and lay out a new line. The vacated portion of the highway, to the extent limited by law, may then either be vacated or abandoned and be taken over by the Board of Freeholders of the county and maintained as a county road. If the county shall have improved, reconstructed or made any extraordinary repairs on the highway that is thus taken over, or on any part thereof, under a contract awarded after March 1, 1927 the Commissioner must set aside a sum sufficient to reimburse the county for all money expended by it in such work. This sum is exclusive of any moneys that may have been received by the county in the form of State Aid, and expended for extraordinary repairs and reconstruction.[675]

The policy and practice of the Department in the location of roads has generally been of the highest order. New Jersey has been a pioneer among the States in this aspect of highway work. The criticism that roads have been located with little regard to expense is not warranted. With few, if any, exceptions, decisions regarding the routes to be followed have reflected a careful study of the advantages to be gained and the eventual savings to highway users. It is not commonly realized that such factors as the reduction in traffic delays, the avoidance of hazardous conditions, and the establishing of convenient avenues of travel must be set off against the initial investment. It is the balancing of these factors that determines whether a certain location is or is not justified.

Department engineers are to be commended on the foresight they have shown in establishing the lines of the main routes. Especially is this true of the location of highways in the built-up sections of the State. The metropolitan area in the northeastern part of New

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[675] See *R. S. 27:7-4* to *10.*

Jersey presents the most difficult engineering problem in the nation. The trunk lines through that area have been boldly conceived. The only criticism that can be made is a negative one. A great deal remains to be done to facilitate the flow of traffic in the metropolitan counties and the Department seems to have lost the momentum it had ten years ago. If the explanation lies in its fear of the cost, one may venture to say that each passing year increases the amount which will eventually have to be spent.

The connecting link between Routes 1 and 25 was a brilliant piece of location engineering. The saving in time alone will pay for this project. The George Washington Bridge approaches comprise another outstanding achievement, carried out under difficult circumstances.[676] Route 21 in Newark is still another, although the prices paid for right-of-way undoubtedly increased the cost two or three million dollars beyond what it should have been. Route 6, which passes through Great Notch, just southeast of Paterson; Route 35 and the Edison Bridge in Perth Amboy, South Amboy and Woodbridge Township, relieving a "bottle-neck" condition; the Camden Airport Junction of Routes 25, 38, 40 and 45;[677] Route 42 from Camden to Route 48 near McKee City (the Black Horse Pike, relieving the Philadelphia-Atlantic City traffic congestion on parallel route 43); and the Newark Junction of Route 21, 25 and 29 belong in the same category of outstanding location projects. There are others.

Special mention should be made of the by-passing of built-up areas by the super-highways on the State system.[678] The day when New Jersey's trunk highways traversed the main streets of its larger towns and cities is long past. The policy inaugurated in the 1920's of avoiding centers of population has been continued as a

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[676] The Skyway, the last section of the connecting link, was opened to traffic November 24, 1932. The completion of this project represented nine years of intensive study, planning, design and construction. The George Washington Bridge Plaza main stem roads were opened to traffic October 26, 1931. *New Jersey State Highway Department Annual Report, 1932,* report of the Construction Division, *pp. 2* and *27.*

[677] This junction will have to be improved to handle the increasingly large volume of traffic that has been attracted to it. An overpass arrangement is contemplated. The location and design were good for their time (1925).

[678] There are about 100 by-passes of cities and towns on the State Highway System. They permit the uninterrupted flow of through traffic and reduce the congestion on local thoroughfares.

standard practice. Evidence of the advantages of this policy may be found on almost every through highway. Route 25 is one of the most recent and important of these by-pass routes. It skirts dozens of communities in its sweep from Newark over and through Elizabeth, and thence southward past New Brunswick, Trenton and the Camden area. Route 4 from the George Washington Bridge southward to Perth Amboy and Cape May, Route 29 from Newark westward to Lambertville and Trenton, and Route 23 from Verona northwest to the New York line at Port Jervis, are recent examples. Elevated and depressed highways are combined with by-passing to give through traffic a freedom from interruption and delay.

Design:

New Jersey has always been a leader in the field of highway design. Such features as traffic circles, cloverleafs, divided highways, elevated and depressed roadways and reflecting curves were introduced and developed on the State system years ahead of other States. Imagination, resourcefulness and outstanding engineering ability have gone into the design of the State roads. The work done on the drafting boards of the Survey and Plans Bureau has, as much as anything else, raised New Jersey's highway system to a preeminent position among the highway systems of the world. Design features that have become commonplace to those traveling over the superhighways of the State have been imitated and adapted wherever roads are built.

Constant study and experimentation have achieved this result. The criticism made ten years ago that the Highway Commission was "no longer concerned with grades, curves and pavements, but is now interested in what are termed 'refinements'"[679] was the short-sighted complaint of a writer more interested in finding some way of effecting economies than in encouraging the development of adequate, safe and modern highways.

The problem of efficient design has for many years been uppermost in the minds of the engineers charged with building the main

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[679] Princeton Survey report, *op. cit., p. 186,* and see *p. 165.*

system. The aim has been to build roads making for "more economic operation, freedom from congestion and safer driving at all times."[680]

The Department has kept its construction standards high. The primary demand was that the roads be strong and durable. Nine-inch pavement on heavy traffic routes, with a single line of reinforcement two inches from the top, was required as early as 1928.[681] The general requirement up to that time had been a pavement thickness of only eight inches.[682] The 1932 report of the Construction Engineer speaks of "representative standard modern highway construction projects with 9″ reinforced concrete pavement 20 feet wide with 10 foot shoulders, graded 40 feet and in some cases 50 feet wide, contracted for in 1931 throughout the several territories of the State, exclusive, however, of work in the metropolitan area and construction of the so-called super-highways."[683] In 1932, construction contracts generally specified 9-inch single line reinforced concrete, with 10-inch double

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[680] *New Jersey State Highway Department Annual Report, 1930.* The report of the Construction Engineer, *pp. 2* and *3,* contains an important statement of the aims of the Department in problems of design: "The location and design of highways in New Jersey has become something more than the reconstruction of existing roads. The ever increasing use of our main highways during all kinds of weather throughout the year, and especially at night, necessitates constant study of traffic movements under varying driving conditions in order to bring our design to a higher standard that will make for more economical operation, freedom from congestion, and safer driving at all times. * * *

"The influx of traffic from outside States, especially at points where bridges and tunnels have or are to be constructed, has called for more progressive designs in order that the heavy and every increasing traffic, present and anticipated, may be distributed at high speed to points several miles away without further congesting and complicating conditions on existing roads and streets already overburdened in many cases.

"The solution of the problem has called for wider and straighter roadways, by-passing centers of population, viaduct construction, railroad grade separations, highway grade separations, traffic circles and otherwise improved intersections, with provisions for proper interchange of traffic from one highway to another, improvement in alignment and grades, proper lighting at special locations, and proper directionary and cautionary signs.

"The increasing higher speed of modern motor vehicles necessitates greater sight distances at curves and summits in the roadway so that passing of traffic can be made with greater safety. * * *

"The development of the modern highway has greatly increased the problems of location, design and supervision by the Division of Survey and Plans. Much more study of these problems has been given than heretofore, and there is need of further study and research to attain even better results. In the congested areas of the State, where the widening of existing routes or the construction of parallel routes would be difficult and expensive in the future, the work is being planned with more provision for future requirements than in other parts of the State, which, of course, will result in future economy."

[681] *New Jersey State Highway Department Annual Report, 1928,* report of the Construction Division, *p. 222.*

[682] *New Jersey State Highway Department Annual Report, 1931,* report of the Construction Division, *p. 2.*

[683] *Ibid.*

reinforced concrete pavement being required on projects like the George Washington Bridge Plaza and the Newark Junction.[684]

New Jersey has used reinforced concrete almost enclusively in the building of her State Highway System. Reference has already been made to the fact that 81.6% of the system consists of concrete pavement. Nine and 10-inch concrete pavement, of uniform thickness on the entire cross-section, with single and often double reinforcement, is the standard. This practice has been criticized as unnecessarily expensive, the point being made that other States have laid 6 to 8-inch concrete on many of their roads. The advisability of adopting this standard should be considered in planning future roads that are not expected to carry the heavy flow of traffic found on through highways. There seems to be no reason for using a super-highway standard on a less traveled thoroughfare.

Proper drainage is a feature of all roads on the State system. The care shown by the highway engineers in making adequate provision in this regard has added years to the life of the improvements.

On the other hand, little attention was paid to the important problem of subgrade until recent years.[685] Although recognized authorities regard the highways of New Jersey as the equal of any in the country and among the very finest anywhere, they consider that the general program has suffered because of existing subgrades. Some of them are of sand, and this has not been too good for the roads. Others are of clay, which traps the water.

The importance of a proper sub-base was realized by most highway engineers at a relatively late date. The failure to do so earlier has, in the case of New Jersey, affected the integrity of the State system to a limited extent. During the past four or five years increasing attention has been given to this factor in road design. There can be no question that the use of a proper sub-base as a stabilizer for pavement foundation and as an insulator against capillary action of ground water will lengthen the life of the highways and so justify the added construction cost in the long run.

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[684] *New Jersey State Highway Department Annual Report, 1932,* report of the Construction Division, *p. 13.*

[685] The first mention of this problem is found in the report of the Construction Engineer for 1934. *New Jersey State Highway Department Annual Report, 1934.* Among the problems of design mentioned by him as pressing for solution are: (1) subgrade stabilization by adequate drainage, and (2) decreasing the effects of subgrade friction to reduce the number of transverse cracks in the pavement.

The Engineer of Special Assignments in the Survey and Plans Bureau of the Department conducts continuing research into various structural problems related to the efficiency and durability of pavements.[686] Among them is the problem of subgrades, on which he was conducting a series of experiments at the time of this study.

Another problem has been that of joints. Studies into the cause of failures of joints in concrete and the development of new types and designs were begun by the Engineer of Special Assignments in 1932, and intensively pursued for several years thereafter.[687] A circular concrete track was built at Fernwood to test various types of joints with the result that the load-transfer type (tongue and groove construction) was developed. This is now standard in the construction of transverse joints on important State routes.

Clear sight distances have been stressed in construction plans for State highways to a greater degree than in most States. The controlling purpose behind this requirement has been to provide safer roads for the highway user. An inventory of the number of restricted sight distances on the main highways, and the number of such restricted sights per 100 miles, made by the State-wide Highway Planning Survey in 1939-1940 over 1608.5 miles of the State system, shows the following:[688]

Number and Number per 100 Miles of Restricted Sights on Main Highways

	Rural (1239.7 mi.)		*Urban (368.8 mi.)*	
	No.	*No. per 100 mi.*	*No.*	*No. per 100 mi.*
Less than 400′	244	20	176	48
400′ — 500′	348	28	139	38
500′ — 800′	1095	88	345	94
800′ — 1000′	297	24	78	21
Totals	1984	160	738	200

[686] See *p. 77, supra.* Research problems dealt with since 1931 include curves, transverse joints, reflecting curbs, subgrades, and studies and investigations into the causes of the deterioration of concrete pavements.

[687] *New Jersey State Highway Annual Reports, 1932* (report of the Construction Engineer, *p. 3*), *1933* (*Ibid., p. 2*), *1934* (*Ibid., p. 2*), *1935* (report of the Southern Construction District Engineer) and *1936* (*Ibid.*).

[688] *New Jersey State-wide Highway Planning Survey, Road Inventory Procedure Report and Preliminary Tables,* May 1941, Table R 1-3-B (Preliminary).

This tabulation shows that only 12.3% of the sight distances on rural highways on the State system are less than 400 feet, the corresponding percentage for urban highways being 23.8%. Slightly over 70% of the sight distances are 500 feet or more in length on the rural highways, the corresponding percentage for urban highways being 57.3%. This is excellent showing which will improve with the planned reconstruction of some of the main highways and the construction of new highways.

Considerations of safety have also dictated the Department's insistence upon minimum horizontal curvature and minimum grades. The goal in recent years has been a curvature of three degrees and a grade of three per cent. wherever possible. Minimum grades and curvature mean increased highway safety. They also help reduce the motorists' costs. There is less wear and tear on tires and brakes, and less consumption of gasoline in negotiating grades. An inventory made in 1939 by the State-wide Highway Planning Survey of curves of three degrees or more on the main rural highways of the State system, shows the following:[689]

Number and Number per 100 Miles, and Length and Length per 100 Miles of Curves of 3° or More on Main Rural Highways (1239.7 miles)

	No.	*No. per 100 mi.*	*Length in miles*	*Length per 100 mi.*
3° to 6°	907	73	81.627	6.59
Over 6° to 11°	213	17	16.344	1.32
Over 11°	45	4	2.102	0.17
Totals	1165	94	100.073	8.08

This shows that 77.85% of the curves on the State system rural highways are three to six degree curves, compared to 18.28% that are over six degrees to eleven degrees, and only 3.86% over eleven degrees. Of the total mileage of these curves, 81.5% falls into the first-named category.

[869] *Ibid.*, table R 1-4-B (Preliminary).

A similar study made at the same time of grades of three per cent. or more on the main rural highways of the State system, shows the following:[690]

Number and Number per 100 Miles, and Length and Length per 100 Miles of Grades of 3% or More on Main Rural Highways (1239.7 miles)

	No.	*No. per 100 mi.*	*Length in Miles*	*Length per 100 mi.*
3% to 5%	737	59.0	79.734	6.43
Over 5% to 8%	244	20.0	32.462	2.62
Over 8%	6	0.5	0.568	0.05
Totals	987	80.0	112.764	9.10

These figures for sight distances, curves and grades go far in supporting the claim made for the State system as being one of the safest in existence. It has cost money to maintain the high standard of these features in highway design, but it has been money well spent.

A good highway must not only be durable and strong enough to withstand the loads encountered, but wide enough to carry the volume of traffic that uses it. Reference has already been made to the fact that Department engineers were somewhat short-sighted or overly cautious in not obtaining sufficiently wide rights-of-way in the early days of the State system.[691]

This error in judgment also resulted, of course, in the construction of too narrow a paved width on some of New Jersey's most heavily traveled thoroughfares. These trunk highways, which were intended to speed traffic on its way, became crowded and unsafe within a very few years. An example of bad planning was the three-lane Brunswick Pike (Route 26), from Trenton to New Brunswick. The middle lane of this highway was an invitation to death. Head-on collisions occurred with terrible frequency when passing movements brought automobiles together on the center strip.

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[690] *Ibid.*, table R 1-5-B (Preliminary).

[691] See *pp. 339* and *340, supra.*

The Department engineers were aware of the fact that they had not made the highways wide enough almost as soon as the roads were opened to traffic. Then began the expensive program of road-widening. New roads were, of course, built on greater widths in the light of past experience and the information obtained through traffic counts.

The following schedule summarizes the travel lanes on the State system. This tabulation is not based on definite widths of so many feet, as in many other States, but more accurately and realistically, on a travel-width which will comfortably accommodate the passage of vehicles.[692]

Travel Lanes

Type of highway	*Mileage*
Dual (divided)	246.130
6-lane undivided	2.758
5-lane undivided	3.245
4-lane undivided	85.667
3-lane undivided	166.339
2-lane undivided	1130.389

Of the total mileage thus classified, 504.139 miles (30.84%) are multi-lane highways of more than two travel lanes.[693] There are 337.8 miles (20.66%) of highway of over four travel lanes. Dual highways make up 15% of the total.

The idea of a dual (divided) highway was first put forward in the Department in 1927, or perhaps even earlier.[694] Nothing really definite was done about the matter until the widespread publicity and criticism resulting from the many accidents on the Brunswick Pike convinced the Department engineers that some action must be taken. After considerable study of the problem they concluded that a divided

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[692] *Source:* New Jersey State Highway Department. Figures are as of January 1, 1942. See *pp. 340* and *341* and footnote 585, *supra.*

[693] If the standard used in other States were followed, there would be 691.8 miles (43.32%) of highways with over two lanes on a given width. Studies of the effect of lane widths and roadway widths in relation to capacity on both single and dual highways were continued in 1941. In the light of information already developed, recent policy has been to increase lane widths. *New Jersey State Highway Department Annual Report, 1941,* report of the Construction Engineer, *p. 3.*

[694] See *p. 340, supra.*

roadway, properly designed, would go far toward meeting the demand for safer highways. A pictorial report was prepared illustrating the superiority of this type of roadway, primarily from the point of view of safety. It was planned to incorporate the principles of the divided highway design on some of the projects to be constructed in 1932. These were through arteries, requiring three or more lanes, and were designed on rights-of-way varying from 100 to 125 feet in width.[695] Eleven projects embodying the dual highway principle were placed under contract in 1932.[696]

Once adopted, the dual highway became a favored design on highways carrying a heavy volume of traffic. In 1934—just two years later—contracts were awarded covering 34 miles of dual highway construction. Of this mileage, concrete paving on both sides of the center island was called for on 26 miles. Eight miles were planned so as to utilize existing roadway surfaces for one side, the single highway being turned into a dual type by the installation of a dividing island and paving the other side. In addition, there were 11 miles to be paved on a 20-foot width as first-stage construction, right-of-way having been acquired to accommodate the complete dual highway that was to be constructed in the future. With the completion of these projects, there would be 80 miles of dual highway paved on both sides in service, and 40 miles of first stage construction.[697]

A new and revolutionary method of dualizing existing highways was introduced in 1935 on Route 26. This consisted of moving the 14½-foot existing slab of 9-inch reinforced concrete over by the use of air pressure, to provide a 12-foot island space. A 10-foot strip of reinforced concrete constructed adjacent to the moved slab resulted

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[695] *New Jersey State Highway Department Annual Report, 1931,* report of the Construction Engineer, *p. 2.* Divided highways already existed in other States at the time of this report.

[696] *New Jersey State Highway Department Annual Report, 1932,* report of the Construction Engineer, *p. 3.* Features considered in connection with these projects included the determination of first-stage cost and the adaptability for widening or extension for ultimate needs. Some of the projects consisted of grading only one-half of the roadway where it was considered that only 20 feet of pavement would be required for immediate needs, while other projects called for grading the full width to permit of paving two 20-foot roadways separated by islands. It was planned in all cases to acquire, in the first instance, the right-of-way required to provide the full width necessary to accommodate anticipated ultimate facilities.

[697] *New Jersey State Highway Department Report, 1934,* report of the Construction Engineer, *p. 2.*

in a highway consisting, when completed, of two 25-foot widths of pavement, with 5-foot shoulders and a 12-foot center island.[698]

This work was done by the Maintenance Division. The first project, 6.732 miles long, begun in October 1935, was completed November 12, 1936. A second project on the same route, 4.679 miles long, was gotten under way before the first was finished. It was completed the next year. Two slab-moving and widening projects were put into operation in 1938 on Route 26, between Penns Neck Traffic Circle and Trenton, and two more on Route 25 in 1939. The one begun in the spring of 1941 on Route S-41 involving the movement of two slabs for a maximum distance of 36 feet, is the most daring of all the dualization projects of this type.[699]

The maintenance forces carrying out these construction jobs have become expert at the work. The problems encountered on the earlier projects have been ironed out. For the time being, these slab-moving operations and the subsequent widening and dualization of existing highways have resulted in considerable savings. Just what effect the manipulation of already constructed pavements will have upon their durability is unknown. Whether there will be an ultimate saving depends upon the answer to that question. Aside from the appearance of an occasional crack on these slabs, there is no present indication that the moving operation has diminished the life of the pavements.

The latest feature in highway design on the State system is the reflecting curb. The curb was the result of long study and experimentation by the Engineer of Special Assignments. He built the original models and tested them out under varying light and weather conditions.

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[698] This was done by gouging out the longitudinal joint filler and inserting a flattened hose for a length of almost 450 feet. The inflation of the hose by compressed air moved the slab about three inches. The space was then blocked and the movement successively continued until the 12-foot opening was obtained. The moved slab was then mud-jacked to grade and a 10-foot strip of reinforced concrete pavement constructed adjacent to it. *New Jersey State Highway Department Annual Report, 1935,* report of the Southern Construction District Engineer on the work done on Route 26, sections 4B and 5B.

The method was developed and refined by the Designing Engineer attached to the office of the Construction Engineer, after it had been suggested by another member of the Department.

[699] *New Jersey State Highway Department Annual Reports, 1936* (report of the Maintenance Division, *p. 2*); *1937* (*Ibid., pp. 1* and *2*); *1938* (*Ibid., p. 2;* the two 1938 projects were the largest of many W.P.A. projects undertaken that year); *1939* (*Ibid., p. 2*); *1940* (*Ibid., p. 2*); and *1941* (*Ibid., p. 2*).

The first "grooved" type of reflecting curb, installed on Route 25 in 1937, did not prove very successful.[700] Three new types were introduced in 1938: a precast white curb of the sloping reflector type for use in center island construction; a cast-in-place scored sloping white curb, also used in center island construction; and a cast-in-place vertical reflector curb taking the place of the standard 9″ x 20″ curb. These types were considered as still in the experimental stage at the time of their use, although it was felt that with certain modifications they would meet the purpose for which they were intended.[701]

For a time most of the reflecting curbs were precast. Today they are cast in place, and this work is made part of the construction contract. The various types used—along the sides of center islands, at island ends, along the outside curb and at intersections—have proved highly effective in dry or wet weather. They make for much safer driving. The one major difficulty encountered by the Department occurs during snow removal, when the equipment damages the reflecting faces of the curbs.

New Jersey has dealt with highway intersections at grade in a variety of ways. In most cases, the problem is relatively simple, so that turning and crossing movements can be handled with a minimum of trouble or expense. It is when through and turning traffic becomes so dense as to cause delay and affect the safety of those using the intersection, that the matter becomes complicated. The engineers of the Department have tried to reduce or eliminate these situations by the use of traffic circles, "cloverleafs" and highway separations.

The first traffic circles, or rotary intersections as they should more properly be called, were designed in 1925.[702] The one at the

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[700] *New Jersey State Highway Department Annual Report, 1937,* report of the Southern Construction District Engineer covering work on Route 25, section 26A.

[701] *New Jersey State Highway Department Annual Report, 1938,* report of the Southern Construction District Engineer.

[702] The term "traffic circle" is applied to any intersection design based on the one-way movement of vehicles around a central area. The central island can be of various shapes, such as rounded squares, ovals, diamonds, or polygons. The American Association of State Highway Officials has preferred to call these circles rotary intersections. *A Policy on Rotary Intersections,* published by the Association (Washington, 1942), *p. 1.* See also, "Traffic Circle Design," by Harold W. Giffin, Engineer of Survey and Plans, New Jersey State Highway Department, a paper presented before the Bureau of Street Traffic Research, Harvard University, May 3, 1938. He points out that the antecedent of the traffic circle was the old town square.

Camden Airport was the first of its kind designed and built for automobile traffic in America. It was intended for an operating speed of 15 miles per hour; vehicles now negotiate it at speeds up to 35 miles per hour. The 320-foot inside diameter has proved too small for smooth operation during peak traffic. The Department contemplates the construction of an overpass in the near future.

There are 75 rotary intersections in New Jersey today.[703] They represent all stages in the development of rotary design during the past 17 years and reflect the constant study and experimentation of the engineers who have dealt with the problem. Rotaries which were once adequate are now unsuited for the volume and speed of the traffic using them. Although diameter is not the only controlling element, experience has proved that in many cases it is the smallness of the diameter that has resulted in the rotary intersection becoming dated. Rotaries with a 100-foot diameter, as well as those with a diameter of 320 feet, have proved too small.[704] Other features in the design of a rotary, such as the entrance roads, the one-way "radial" roads between the entrances and exits on which the mergings and crossings take place, and the exit roads, are also important elements which in the end determine whether a rotary will be adequate or not. It must, of course, be realized that the increased speed of modern traffic and the increasingly large number of vehicles that pass over the through highways of New Jersey, have in themselves made some of the traffic circles totally inadequate.

New Jersey has gone rather far in featuring the rotary intersection on its State Highway System. One of the advantages claimed for the rotary is that the cost of construction is less than a highway grade separation with properly designed turning ramps.[705] This is probably so, although the right-of-way costs on some New Jersey rotary intersections have been so high that one may question whether

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[703] *Source:* New Jersey State Highway Department. They are concentrated in the metropolitan counties for the most part. There is an unusual concentration in Monmouth County, where seven rotary intersections have been built in recent years.

[704] "Highway Grade Separations," by Harold W. Giffin, Engineer of Survey and Plans, New Jersey State Highway Department; paper presented before the Canadian Good Roads Association. *Proceedings of the 22nd Annual Convention of the Canadian Good Roads Association* (Charlottetown, P.E.I., 1936), *p. 79.*

[705] *A Policy on Rotary Intersections, op. cit., p. 4.*

it would not have been better to build a grade separation at the intersection.

One of the main disadvantages of rotary intersections, especially when they are quite extensive, is that they tend to confuse drivers not familiar with the particular development. This confusion increases accidents and, to a certain degree, increases time loss because of the unnecessary trips around the rotary. Drivers approach a rotary in a horizontal plane and very few are skilled in negotiating the circle.[706] Studies made of some of the rotary intersections indicate that traffic-actuated lights would be equally, if not more effective, as far as time loss to vehicles is concerned.

Rotaries can never be a standard product. They must be designed to fit the conditions of traffic and topography in the particular locality. All features deemed desirable can rarely be incorporated into a rotary because they usually conflict with each other to some extent. Compromise is necessary.

It may be said, generally, that New Jersey's development of the rotary intersection represents a large step forward in road design. The engineers have not been afraid to test their ideas in actual construction. When they have failed it has been largely because of the change in the character and speed of modern traffic.

State highway engineers have gone perhaps too far in their use of this design. It is felt that rotaries have been built in locations where they really were not warranted. The rotary idea itself is a good one, but that does not mean rotaries should be constructed where other solutions may be just as economical and perhaps more efficient. A more conservative policy is indicated.

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[706] Other disadvantages cited for rotaries are: (1) the relatively large areas required, which prevents their use in congested areas; (2) they are not readily adaptable to traffic consisting of all forms of motor vehicles, pedestrians and bicyclists; (3) they must be extremely large when used on high speed roads, or traffic will be required to slow down too much; (4) vehicles going through and those making left turns are subjected to a certain amount of delay in passing through a rotary; (5) numerous signs, reflectors, and direct illumination units are necessary for traffic safety, all of which increases maintenance cost; moreover, all of the intersection area that is not paved must be covered with grass or other ground cover which must be maintained; (6) the reduction in accidents by rotaries is still debatable; while major accidents may be greatly reduced, it is possible that minor accidents may be greater in number and even may be of equal or greater expense to the public; (7) rotary designs are not altogether satisfactory when two roads intersect at an acute angle of about 40 degrees or less; and (8) rotaries are not readily adaptable to stage development. See, *A Policy on Rotary Intersections, op. cit., pp. 4* and *5*.

Another important solution of highway intersections at grade developed by Department engineers is the cloverleaf design, which appeared in 1928. The first cloverleaf was built at the intersections of Routes 4 and 25, near Woodbridge. There are three cloverleafs on the State system: the one just mentioned, one in North Jersey at the intersection of Routes 2 and 4 at Paramus, east of Paterson, and one in South Jersey at the intersection of Routes 42 and 50, northeast of Mays Landing. The Woodbridge cloverleaf has proved its value many times over. A traffic count of 62,527 vehicles was obtained in a period of 16 hours on a holiday in 1930, the peak hour count being 6,074. The cloverleafs have not only expedited traffic, but greatly increased safety at the intersections mentioned.

Emphasis in recent years has been on grade separations of intersecting highways. There are 195 of these grade separations of which 192 were built by the Department.[707] Perhaps the most extensive present use of this design is on Route 6. The approaches to the George Washington Bridge represent another important example of the use of grade separations. This development includes among other outstanding features of design a three-level crossing.

Where grades are separated, provision is usually made for the interchange of traffic from one road to the other by the construction of connecting roads or ramps. The number of these depends upon the traffic demands and the relative importance of each road. Some ramps are designed to carry traffic in both directions and others in one direction only. A complete interchange requires eight turns—two rights and two lefts from each road—and this is accomplished without cross traffic by eight one-way ramps or four two-way ramps.[708]

Grade separations make for greater safety and convenience. Traffic counts and time studies have shown that there is a large reduction in time loss. This saving in time has alone proved the economic worth of the improvement when capitalized against the cost involved. Combined with other features of design used on the State Highway System grade separations have proved to be a very important element

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[707] *Source:* New Jersey State Highway Department.

[708] *Proceedings of the 22nd Annual Convention of the Canadian Good Roads Association, op. cit.,* "Highway Grade Separations," *p. 74.*

in affecting economies of operation in highway travel along the main arteries.

Like other problems in highway construction the question of grade separation reduces itself to a study in highway economics. Grade separations can be justified where the return in economies, convenience and safety exceeds the cost of the improvement. Admittedly these factors cannot be accurately calculated. A definite money value cannot be fixed for them but they are nonetheless real and appreciated by highway users. It may be said in a very general way that grade separations justify themselves mostly in densely populated areas where traffic is heavy and the benefits and burdens are widely distributed.[709]

Another outstanding feature of the design of roads on the State Highway System is the separation of railroad grade crossings. The work first began about 1920. The policy of keeping the main highways free of railroad crossings has been pursued with vigor since. In consequence, the New Jersey system is exceptionally free from these dangerous intersections, especially when compared to other States.

The Department has eliminated 37 existing railroad crossings since 1920. In addition, inadequate separation structures have been replaced by modern and sufficiently strong ones in 24 instances. Finally, in 66 cases the Department, in building a road over new alignment, designed the road so that it would pass over or under the railroad.[710] These figures do not include railroad grade separation structures in existence elsewhere on the system.

An inventory made by the State-wide Highway Planning Survey shows the following number of railroad grade separation structures open to travel on January 1, 1940:[711]

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[709] *Ibid., p. 79.*

[710] *Source:* New Jersey State Highway Department.

[711] *Road Inventory Procedure Report and Preliminary Tables, op. cit.,* Tables R 1-9-A (rural) and R 1-9-A (urban).

Number of Railroad Grade Structures Over 20-foot Span

Type	*Rural*	*Urban*
Above railroad only	37	39
Above railroad and stream	1	
Above railroad, stream and road		2
Above railroad and road	2	4
Under railroad (simple)	27	45
Under railroad (combination)		3
Totals	67	93

According to this inventory, there were 160 railroad grade separation structures of 20-foot span on the State system on the date mentioned. Of these, 127 were built by the Department since 1920.

Railroad grade separation work has been financed in several ways. Prior to 1929, statutory provisions placed the entire cost on the railroad company. In that year a new law was passed[712] directing the State Highway Commission to formulate a program before January 1 of each year, "covering the work to be started or completed during the ensuing year, for the elimination of railroad crossings at grade on State highways, the improvement, relocation, alteration and reconstruction of crossings of railroads and State highways not at grade, and the location and construction of new crossings of railroads and State highways not at grade * * *."[713] The total estimated cost of such annual program may not exceed $2,000,000. A copy of the program is furnished to every railroad company called upon to perform work thereunder. Any disputes arising under the 1929 act may be submitted to the Board of Public Utility Commissioners whose decision is final, subject only to review by the courts as provided by law.

By the terms of the statute, the cost of railroad grade crossing work, exclusive of the cost of the surface paving on roadways and the

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[712] *P. L. 1929, c. 88; R. S. 48:12-68* to *78.*

[713] The Grade Crossing Engineer in the office of the Construction Engineer was responsible for formulating the annual program under this act and arranging for agreements with the railroad companies. See *p. 71, supra.*

curbing, sidewalk paving and guard rails on approaches, which are constructed at the sole expense of the State, is borne by the State and the railroad companies involved, in equal shares. The statute provides that the State Highway Commissioner and any railroad company may enter into an agreement on the basis of equal division of the cost, covering the work in the annual program, or the elimination of any crossing at grade, or the improvement, relocation, alteration, or reconstruction of any crossing not at grade on any State highway, in addition to the work provided for in such program.

Under the 1929 act, the State Highway Department bears the entire expense of locating and constructing all crossings at grade to carry new highways over or under the railroads, where the construction of such crossings does not result or will not result in the closing, abandonment or combination of an existing grade crossing at or in the vicinity of a new highway crossing.

The Bond Act of 1930 authorized an $83,000,000 issue of which $18,000,00, it will be recalled, were to be grade crossing elimination bonds. Only $6,000,000 of these bonds have been issued. Because of the cancellation of parts of the $83,000,000 bond issue, $6,578,313.25 of the grade crossing elimination bonds still remain to be issued.[714] Only a third of the original $18,000,000 for railroad grade crossing work was, therefore, made available to the Department.

In recent years, the Federal Government has helped to finance a good part of the grade crossing program. The Federal Aid grants do not have to be matched by the State on approved work. Under the Emergency Relief Appropriation Act of 1935, the sum of $3,983,826 was made available for the so-called Federal Works Program (Grade Crossing Elimination). In the period from 1937 to 1940, inclusive, Federal Aid grants for the elimination of hazards at railroad grade crossings totaled $2,944.622.[715] Most of this money in recent years has gone into projects off the State system.

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[714] See *p. 172, supra.*

[715] See footnote *257, p. 177, supra.* The Federal Aid money is intended for the elimination of crossings or the reconstruction of inadequate structures. The grants are 100% grants, but the State must acquire the necessary rights-of-way and prepare the surveys and plans.

In connection with Federal Aid grade crossing work, the Grade Crossing Engineer is responsible for making an inventory of all the grade crossings in the State.[716] He gives priority ratings to the crossings on each railroad system, and sets up a separate priority rating among the several crossings in the order of their need and importance. He then formulates a grade crossing program which must be approved by the Construction Engineer and finally by the Highway Commissioner.

In getting up the program, the Grade Crossing Engineer contacts the railroad companies and tries to arrange agreements with them for the carrying out of their part of the program. Estimates for these projects are made by the Construction Division where the projects are on the State system, and by the railroad for those off the State system. The plans and specifications, as already indicated, are prepared by the Bridge Bureau of the Construction Division where a State highway passes over the railroad; otherwise, the railroad prepares them, whether the structure is on or off the State system.[717]

The Grade Crossing Engineer tries to expedite preparation of the estimates of surveys and plans so as to get the projects into construction as quickly as possible. He keeps in touch with the Survey and Plans Bureau, Bridge Bureau, the railroads, utility companies (in connection with their installations), and, if necessary, the Board of Public Utility Commissioners. After the grade crossing program is approved by the Commissioner, the Grade Crossing Engineer hands it to the Federal Aid Engineer who proceeds to have the program approved by the Public Roads Administration and put into motion.[718]

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[716] The Grade Crossing Engineer has prepared a mimeographed report, dated May 1, 1940, entitled "Status of Railroad Crossings," showing the crossings on the various routes, whether on existing or proposed State highways. This schedule shows the adequacy or inadequacy of each existing crossing and the action, if any, recommended to be taken thereon, as well as the improvement to be made on proposed State highways. The report includes the following summary of railroad crossings:

	Undergrade		*Overhead*				
	Adeq.	*Inadeq.*	*Adeq.*	*Inadeq.*	*Grade*	*New*	*Total*
On existing State highways	60	5	100	2	108	6	281
On proposed State highways	9	12	5	9	53	64	152
Totals	69	17	105	11	161	70	433

[717] See footnote 670, *p. 380, supra.*

[718] See *p. 72, supra.*

The interest of the Federal Government in the elimination of railroad grade crossings and in the replacement of inadequate structures where grade crossing separations already exist, indicates the importance of this work. New Jersey has carried this program forward with as much speed as available funds allowed. The balance of the program should be completed as quickly as practicable.

The Department has in recent years introduced two new elements in the design of new highways on the State system,—safety lighting and beautification. These will be discussed in connection with the work of the Electrical Division and the Landscape Engineer.

Research in the field of road design has been carried on during the past four years by the Traffic Engineer of the Survey and Plans Bureau.[719] By studying traffic and traffic behavior he has been able to recommend refinements in road design which make for safer and more efficient highways. At the time of this study, he was conducting investigations into the time loss of vehicles on the main system.

The whole problem of road design is in a very fluid state today. Increasing speeds and traffic volume result in continuous change. A great deal of work still remains to be done in this field. Under the circumstances, there are and can be no recognized authorities.

The engineers in the Survey and Plans Bureau are aware of the complexity of their problem and the need of going forward. Their record of accomplishment in the past and constant application to the work at hand indicate their desire to maintain New Jersey's leadership in the field of highway design.

Bridge Design:

The construction of bridges on the State Highway System is of major importance because of the unique geographical position of the State. New Jersey is situated between the metropolitan districts of New York and Philadelphia. It is bounded on the east by the Hudson River, the Newark and Raritan Bays, and the Atlantic Ocean, on the south by Delaware Bay, and on the west by the Delaware River. Many tributaries flow into this river. To the north and northwest the State

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[719] See *p. 78, supra.*

is drained by the Hackensack, Passaic and Raritan Rivers. In the south the rivers flowing into Delaware Bay are characterized by wide estuaries. Extensive marshland and meadow conditions encountered generally through certain sections of the State further complicate the problem of the bridge engineers.

These physical characteristics account for the broad scope of the bridge program as compared to that of other States of the Union. The numerous navigable streams along the eastern and western borders involve the construction and maintenance of an extraordinarily large proportion of movable bridges. It has already been indicated that the density of highway traffic makes the elimination of highway grade crossings a necessity at all important intersections.

It has been the policy of the Bridge Bureau[720] to consider a bridge as an adjunct to the highway, and as such, to design it continuous with the approach roadways so that the motorist will not be distracted in crossing. Insofar as possible, the bridges on the State Highway System are of the deck type, with no part of the supporting structure extending above the level of the roadway. The vision of the highway user is therefore not interrupted, nor is his attention divided between the roadway and the projections which support it.

Balustrade design has received careful attention in its double purpose of affording a sense of security without acting as a barrier to the line of vision. The public has made known its desire to observe the landscape at favorable stream crossings, and whether the structures are of concrete or steel, they are detailed to afford a minimum obstruction to the scene.

The Maintenance Division makes an annual inspection of the bridges on the State Highway System, as does the Bridge Bureau, to determine what bridges ought to be reconstructed. The Superintendent of Maintenance and the Bridge Engineer confer and the former then recommends a program of bridge reconstruction to the Highway Engineer. The annual bridge program consists of such bridges as may have been chosen for rebuilding, as well as new bridges.

After the Survey and Plans Bureau has completed its survey of the route and thus determined the location of the bridge site, the De-

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[720] See *pp. 84* to *86, supra,* for the organization and duties of the Bridge Bureau.

signer of Bridges and Structures in the Bridge Bureau prepares studies of the crossing and confers with all bodies that may have an interest in the matter, such as the State Water Policy Commission, War Department, Board of Commerce and Navigation and railroad and public utility companies. After conferring with the Bridge Engineer as to the design and major characteristics of the structure, his staff of designers makes a preliminary layout of the structure and tentatively determines on the location of the foundations. The Supervisor of Borings and his labor forces then make test borings at these locations and report to the Bridge Engineer. He determines whether the location of the foundations is all right or whether the layout should be changed.

The work of designing the structure is then carried to completion. The Senior Bridge Designers design the more important structures and those presenting unusual problems. The Bridge Designers handle smaller projects. The design for smaller structures is fairly standard. Upon the completion of the plans, they are checked by the Designer of Bridges and Structures and, in the case of larger structures, by the Bridge Engineer also. Estimates and specifications are prepared, and the plans and specifications are then sent to the Commissioner for approval.

The Bridge Bureau works very closely with the Survey and Plans Bureau. The coordination between road and bridge construction is excellent. It is, of course, almost impossible to get a perfect coordination, but every effort is made to overcome obstructions standing in the way of this desirable arrangement.[721] One of the duties of the Office Engineer in the Survey and Plans Bureau is to coordinate the bridge plans with those relating to the road itself.[722]

The Bridge Engineer is responsible for checking and approving designs prepared by railroad companies for grade crossing elimination structures financed by Federal Aid funds, where they pass over the highway on the State system, as well as for those off the system. He also checks and approves designs prepared by county engineers for bridges built with State Aid funds. The varied character of the geol-

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[721] On rare occasions the bridge cannot be designed and the contract let and completed before the road is finished. Coordination is sometimes defeated by the fact that road and bridge funds are not available at the same time, so that the bridge (or road) is completed first.

[722] See *p. 74, supra.*

ogy of the State and the unique traffic conditions encountered in New Jersey make it necessary for the Bridge Bureau to consider all types of foundation and superstructure design. Structures on the State system therefore represent a cross-section of the entire field of bridge engineering. Notable examples are the Pulaski Skyway on the connecting link between Routes 1 and 25, the Edison Bridge at Perth Amboy, the College Bridge on Route 25 near New Brunswick, the viaducts on Routes 21 and 29 in Newark, the three-level highway separation on the approach to the George Washington Bridge, the depressed roadway approaching the Holland Tunnel in Jersey City, the cloverleaf type of grade separation, and the numerous movable bridges of the bascule and vertical lift type.

New Jersey is one of the few States that has adopted the H-20 loading which provides for trucks having a 20-ton gross weight, as a universal practice. While this is above the legal load limit, it was used to anticipate increases in highway loads. Experience has justified this provision.

The most noteworthy pioneering effort in bridge design in recent years is that of the Edison Bridge, involving continuous plate girder design of spans exceeding any ever attempted in the United States up to the time the bridge was constructed. Based on this precedent, a number of States are now considering the use of the design for spans of greater length because of its simplicity, economy and appearance.

With one or two exceptions, all of the bridges built by the Department have been of permanent construction. The structural steel is encased in concrete, except in the case of very long spans and movable bridges. Maintenance is thus reduced to a minimum.

It has always been the policy of the Department to give due consideration to the beauty of a bridge as well as its safety, utility and permanence. This has been accomplished without additional expense. The success of the effort is recognized nationally and internationally. The following awards testify to this fact:

College Bridge on Route 25—first prize, Phebe-Hobson, Fowler Award by the American Society of Engineers, 1930.

Pulaski Skyway on Route 25—first prize, Class A, awarded by the American Institute of Steel Construction, 1932.

Shark River Bridge on Route 4—first prize, Class B, awarded by the American Institute of Steel Construction, 1933.

Shrewsbury River Bridge on Route 36—first prize, Class B, awarded by the American Institute of Steel Construction, 1933.

Passaic River Bridge on Route 25—first prize, Class D, awarded by the American Institute of Steel Construction, 1942.

New Jersey preeminence in the field of bridge design and construction is further testified to by the Public Road Administration's appointment of the Bridge Engineer to the committee of four that prepared the 1941 standard bridge specifications of the American Association of State Highway Officials. These specifications embody the latest developments in bridge design and construction.

The following tables represent an inventory made by the Statewide Highway Planning Survey of highway bridges over 20-foot span and those of a 5 to 20-foot span, classified according to clear width and condition, on the rural and urban sections of the State Highway System.[723] They show that the bridges on the system are, with few exceptions, in excellent condition, none being rated as "poor." Of the 1,003 bridges, 950 are over 27 feet in clear width—an unusually large proportion. Only fifteen are under twenty feet in clear width.

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[723] The bridges were those open to travel on January 1, 1940. *Road Inventory Procedure Report and Preliminary Tables, op. cit.,* Tables R 1-6-B (rural and urban). These tables show the type and predominating material of the main structure.

NEW JERSEY STATE HIGHWAY SYSTEM

Number of Highway Bridges over 20-foot Span Classified by Clear Width and Condition

	Under 16'	*16'-19'*	*20'-26'*	*27' and over*	*All widths*
Rural					
Good condition	4	4	22	356	386
Fair condition	1	2	1	4	8
Poor condition	..	..	..	...	...
Total	5	6	23	360	394
Urban					
Good condition	..	2	2	208	212
Fair condition	..	..	..	1	1
Poor condition	..	..	..	..	..
Total	..	2	2	209	213
Grand Totals	5	8	25	569	607

Number of Highway Bridges 5-foot to 20-foot Span Classified by Clear Width and Condition

	Under 16'	*16'-19'*	*20'-26'*	*27' and over*	*All widths*
Rural					
Good condition	2	..	4	316	322
Fair condition	..	..	3	2	5
Poor condition	..	..	..	..	..
Total	2	..	7	318	327
Urban					
Good condition	..	..	6	62	68
Fair condition	..	..	..	1	1
Poor condition	..	..	..	..	..
Total	..	..	6	63	69
Grand Totals	2	..	13	381	396

Any span under five feet is considered a culvert and is handled by the road engineers rather than by the bridge engineers.

Contracts:

By statute, all work of construction or building of unimproved roads and of extensive repairs to improved roads taken over as State highways must be done by contract or by labor of inmates of State institutions.[724] The latter method was discontinued in the early 1920's.

Prior to advertising for bids for construction or reconstruction, the Commissioner must serve notice on the owners or tenants of the lands abutting the proposed highway, and upon any public utility using it, that subsequent to the construction of the surface pavement, no openings will be permitted for a period of five years thereafter without his consent. Personal service is made wherever possible; otherwise a copy is attached to the premises and signs posted at both ends of the proposed project.[725]

Upon the completion and checking of the estimates, plans and specifications of a project, the Construction Division sends the Chief Clerk a statement which includes a brief description of the project, the estimated quantities of principal materials, and other data essential to the preparation of the advertisement to bid. The Chief Clerk makes up the advertisement from this information. It includes a brief description of the project and its location, the estimated quantities of the chief materials, and the time and place where bids will be received. The advertisement states that plans and specifications are on file and may be examined at the office of the State Highway Department in Trenton. A deposit of ten dollars is required for all plans furnished by the Chief Clerk, and is refunded upon their return in proper condition. Bidders are informed that they must qualify under the prequalification law and the regulations of the Department, and submit a revised statement of their financial condition and their plant and equipment with their bids.

Bids must be made on standard proposal forms provided by the Department and in the manner designated in the standard State highway specifications, and be enclosed in a sealed specially addressed envelope bearing the name and address of the bidder and the project

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[724] *R. S. 27:7-25.*

[725] *R. S. 27:7-26* to *28.*

upon the outside. Each bid must be accompanied by a certified check drawn to the order of the State Treasurer for not less than ten per cent. of the amount of the bid, provided that the check shall not be less than $500 nor more than $20,000.[726] Where the project advertised is a Federal Aid project, the advertisement contains a notice that the work is to be performed in accordance with the regulations of the Public Roads Administration, which require that labor must be employed from lists furnished by the State Employment Service. In such cases, the minimum wage to be paid to various grades of labor is set forth.

The Commissioner has the power to divide the work to be done into two or more contracts, but all bids for the whole or as subdivided must be submitted at the same time. The advertisement must be published at least three weeks before the contract may be awarded, and inserted at least once a week in each of two newspapers printed in the county or counties where the road is located, and in one other newspaper in Trenton.[727]

The bids are opened at the time and place indicated in the advertisement, in the presence of the Highway Commissioner, Highway Engineer, General Solicitor, Contractors' Classification Officer, and the Construction Engineer or his representative. The Bridge Engineer is present where a bridge project is involved, and the local representative of the Public Roads Administration in the case of a Federal Aid project. The Assistant Chief Clerk tabulates the unit prices and total bid as each proposal is opened.

The Commissioner may reject any or all bids not in accordance with the advertisement of specifications or for any other irregularity, or if the price for the work or the materials is excessively above the estimated cost, or for any other cause. The Highway Engineer is required to prepare a list of the bids, including any rejected, and the cause therefor. By law, the Commissioner must award the contract to the lowest responsible bidder or reject the bids within one month after the bids are received, and all proposal checks delivered with the bids, except the two lowest responsible bids, must be returned within three

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[726] *R. S. 27:7-31.* The check is held as security to insure that the successful bidder will deliver the contract, properly executed and secured by a satisfactory bond, within ten days after the ratification of the award. Upon his failure to provide a satisfactory bond, the check is forfeited to the State as liquidated damages. *R. S. 27:7-32.*

[727] *R. S. 27:7-29.*

days thereafter.[728] The Commissioner sometimes announces the award of the contract after the bids have been opened and tabulated, or makes the award by order or at a regular meeting within the time limited by law.

The contract and bond are prepared in the office of the Chief Clerk. After being executed by the successful bidder they are ready for the Commissioner's signature. The Highway Engineer in the meantime approves the specifications, the Chief Auditor and Accountant approves the contract as to funds,[729] and the Highway Engineer signs the report on bids opened and his recommendation of the award of the contract. The General Solicitor approves the contract and bond as to form and execution.

The completed contract is bound together under one cover. This includes the description of the project, the supplemental specifications, and the proposal form signed by the contractor, which also bears the Highway Engineer's approval of specifications and the Chief Auditor and Accountant's approval as to funds (all of these are prepared by the Construction Division for inclusion in the completed contract); the report on bids opened and the recommendation of the award of the contract by the Highway Engineer; the Chief Clerk's affidavit as to publication and notice and his certification of the award of the contract; the contract and bond, and the General Solicitor's approval as to form and execution. The original and a copy go to the Chief Auditor and Accountant. He forwards the copy to the State Comptroller for his files. Copies also go to the contractor, Construction Engineer, and the Bridge Engineer, in the case of a bridge contract.

Where the contract involves a Federal Aid project, it must be approved by the Public Roads Administration and several copies are provided for its use.

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[728] *R. S. 27:7-30* and *33.*

[729] At the same time the Chief Auditor and Accountant sets up an amount equal to the contract, plus five per cent. for contingencies. This increment has been found more than adequate to cover extra costs under construction contracts. In fact, the Chief Auditor and Accountant is able to report annual "savings" on completed contracts. Thus, in 1941, there were savings of $333,357.32 on road construction contracts, $133,026.88 on bridge and grade crossing contracts, and $1,300 on detour roads. *New Jersey State Highway Department Annual Report, 1941,* report of the Auditing and Accounting Bureau.

Specifications used by the Department are such that the structural integrity of the completed project is assured if the specifications are followed. The general specifications have been revised from time to time. The Department has thus been able to keep abreast of the rapid developments in highway construction. It may be said generally that these specifications represent the best practice in the field of highway engineering. New Jersey specifications have long ranked among the finest in the country. The most recent revisions are those made in 1935 and 1941. The Designing Engineer connected with the office of the Construction Engineer was in charge of the 1941 revision.[730] The Laboratory Division was not given the opportunity of thoroughly reviewing the specifications before they became effective, although the head of the Laboratory and his chief assistants would ordinarily and logically be the persons consulted.

It is recommended that in the future any proposed change in specifications be taken up in conference with established highway contractors in order to obtain their views and criticisms.[731] The specifications should also be reviewed by the head of the proposed Research and Testing Bureau, who will consult with the engineers of the Construction Bureau. New specifications should, of course, be approved by the Highway Commissioner before becoming effective, as at present.

The specifications used in connection with construction contracts are drawn so that fair and reasonable competition is encouraged.[732] The care with which specifications are prepared undoubtedly has resulted in the Department receiving lower bids than would otherwise be the case. Experience has shown that competitive bids are lower where specifications are free from provisions that may lead to misunderstanding and controversy, or that may be invoked to compel the performance of the work in a way that materially increases the contractor's cost over the amount normally anticipated.

The amount bid by a contractor is also influenced by the accuracy of the estimates of quantities made by the highway engineers. De-

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[730] See *p. 71, supra.*

[731] *Cf.,* National Institute of Public Administration report, *op. cit., p. 299.*

[732] *R. S. 27: 2-5* requires that the specifications on State construction work be drawn so that competition is in every way fair and reasonable. The law permits the Department to call for more than one type of material and construction, and to ask for bids in the alternative. *R. S. 27:2-2.*

partment estimates have generally been fairly close. The suggestion has been made that somewhat keener bidding would be encouraged if the construction contract fixed a maximum percentage of increase or decrease that might be made by the Department in the estimated or bid quantities without adjusting the unit prices. Generally, public works contracts use from ten to twenty per cent. as the maximum variation.[733]

Neither the construction contract nor the Department specifications contain any provision for the arbitration of contractors' claims. In most cases, extra work is taken care of by change orders, and situations not within the contemplation of the original contract, by supplemental agreements.[734] However, a contractor occasionally has a claim which was not taken care of in this manner. Under the present system, he must go along with the Commissioner's decision or take the Department to court.[735]

Provisions for arbitration are contained in the contracts of other jurisdictions. They have been found good for all concerned and give the contractor a feeling of security. The inclusion of an arbitration provision may result in some reduction in the amounts bid. More important than this, however, is the fact that it stabilizes contractual relations. It is recommended that the Legislature authorize the Department to include an arbitration clause in highway contracts.[736]

Although the engineers of the Construction Division are unusually accurate in most details connected with construction contracts, it would appear that their cost estimates in many cases exceed the contract price as well as the final adjusted contract price. The cause for this is not clear, unless it is the practice followed of estimating cost on

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[733] *Cf.*, Agg and Brindley, *op. cit., p. 245;* National Institute of Public Administration report, *op. cit., p. 298.*

[734] See *pp. 416* and *417, post.*

[735] A rather extraordinary practice was that which occurred recently when four contractors presented their claims to a sub-committee of the 1942 Joint Appropriations Committee. The claims were allowed and included in the total appropriation made to the Department. The sub-committee, therefore, sat as a sort of informal Court of Claims.

[736] *Cf.*, Agg and Brindley, *op. cit., p. 246;* National Institute of Public Administration report, *op. cit., p. 299.* A broader consideration of this problem indicates that eventually there should be a Court of Claims similar to that of the Federal Government, before which those having claims against the State may present their case.

the basis of experience in similar situations on other contracts. A theoretical rather than a practical figure is thus arrived at, with the result that the engineer's estimate of cost is out of range with the final figure. No harm comes of this, however.

The general opinion is that bids on construction contracts have almost always been very favorable, especially during the recent depression years when competition among contractors was unusually keen. Because of the prequalification requirements, the Department has had practically no trouble with contractors getting into difficulties because their bids were too low to allow of a profit.

The chief duty of the Construction District Engineers is the administration and inspection of contract construction work. This applies to new construction as well as to reconstruction and extraordinary repair of roads and bridges on the State system. It also includes construction work off the State system financed by Federal Aid funds,—grade crossing elimination work and construction of roads and bridges on secondary roads. The District Engineers also coordinate construction projects with the State WPA office.

The Construction District Engineer and Bridge Engineer (in the case of a bridge project) come into the picture as soon as the contract is advertised.[737] They arrange to find out as soon as possible who the successful bidder is so that engineering personnel can be assigned to the job. The practice of the Department has been to select the more experienced and able Resident Engineers for the more difficult jobs. The contractor is contacted to find out when the work will begin, to inform him who the Resident Engineer will be and to arrange for a field office. The Construction District Engineer and the Resident Engineer confer with the contractor to arrange for all the details. The contractor is required to fill out a questionnaire showing the source of supply of the various materials that will be used on the contract. This questionnaire is made out in triplicate, copies going to the District Engineer, Bridge Engineer and Laboratory. The Laboratory inspects the materials at the source in order to approve or disapprove of their use in the construction work.

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[737] The description of construction work which follows refers to the procedure used in the case of road building. Essentially the same procedure is followed by the Bridge Engineer, Resident Bridge Engineers, Bridge Inspectors, Auditor, and the rest of the Bridge Bureau personnel in the construction of bridges.

The Survey and Plans Bureau field forces then set the stakes and make measurements for the contractors, and the work begins.[738] The Construction District Engineer administers and inspects the construction work in the field from the time the contract is let until the work is completed.

The Resident Engineer in charge sends in a duplicate report to the district office at the beginning of each project, showing the location and phone number of his own office and of the field office at the site, and the names of the contractor and his superintendent. During the entire period of the contract, the Head Clerk in the office of the Construction Engineer keeps in touch with the work to see that it goes forward as quickly as possible.[739] He reviews the weekly reports coming in from the field and if there is any lag or delay, he checks the situation to find out if the work can be expedited.

The organization and duties of the field forces on construction work have been described in the section dealing with the Construction Division in Chapter II.[740] Highway and Bridge Inspectors make daily reports of the progress made on their construction projects showing, among other things, the nature and amount of the work done, and any samples of materials forwarded to the Laboratory that day, including test specimens of concrete and samples of bituminous pavement or mixtures. Copies are sent to the Construction District (or Bridge Bureau) offices and, where samples of materials are involved, to the Laboratory. A daily report is also sent in from the field covering bituminous materials received by truck. This daily report must be accompanied by the delivery slips covering the several deliveries. Copies are sent to the Construction District office and the Laboratory.

The Inspector in charge of the concrete batching plant supplying the job also prepares a daily report showing, among other things, the concrete construction for the day, the square yards of pavement laid, the number of bags of cement used, the total amount of cement used

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[738] The cost of this "construction engineering" is charged to the respective jobs by the Auditor connected with the office of the Construction Engineer. See *p. 70, supra.*

[739] See *p. 70, supra.*

[740] See *pp. 80* to *84, supra,* for the work of the Construction District Engineer and his forces, and *pp. 84* to *86, supra,* for that of the Bridge Bureau.

to date, the amount of cement, sand and stone (or gravel) received, and field analyses of the sand and stone (or gravel). Copies of this report are similarly forwarded to the Construction District office and to the Laboratory. In the case of bridge work, a report is sent to the Bridge Engineer showing the pile record for the bridge.

The Resident Engineer keeps in touch with the various construction jobs assigned to him to see that the work is progressing satisfactorily. The Highway Inspectors under him administer and inspect the particular project to which they are assigned. They check on drainage, fills, and the construction of the sub-base. They also keep a careful check on the concrete mixer while the paving is going on, the placing of the reinforcement, the setting of the joints and the finish of the pavement. They also check on the curing of the pavement after it has been laid. In general, they are responsible for the quality of the workmanship and for seeing to it that all the requirements of the specifications are met by the contractor.

The Resident Engineers in charge of construction projects are required to draw up a weekly cement report showing the total number of square yards of pavement for the week and the total laid to date. This report also shows the amount of cement received, on hand, used, and theoretically required to date, and the excess or shortgage on the pavement and structure. Copies are sent direct to the Construction District office, the Laboratory, and the Construction Engineer. Resident Engineers also prepare slab-core records, showing the road station, the slab numbers from which the cores were cut, the date the pavement was laid, and other information relating to the cement and water used, temperature, etc. He sends copies of this report to the Construction District office and the Laboratory.

In addition, where the job involves a railroad or utility company, the Resident Engineer sends in a report of the labor employed, equipment and materials used, supplies received, and the progress on the job. This is signed by him and the field representative of the company, and is for the purpose of checking invoices upon presentation. The form is used on work being performed by the company in which the State is financially interested on its own account or on account of Federal participation.

A report is prepared weekly by each Resident Highway Engineer showing progress made on the construction jobs for which he is responsible. These reports are sent to the respective Construction District Engineers. They, in turn, make up weekly progress reports covering all work under their jurisdiction. This report is sent in triplicate to the Construction Engineer, who provides a copy for the general files and the Highway Engineer. The Bridge Engineer prepares a similar weekly progress report.

The contractor is paid monthly for work performed and material furnished in the construction of a project, and in certain cases semi-monthly.[741] An estimate certificate is prepared in the office of the Construction District Engineer from information supplied by the Resident Engineer in charge of the project. It is then signed by the one who made the estimates on the job, and by the Resident Engineer or Highway Inspector in charge of the particular project. The certificate is audited by the Auditor in the Construction District office, signed by the Construction District Engineer, and forwarded to the Chief Auditor and Accountant for final audit and his signature. It is then signed by the Construction Engineer and the State Highway Engineer along with the invoice covering the amount of the payment and returned to the Chief Auditor and Accountant for payment. In the case of semi-final and final estimates, the approval and signature of the Highway Commissioner is also required.

The estimate certificate is made up in quintuplicate. At the time when it is audited in the Construction District office, the Auditor sends one of the copies of the contractor along with the invoice form already filled out. A copy is also sent to the Resident Engineer. The contractor signs the invoice and sends it direct to the Chief Auditor and Accountant. Generally, only the original and two copies of the estimate certificate are submitted for the approval of the Construction Engineer, Highway Engineer, and, in the case of semi-final and final estimates, the Highway Commissioner. The original finally goes to the State Comptroller with the invoice for payment, the duplicate being retained by the Chief Auditor and Accountant for his files. The triplicate signed copy is returned to the Construction District office.

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[741] *R. S. 27:7-34* permits of this arrangement in highway contracts.

Additional copies are made where others are involved, such as railroad companies, political subdivisions of the State, or the Public Roads Administration in the case of a project partly or wholly financed by Federal Aid funds. These copies are furnished by the Construction District office. Where road and bridge items occur in the same contract, separate estimates are prepared by the Bridge Bureau for the bridge work and by the Construction District office for the road work, and each furnishes the other with a copy for its files.

In making up the estimate certificate, only ninety per cent. of the estimate for work done and material used in the project is allowed. In addition, the contractor is allowed eighty per cent. of the material on the ground.[742] The ten per cent. deducted from each estimate is retained until the final estimate and payment, when the contractor gives the Department a bond in the amount of five per cent. of the adjusted contract price.[743] The funds withheld are then released to him.

Changes invariably occur in the course of construction work. These changes may involve supplementary work not in the contemplation of the parties when the original contract was signed, extra work, or a reduction in work. In any event, a change of plan form is made up in the Construction District office recommending approval of a change in the original plans. This form is signed by the Resident Engineer, approved by the Construction District Engineer and then by the Construction Engineer, who in turn presents it to the Highway Engineer for final approval. This form is prepared in five copies. The original and last copies are retained by the Construction Engi-

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[742] *R. S. 27:7-34* allows partial payments amounting to 90% of the value of the materials in place and of the work done. Highway contracts may also provide for partial payments on all materials placed along or upon the site which are suitable for the use and execution of the contract, provided the contractor furnishes releases of liens for all materials furnished at the time each estimate of work is submitted for payment. These partial payments equal 80% of the value of the material on the ground.

[743] *R. S. 27:7-35* provides that when a contractor has completed his contract for work done on the State highway, no part of the contract price shall be retained, but he shall enter into a bond to the Highway Commissioner in a sum amounting to five per cent. of the contract price, with a surety company authorized to do business in the State and approved by the Attorney-General, as surety. The policy remains in force for one year and provides that the contractor can be held responsible for poor workmanship done or poor materials furnished under the contract.

neer, the duplicate submitted to the Chief Auditor and Accountant for his records, and the triplicate and quadruplicate returned to the Construction District office where one copy is sent to the Resident Engineer in charge of the project as his authorization for ordering the contractor to proceed with the work. In the case of Federal Aid projects, six preliminary copies of the change of plan order are prepared, five being sent to the Public Roads Administration. It returns one copy approved, and the Construction District office then proceeds to submit a regular set in the manner here described.

In the case of supplementary work, the Construction District office prepares a supplemental agreement after the change of plan order has been approved. The agreement is recommended for approval by the Construction District Engineer, audited by the Construction District Auditor and subsequently by the Chief Auditor and Accountant. Before passing to the Highway Commissioner for final approval and signature, it is approved by the Construction Engineer and the Highway Engineer. This form, too, is prepared in quintuplicate, the original going to the Chief Auditor and Accountant, the duplicate to the contractor, a copy to the Construction District office and another to the Resident Engineer. The fifth unsigned copy is retained by the Construction District office at the very start. As in the case of change of plan orders, copies of supplemental agreements are likewise furnished to all parties involved in the construction project.

Extra work orders and reduction work orders follow exactly the same procedure as supplemental agreements, except that they are not signed by the Highway Commissioner. The approval of the Highway Engineer is the last signature required.

Upon the completion of a job, the Resident Engineer in charge notifies the Construction District Engineer of that fact in writing. The District Engineer then makes a final inspection and, after checking the strength of concrete and other final reports relating to the job, signs an acceptance form advising the Construction Engineer that the contract has been completed in accordance with the plans and specifications and recommending the acceptance of the project by the Commissioner. The Superintendent of Maintenance also makes a final inspection to determine whether the project should be taken over by

his Division for maintenance, and if he approves he signs the acceptance form. The Construction Engineer then adds his signature of approval, and the Highway Engineer also signs. The Chief Auditor and Accountant notes on the form the fact that the contractor has posted his bond in the amount of five per cent. of the adjusted contract price.

The Chief Clerk presents the acceptance form, together with the final estimate certificate and the final audit record, prepared by the Chief Auditor and Accountant, to the Commissioner. Attached to the final audit record are the Laboratory report, the contractor's bond, and a notation that the road "as built" has been checked by the Survey and Plans Bureau. The Commissioner then signs the acceptance form and the final estimate, and arrangements go forward to pay the contractor the balance due him.

As soon as the project has been accepted, the Construction Engineer notifies the Superintendent of Maintenance that his Division is to take over the road or bridge for maintenance from then on. The original of the acceptance form, which has been prepared in quadruplicate, is retained in the files of the Chief Auditor and Accountant, copies going to the Superintendent of Maintenance, the Construction District or Bridge Bureau office, and the general files.

The Highway Commissioner may permit a contractor to sublet a part or parts of the original contract. The general contractor makes a written request for this permission to the Construction District office, and the prospective sub-contractor executes a form in duplicate in which he agrees that he will be bound by all the provisions of the contract and make no claim whatsoever against the Department under the terms of his sub-contract. The request of the general contractor is transmitted to the Commissioner through the Construction Engineer and he approves of the subletting by taking formal action at a meeting. The Chief Clerk then notifies the general contractor of the approval and sends a copy to the sub-contractor with a form of bond covering the work in question, to be executed and returned by him.

The Highway Commissioner may also extend the time for the performance of a contract where circumstances warrant. The contract form provides that a portion of the work may be deferred with the

approval of the Commission, and in such case the sum withheld from the contractor may not be less than twenty-five per cent. of the value of the work to be done.[744]

The Department has had to resort to the enforcement of the contractor's bond in relatively few cases because of the care with which the engineering forces administer and inspect the contract. Materials and workmanship are rigidly inspected, with the result that the roads and bridges built under the supervision of the Construction Division are of an unusually high type, both from the point of view of durability and appearance. The highways of New Jersey show every indication of lasting well beyond the normal life of such improvements. If reconstruction becomes necessary at an earlier date, it will be because the road or bridge is no longer adequate in the face of traffic conditions encountered or the development of the area.

Construction Work in Progress:

Schedule 7 on page 421 indicates the continuing volume of construction work carried on by the Department in the period from 1931 to 1941, inclusive. It is to be noted in connection with these figures, that work on a particular project was not necessarily carried on during the entire year, nor commenced and completed during any one year. Most projects start in one year and are finished in another, and the mileages and number of bridges are included in the totals for each year during which some work on a project, large or small in amount, was under way for all or any portion of the year.

It will immediately be observed that the amount of work in progress during recent years is not as great as in the period immediately following the adoption of the 1927 revised State system. The number of construction contracts, volume of work, and the actual value of the work done (as may be seen from the schedule which follows), slumped during the depression period. Volume has gradually picked up during the past four years.

The figures in Schedule 7 should be considered together with those included in the following schedule, showing the total value of the work

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[744] *R. S. 27:7-34.*

performed in each of the years in question, and the engineering and inspection costs for such work:[745]

Value of Work Performed and Engineering and Inspection Costs—1931-1941

Year	*Value of work performed*	*Engineering and inspection costs*	*Percentage*
1931	$23,788,268.28	$1,851,031.66	7.78
1932	16,124,287.06	1,662,155.29	10.31
1933	7,339,129.10	1,067,947.14	14.55
1934	6,696,858.80	742,417.20	11.09
1935	4,550,728.21	795,942.15	17.49
1936	9,926,325.87	888,302.30	8.95
1937	5,827,073.69	1,005,164.52	17.25
1938	8,145,386.22	1,128,268.80	13.85
1939	9,735,650.47	1,123,941.16	11.54
1940	9,957,043.74	1,154,857.00	11.60
1941	8,624,988.75	1,190,891.76	13.81

Engineers in the Construction Division used to speak of six and eight per cent. overhead. The reports of the Construction Division once carried percentage figures for engineering, inspection and administration.[746] They no longer do so.

To the percentages in the last column of the above schedule should be added an extra 1.2% to 1.5% representing that part of the general administration and laboratory costs which may properly be charged against the work of Construction Division. Overhead during the past

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[745] *Source*: *New Jersey State Highway Department Annual Reports, 1931 to 1941,* inclusive, reports of the Construction Engineer and of the Auditing and Accounting Bureau.

[746] It seems that the last annual report mentioning this figure was that for 1928, when engineering, inspection and testing costs were 5.99% and administration 1.54%. *New Jersey Highway Department Annual Report, 1928;* report of the State Highway Engineer, *p. 3.* The Abell Commission report, *op. cit., p. 290,* which appeared in 1930, spoke of 7% for engineering, inspection and testing, and an additional 1% for general administration.

Schedule 7

NEW JERSEY STATE HIGHWAY DEPARTMENT

CONSTRUCTION DIVISION

Construction Work In Progress, 1931-1941

	Mileages and types of pavement							*Number of*		
									Grade separations	
Year	*Granite block*	*Brick*	*Concrete*	*Bituminous concrete or asphalt*	*Gravel or macadam*	*Grading*	*Total mileage*	*Stream bridges (over 5′ span)*	*Rail-roads*	*High-ways*
1931	0.541		205.698	6.227	8.203	5.001	225.670	132	32	67
1932	0.653		157.039	7.061	3.209	15.054	183.016	100	34	53
1933		0.753	78.891	6.175	0.961	13.038	99.818	40	16	11
1934		0.753	83.476	4.147		0.250	88.626	40	20	9
1935			100.246	2.427	4.970	10.074	117.717	52	14	14
1936			117.778	4.336	20,906	12.855	155.875	54	27	20
1937			95.193	4.319	18.911	8.746	127.169	46	31	28
1938			78.230	6.403	2.278	31.532	118.443	38	15	20
1939			76.843	8.256	16.858	51.608	153.565	60	15	18
1940			91.209	7.386	18.520	60.317	177.432	53	11	20
1941			103.548	15.759	22.043	44.217	185.567	62	10	17

Source: New Jersey State Highway Department

decade has therefore averaged almost fifteen per cent., the average under the Highway Commissioner being almost two per cent. more than what it was under the Highway Commission during the years 1932 to 1934, inclusive.

There may be explanations for some years. For example, the delay of several months in 1933 before a full four-man Commission was available for the letting of contracts, and the similar hiatus in 1935 when new construction came to a standstill pending the change-over to the single Commissioner form of highway administration, considerably reduced the volume of construction work in progress. The payrolls of the highway forces continued, however. The result was a high percentage of overhead.

Some of the increased overhead may also be explained by the greater amount of work required in connection with the design and construction of the modern type of road. The lack of any long-range construction plan may also be a partial explanation. Without such a plan the Construction Division, and particularly the Survey and Plans Bureau forces, find that a project which was ready for execution is not on the annual program. Surveys, plans, estimates—all go back into the file. This has happened again and again, so that some of the work has to be done over several times before the project is actually carried out. This is a needlessly wasteful situation that could be eliminated through a highway planning program.

All these explanatory factors, however, do not justify the overhead figure of thirteen to better than fifteen per cent. (including administration and laboratory costs), since 1938. A glance at the schedule will show that engineering and inspection costs have increased steadily since 1934, rising from $742,417 to $1,190,891. The increase in the first two or three years (1934-5-6) is perhaps understandable. The Construction Division had to undo the work of the Foran Commission which cut personnel indiscriminately with small regard for its effect on the efficiency of the Department. The increasing costs since then do not have the benefit of such an explanation.

The fact is that overhead has mounted steadily, and in no direct proportion to the amount of construction work in progress or the dollar value of the work actually performed. This indicates that little attempt was made to reduce costs to a minimum whenever possible.

The answer must lie in the fact that an excess of engineering and inspection personnel was retained when the work could readily have been carried on by an essential nucleus of the departmental forces. Work was spread thin when construction volume ran low.

There is unquestionably room for a great deal of improvement in the overhead figures for construction work. It is recommended that a study be undertaken at once into the factors that have made for the fifteen per cent. average overhead cost in the period under consideration and the manner in which this figure may be reduced materially.

Highway Costs:

Various attempts have been made in the past to compare the cost of New Jersey roads with that in other states.[747] Any such comparison is, in the nature of things, impractical and unfair. The only way in which a fair comparison can be made is with identical designs, identical conditions as to costs of labor and materials, lengths of haul, climatic conditions, and other factors that must necessarily be taken into consideration. In attempting to use any construction cost figures for comparative purposes, a detailed analysis must be made and proper adjustment allowed for necessary differences in design or construction features. One of the factors having the most influence on costs is the traffic which the highways have to carry. By virtue of its geographical position, New Jersey is burdened by a great volume of interstate traffic. This traffic uses the highways of the State in transit from one State to another, or comes into the State for business, industrial, or recreational purposes.

The Department has prepared figures from time to time showing representative road construction costs, exclusive of bridges and right-

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[747] See, for example, the Princeton Survey report, *op. cit., 182* to *184,* and Tables II and III. The comparisons made in that report were properly criticized by the Department officials. (See *Statement by the State Highway Commission on the Princeton report, op. cit.*), and others.

The Public Roads Administration of the Federal Works Agency has three indexes of highway construction costs: (1) a price trend index, based on the varying unit costs of a composite mile composed of the same quantities and materials for each year; (2) a usage trend index that shows the variations in quantities of excavation, surfacing and structures actually placed in the composite mile constructed each year; and (3) a cost trend index that is based on the actual cost of the composite mile constructed each year. None can be used as a fair basis for comparison.

For a general discussion of the economics of highway improvement, see Bateman, *op. cit., chapter XV.*

of-way, on the State Highway System. The latest figures show that the general average for a representative single highway is $61,000 per mile, and for a representative dual highway, $126,700. The following tabulation shows the average cost of representative highways, both single and dual, in the northern, central and southern sections of the State:[748]

Representative Road Construction Costs
(Exclusive of Bridges and Right-of-Way)

Type of road and section	*Miles*	*Cost*	*Average cost per mile*
Average Single Highways			
20′ normal width of concrete			
40′ general graded width			
Northern section	66.667	$ 5,405,309.58	$ 81,100.
Central section	62.925	3,607,685.02	57,330.
Southern section	102.218	5,142,607.36	50,300.
Totals and general average for single highway	231.810	$14,155,601.96	$ 61,000.
Average Dual Highways			
40′ minimum width of concrete			
100′ average graded width			
Northern section	38.971	$ 5,202,987.38	$133,500.
Central section	13.388	1,646,855.69	123,000.
Southern section	19.663	2,277,288.81	115,800.
Totals and general average for dual highway	72.022	$ 9,127,131.88	$126,700.

It is to be noted that highways in the metropolitan areas and express highways, as well as highways which presented unusual conditions or unusual traffic problems, have not been included in this tabulation. They cannot be considered as representative, nor can an intelligent average be given for the construction of such highways.

[748] *Source*: New Jersey State Highway Department, December, 1941.

North, central and south Jersey are considered to be, generally, the territories divided by lines extending from Frenchtown to Woodbridge, and from Burlington to Toms River.

Since 1927, the single roadways paved twenty feet wide in the northern section of the State have been those highways "bucking" the ridges, such as Routes 30, 31 and S-31. This explains the high average cost per mile for single highways in that area. Roads paralleling the ridges, such as Route 8, can be built at no greater cost than those in central Jersey and some parts of south Jersey. However, the roads paralleling the ridges have in most cases necessarily been designed for greater widths than twenty feet since 1927.

The relatively low cost per mile for representative dual highways in the northern area is because those roads have been constructed through the less difficult terrain. It is further to be noted that the representative cost for dual highway construction in the southern area is relatively high. This is because of the fact that the dual highways in south Jersey have been constructed and are needed in sections where difficult construction problems are presented, such as Route S-41, from Route 38 to Route 43, which traverses the heavy marl area centering on Marlton.

The average cost per mile of road varies from year to year because of variations in the cost of materials and labor entering into such construction, and changes in design features, types and quantities of materials actually used.[749] Whatever effect lower prices of constituent units in construction work may have had in turning the cost trend downward in recent years has been more than offset by changing traffic conditions which have required wider surfaces, longer sight distances, flatter curves, and other features conducive to safety with increased speed.[750]

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[749] "Indexes of Highway Construction Costs," reported by the Division of Management, Bureau of Public Roads, *Public Roads,* June 1936, *p. 83.*

[750] The average cost per mile of all hard surfaced roads laid, exclusive of bridges, was reported as $79,000 in 1923, $65,000 in 1924, and $63,420 in 1925. *New Jersey State Highway Department Annual Report, 1925,* report of the State Highway Engineer on the work of the Construction Division, *p. 2.* The next reference to cost is found in the report of the Construction Engineer for 1931 (*p. 2*), who stated that the average cost per mile of construction projects with 9-inch reinforced concrete pavement, 20 feet wide with 10-foot shoulders, graded 40 feet and in some cases 50 feet wide, for all roads except those in the metropolitan areas and the so-called super-highways which were not representative, was $52,250. The average cost per mile of bridge work on these roads was $10,000 making a total of $62,250. He compared this cost with that for the year 1929 for similar roads having only an 8-inch pavement thickness, the figures being $76,279 per mile of road and $6,528 per mile for bridge work, or a total of $82,807. *New Jersey State Highway Department Annual Report, 1931.* No cost figures have been given for subsequent years.

The average cost per mile of road in New Jersey is much higher than in most States. This is because of the higher cost of right-of-way (due to the relatively high proportion of metropolitan area found in the State), and the modern standards of design followed in the construction of the main system. No comparison has been made of the cost per square yard of paving or cubic yard of concrete. In all probability this cost would be about the same as elsewhere, yard for yard. The increased cost per mile is almost entirely due to the features mentioned. Aside from the prices paid for right-of-way and excessive overhead construction costs, it is felt that New Jersey is receiving full value for the money spent on its highway system.

W. P. A. Projects:

W.P.A. construction projects on the State Highway System, known as "Primary" projects, are handled by a special W.P.A. Bureau set up in 1938 under the W.P.A. Coordinator.[751] He is responsible for promoting and coordinating these projects, as well as the "Betterment" and "Institutional" projects of the Maintenance Division and the "County," "Municipal" and "Dirt Road" projects off the State system.

The W.P.A. road program was inaugurated early in 1938 as one means of relieving the serious unemployment problem. A $25,000,000 program was undertaken, the share of the State as sponsor being $5,000,000, or twenty per cent., to be expended for materials, supplies, equipment and engineering services.[752] The purpose of W.P.A. projects was, of course, to use a maximum amount of labor. The ideal project was one that could be worked at a cost of thirty per cent. for material and equipment and seventy per cent. for labor, which is the reverse of the percentages on a normal State highway program.[753]

"Primary" projects that have been found adaptable to the W.P.A. program are: clearing the right-of-way, grading and drainage of new

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[751] See *pp. 87* and *88* for the organization and duties of the W. P. A. Bureau.

[752] *Double Duty Roads,* published by the Works Progress Administration of New Jersey (Newark, 1939); *New Jersey State Highway Department Annual Report, 1938,* report of the W. P. A. Coordinator. Enabling legislation was immediately passed (*P. L. 1938, c. 10*) authorizing State sponsorship of W. P. A. road and bridge projects and empowering the Highway Commissioner to make application to the Works Progress Administration for funds and to enter into contracts with the Federal Government.

[753] *New Jersey State Highway Department Annual Report, 1938,* report of the W. P. A. Coordinator, *p. 3.*

right-of-way construction of approaches, top-soiling, fill, and similar jobs requiring a proportionately large amount of hand labor.

After the Construction Engineer has reviewed the annual program of the Department to determine what projects can be fitted into the W.P.A. program, the W.P.A. Coordinator submits the projects to the State W.P.A. office, together with engineering estimates, plans, drawings and sketches. It prepares the regular W.P.A. proposal and application form setting out various data concerning the project, particularly those relating to labor and superintendence, equipment, material, supplies and other non-labor costs, sponsorship and source of funds, in the greatest detail. This must be approved by the Works Progress Administration after the Highway Engineer (officially designated as the sponsor's agent for this purpose) has regularly approved the project and signed the "sponsor's request for project authorization and sponsor's agreement" which is part of the form.

After the Federal agency has approved the "Primary" project it is put into operation. Almost all "Primary" projects have been handled by contract, the procedure of letting the contract being the same as for a regular construction contract except that the W.P.A. is an interested party. The letting of contracts, with the Department furnishing W.P.A. labor to the contractor, was inaugurated by the W.P.A. Coordinator and has worked out very satisfactorily. The contractor is, in fact, the agent of the State as sponsor. The contract method enables the State to get the advantage of competitive bidding in obtaining the supervisory personnel, materials and equipment that it must contribute as its share of the project. Furthermore, it results in the State receiving the benefits of the contractor's organization and experience at the same time that it offers him an opportunity to obtain work.[754]

The contract is administered and inspected by the Construction Division forces, and dealt with in all respects like a regular construction contract. The W.P.A. Coordinator's office keeps in touch with "Primary" projects at all times.

Three W.P.A. programs have been available since 1938: (1) the "1014 program," where the Federal Government contributed $20,000,000,

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[754] *Procedure Covering the W. P. A.-State Highway Program,* issued by the Works Progress Administration of New Jersey, multigraph (Newark, 1939).

the State's share as sponsor being twenty per cent. This program is now completed. (2) The "1016 program," where the Federal Government's share was $17,645,541, the State's share of the total originally being twenty per cent., later increased to twenty-five per cent. This account closed October 1, 1941, with about $14,000,000 spent. (3) The "1027 program," with $10,189,656 of Federal funds available, the States share as sponsor being twenty-five per cent. of the total. This account became active after October 1, 1941, all projects closed out on the "1016 program" being transferred to it.

The share of the State as sponsor on W. P. A. Projects from the time the program began on March 15, 1938, to December 31, 1941, follows:[755]

Expenditures and Commitments, W. P. A. Projects, 1938-1941

Year	*Transferred to other accounts*	*Expenditures and Commitments* — *Construction Roads and Bridges Primary projects*	*Construction Roads and Bridges Secondary projects*	*Yearly total*
1938	$ 77,723.62 (a)	$2,025,272.53	$1,197,003.85	$ 3,300,000.00
1939	62,429.25 (a)	1,047,063.36	799,234.71	1,908,727.32
1940	35,820.87 (a)			
	2,870,000.00 (b)	689,296.70	859,863.36	4,454,980.93
1941 (est.)	778,022.87 (b)	146,845.92	0	924,868.79
Funds forward Dec. 31, 1941		139,226.01	0	139,226.01
Total	$3,823,996.61	$4,047,704.52	$2,856,101.92	$10,727,803.05

(a)—Transferred for administration and engineering.

(b)—Transferred to State highway construction due to lack of W. P. A. labor.

"Primary" projects completed and those operating as of the end of each year, and the amount of Federal and State funds involved, are:[756]

[755] *Source:* Auditing and Accounting Bureau. State appropriations of $10,700,000 (1938—$3,300,000; 1939—$3,300,000, and 1940—$4,100,000) and municipal donations of $27,803.05 make up the total of $10,727,803.05. The balance of $139,226.01 will probably be used on additional "Primary" projects not yet determined.

[756] *New Jersey State Highway Department Annual Reports, 1938* to *1941,* reports of the W. P. A. Coordinator.

W. P. A. Primary Projects, Completed and Operating, 1938-1941

Year	Completed		Operating	
	Federal	State	Federal	State
1938	$ 370,717	$ 404,099	$1,632,179	$1,311,344
1939	1,525,760	1,312,873	1,773,488	1,337,156
1940	907,268	1,373,403	2,493,042	2,733,137
1941	2,329,434	2,859,579	635,095	455,009

The whole W.P.A. program is rapidly decreasing. At the time this study was made, for example, there was only one project operating in the northern Construction District. The employment figures for the whole program show the downward trend:[757]

W. P. A. Highway Projects—Employment, 1938-1941

Year	Average employment
1938	8,756
1939	11,148
1940	15,853
1941	7,062

The basis for the entire program has changed. Many men have found employment in industry. The emphasis now is on defense projects, where the Federal Government is using a great deal of labor-saving machinery. Defense projects are considered especially economical to the Highway Department, since the usual limitations of twenty-five per cent. sponsorship and eleven per cent. non-labor funds received from the Government, do not apply. In general, all costs are borne by the Government except for engineering and right-of-way.

Total grants for all types of projects on the W.P.A. road program amounted to $49,661,399 as of the close of 1941. Projects completed or operating amounted to $47,679,180 of this sum. The participation by the State as sponsor on these projects has been 28.5%. In 1940, total sponsorship was 20.4%, the lowest in any year of operation.[758]

Just how economical W.P.A. projects have proved to be cannot be estimated, especially where "Primary" projects are concerned. Con-

[757] *New Jersey State Highway Department Annual Report, 1941,* report of the W.P.A. Coordinator.

[758] *Ibid.*

siderable savings to the State are claimed for this work. The greater advantage was probably gained out of the "Betterment" projects supervised by the Maintenance Division and the "County" and "Municipal" projects off the main system.[759]

Federal Aid Work:

Federal Aid projects were the responsibility of the Projects Division until 1933. In that year the work was transferred to the Construction Division where it is handled by the Federal Aid Engineer.[760]

New Jersey has received Federal grants-in-aid since the program was first established by the Federal Aid Road Act of 1916. Starting with a grant of only $59,213 in 1917, Federal contributions have grown until they reached into the millions during recent years. In all, New Jersey has enjoyed a total of $53,384,326.66 in the period from 1917 to 1941, inclusive, of which $40,545,150.66 was granted the State since 1931 alone.[761]

Federal Aid work was a relatively simple matter down to 1933. The funds were of the regular Federal Aid type, requiring a 50-50 matching by the State, and were used on the Federal Aid system under a well established procedure laid down by the Bureau of Public Roads. Since 1933 there have been a variety of Federal grants-in-aid, with many rules and regulations controlling their use. The Department found it necessary to designate the Federal Aid Engineer to act as liaison officer between the State and the Bureau of Public Roads.

The original Federal Aid Road Act of July 11, 1916, was materially defective in one respect in that it permitted of too wide a dispersion of Federal funds. There was no assurance of the completion of connected arteries of travel within any reasonable time. This defect

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[759] See the sections dealing with the Maintenance and Projects Divisions for W. P. A. projects included in their programs. *Pp. 469* to *472*, and *521* to *524, post.*

[760] *New Jersey State Highway Department Annual Report, 1933,* report of the Construction Engineer. See *p. 72, supra,* for the duties of the Federal Aid Engineer.

[761] See *pp. 177* to *180, supra,* for a full account of these grants-in-aid. Approximately 90% of these funds have been used on the Federal Aid Highway System (see *post*).

P. L. 1916, c. 236 (*R. S. 27:8-1* to *4*) authorizes the Highway Commissioner to apply to and contract with the Federal Government for aid in road work, and to use any funds received for road purposes. Federal grants must be kept in a separate account. The 1916 act was passed to allow New Jersey to share in the Federal Aid Road Act apportionments.

was corrected in 1921 by the passage of the Federal Highway Act.[762] The 1921 act retained all the outstanding features of the earlier act, and added the important requirement that the Secretary of Agriculture and the several State highway departments should jointly designate a system of important interstate and intercounty roads limited to seven per cent. of the total road mileage of each State, to constitute the so-called Federal Aid Highway System upon which all future appropriations would be expended.[763] Upon completion of the seven per cent. system, the State could, with the approval of the Secretary of Agriculture, add to the mileage of the Federal Aid system as funds became available for the construction and maintenance of the additional mileage.[764]

The Highway Department completed New Jersey's seven per cent. Federal Aid system in 1930 and immediately took steps through the Bureau of Public Roads to obtain extensions.[765] At that time the system embraced 1,198.4 miles, or seven per cent. of the 17,120.7 miles which constituted the entire mileage in the State when the Federal Highway Act was passed (November 9, 1921).

To date three increments have been added to the Federal Aid system, making a total permissible mileage of 1,712 miles, of which 1,679.6 miles have been approved, with 32.4 miles available for further addition to the system. Except for only 56.8 miles, the entire Federal Aid system is located on the State Highway System.[766]

Federal activity was centered on improvement of the Federal Aid system outside of cities until 1933 when, as an emergency measure,

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[762] *42 Stat. 212,* amending the 1916 Federal Aid Road Act.

[763] *Ibid., s. 6.* The highways were to be divided into two classes: (a) the primary or interstate mileage, not to exceed three-sevenths of the total mileage of the Federal Aid system, on which not more than 60% of all Federal Aid funds allotted the State could be expended until provision had been made for the improvement of the entire Federal Aid system, and (b) the remaining mileage on the system, to be known as secondary or intercounty highways.

[764] The Emergency Relief and Construction Act of 1932, *47 Stat. 709, s. 304,* changed this provision and authorized any State that had provided for the completion and maintenance of 90% of its Federal Aid system to increase the mileage by not more than 1% of the total mileage of the State, and thereafter to make like increases whenever 90% completion had again been achieved.

[765] The Bureau of Public Roads surveyed the system in 1931 and pending its report, the addition of 129.46 miles to the Federal Aid system was authorized. Formal approval was given the completed seven per cent. system in 1932, by which time extensions totalling 180.03 miles had been authorized by Washington. *New Jersey State Highway Department Annual Reports, 1930* to *1932,* reports of the Projects Division.

[766] *Source*: New Jersey State Highway Department, office of the Federal Aid Engineer.

the program was broadened to include extensions of the system into and through municipalities, the elimination of hazards to highway traffic (including the separation of grades at crossings, the reconstruction of existing railroad grade crossing structures, and the relocation of highways to eliminate railroad crossings), and the construction of secondary and feeder roads.[767] This broadened policy was continued under the Hayden-Cartwright Act of 1934 [768] and in subsequent acts.[769]

Federal Aid for secondary roads is administered under the same general plan as is used in improving the Federal Aid system. Cooperation of the Federal agency is with State highway departments; the funds must be matched by State funds, and a system of secondary roads must be designated for improvement. This applies also to the grade crossing funds except, as noted heretofore, matching is not required and use of the funds is not limited to any system.

New Jersey is one of the very few States penalized under section 12 of the Hayden-Cartwright Act for using highway funds for other than highway purposes. A penalty of $250,000 was imposed which was deducted from the regular Federal Aid apportionment for the fiscal year ending June 30, 1937.[770]

One of the conditions attached to the granting of Federal Aid is that the States or their civil subdivisions maintain the roads con-

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[767] National Industrial Recovery Act, *48 Stat. 200, s. 204(a)*. See *p. 179, supra,* concerning this act and the Federal grants-in-aid to New Jersey. Highway construction within municipalities was, as a matter of fact, permitted under the Emergency Relief and Construction Act passed in 1932. *47 Stat. 709, s. 301(a)*.

[768] *48 Stat. 993.* Not less than 25% of the amount apportioned to each State of the $200,000,000 appropriated was to be used on secondary and feeder roads (*s. 1*). The limitation contained in the Federal Highway Act of 1921, concerning road and bridge construction within municipalities, was removed (*s. 13*). Another important provision was that abolishing any limitation on the amount that might thereafter be paid out of Federal funds for each mile of road (*s. 13*). The limitation had been $10,000 per mile exclusive of bridges of more than 20-foot clear span (1916 act), later amended to $20,000 (1919, *40 Stat. 200*), $16,250 for the fiscal year ending June 30, 1923 and $15,000 thereafter (1922, *42 Stat. 660*), and $25,000 (1930, *46 Stat. 141,* but only if the original seven per cent. Federal Aid System had been completed by the State).

[769] Subsequent acts providing large sums for secondary or feeder road construction include the Emergency Relief Appropriation Act of 1935 (*49 Stat. 115, s. 1*), and acts amending the original Federal Aid Road Act of 1916: *49 Stat. 1519, s. 7* (1936), *52 Stat. 633, s. 2* (1938) and the Act of September 5, 1940, (*76th Congress, c. 715, 3rd session, s. 2*).

Acts setting up large sums for grade crossing work include the Emergency Relief Appropriation act of 1935 and the acts amending the 1916 act: *49 Stat. 1519, s. 8* (1936), *52 Stat. 633, s. 3* (1938) and the Act of September 5, 1940 (*s. 5*). See footnote 257, *p. 177, supra,* for the amounts of the Federal grants to New Jersey The apportionment formula for secondary roads is the same as that used for the regular Federal Aid system. For the formula used for grade crossing funds see the footnote mentioned.

[770] *New Jersey State Highway Department Annual Report, 1937,* report of the Auditing and Accounting Bureau. Hayden-Cartwright Act, *48 Stat. 993, s. 12.*

structed with the aid of such funds in proper condition. If any State fails to do so within ninety days after being notified to that effect, the Secretary of Agriculture may proceed to place the highway in proper condition and charge the cost thereof against future Federal allotments, and refuse to approve any other project in such State until reimbursement has been made by the State.[771] New Jersey has never been found wanting in this regard.

Part of the Federal grants-in-aid, as already stated at some length in this chapter,[772] make possible the State-wide Highway Planning Survey. The sum now set aside for this survey may not exceed 1½% of the amount of Federal Aid apportioned to any State. At present $292,274 of Federal funds are obligated to the project, together with $93,089 of State matching funds.[773]

When the survey is completed, one of the first uses for which the compiled data will be used is in determining the location of routes in the Federal Aid Secondary Highway System, which will embrace not over ten per cent. of the total highway mileage of the State. When this secondary system has been approved, expenditures of Federal Aid secondary funds will be limited to projects thereon.[774] The interim projects on which these funds have been and are being used, were chosen so that they would be located on the secondary system.

The use of Federal Aid funds for roadside improvement and landscape development began as early as 1933 when the Secretary of Agriculture promulgated the rules and regulations for carrying out the provisions of the National Industrial Recovery Act. These provided that in the selection of projects to be included in programs submitted by the several State highway departments, priority would be given to "[fifth in order of priority] the appropriate landscaping of parkways or roadsides on a reasonably extensive mileage involving not less than 1 per cent. of the total apportionment to each

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[771] *42 Stat. 212, s. 14.*

[772] See *p. 362,* and footnote 641, *supra.*

[773] *Source*: New Jersey State Highway Department, office of the Federal Aid Engineer. The Works Progress Administration has in addition set up $370,160 for this survey, of which approximately $330,000 has been expended.

[774] "Rules and Regulations for Carrying Out the Provisions of Section 2 of the Act of June 8, 1938 (*52 Stat. 633*) and Acts Amendatory Thereof or Supplementary Thereto, Which Relate to the Improvement of Secondary or Feeder Roads in Accordance with the Provisions of the Federal Highway Act," approved by the Secretary of Agriculture, January 13, 1939; *s. 11.4,* "Selection of Projects."

state * * *."[775] The rules and regulations adopted by the Secretary of Agriculture for carrying out the Federal Aid Road Act, as amended, also provides for roadside improvements and authorizes the Chief of the Bureau of Public Roads to prescribe the extent to which work of this character may be required as a part of the original construction of a project or to be undertaken later.[776] The requirement that one per cent. of the regular Federal Aid apportionments be used for roadside improvements has been continued to date. Well over fifty miles of highways on the Federal Aid system have been landscaped, using the one per cent. fund for that purpose.[777] This money, being regular Federal Aid, must be matched by the State.

All Federal Aid projects clear through the Federal Aid Engineer. In preparing the regular Federal Aid program for the year he reviews the annual highway program that was approved by the Governor and Legislature, for such projects as he thinks are particularly suited to regular Federal Aid. When he has completed this program, he submits it to the Construction Engineer. After it has been approved by him and the Highway Engineer, the Commissioner adds his final approval and the program is sent to the Public Roads Administration in Washington for approval. In this, as in all other Federal Aid matters, the direct local contact is with the Chief Supervising Engi-

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[775] "Rules and Regulations for Carrying Out the Provisions of Title II—Public Works and Construction Projects—National Industrial Recovery Act and the Act of June 18, 1934 (H. R. 8781) for Constructing Highways and Related Projects in Accordance with Provisions of the Federal Highway Act," approved by the Secretary of Agriculture July 7, 1934, and by the Special Board of Public Works July 13, 1934; *s. 5,* "Detailed Programs of Proposed Construction—Priority of Projects."

Similar provision was made under the rules and regulations for carrying out the Emergency Relief Appropriation Act of 1935, as approved by the Secretary of Agriculture and by the Works Progress Administrator July 8, 1935, and by the President July 12, 1935; amended August 29 and September 12, 1935; *s. 21,* "Roadside Improvement Projects."

[776] Approved February 27, 1935, Regulation 13, "Roadside Improvements." "Such work shall include the selective cutting, pruning, and preservation of existing growth, removal of stumps, the flattening of slopes and rounding of slope intersections, the planting of trees and shrubs, and the construction of footpaths where such construction is justified as a safety measure."

[777] The first use of Federal funds for landscaping in New Jersey was made in connection with three road contracts let in 1934. *New Jersey State Highway Department Annual Report, 1934,* report of the Construction Division.

R. S. 27:7-42 authorizes the Highway Commissioner to set aside in any calendar year from State highway construction funds, a sum not exceeding 1% of the amount spent for State highway construction the previous year, to be spent for highway beautification. The money is to be expended under the supervision of a competent landscape architect. This act was passed in 1931.

neer of the Public Roads Administration who has his office in Trenton and who handles all Federal Aid matters in the State. He cooperates with the Federal Aid Engineer and the Department in trying to have each project in such shape when it leaves the Department that the Public Roads Administration district office in Albany, and the main office in Washington, will find no fault with it. Annual programs may be submitted in their entirety or in parts.

Project statements prepared by the Federal Aid Engineer are submitted for approval on forms provided by the Public Roads Administration. Each statement is accompanied by a sketch map of the proposed improvement. Surveys are then made, and plans, specifications and estimates prepared, checked and approved by the Department in the usual manner and sent to the local Federal representative by the Federal Aid Engineer. Such changes as are required before the plans and specifications will be approved, are made. The project is then advertised, the bids tabulated and the contract awarded. The Government, being an interested party, is in touch with the project at every important juncture and may approve or disapprove.

A project agreement is entered into between the Federal Government and the State for each project, the Commissioner signing on behalf of the State. As soon as the project is let, the Federal Aid Engineer notifies the State Employment Bureau, from whose lists the contractor obtains necessary laborers. He also makes a monthly report on the number of men employed, hours worked and wages paid on Federal Aid projects.

The Construction Division forces administer and inspect the work under the contract. All change orders are handled by the Federal Aid Engineer, who forwards them through the local Federal engineer, accompanied by a statement of funds available.

As the work progresses, the Federal Aid Engineer submits progress vouchers for partial reimbursement by the Federal Government of money expended by the State. The final voucher is, of course, the most important and detailed one. Copies of all vouchers are sent to the Chief Auditor and Accountant, who is also contacted as to availability of funds for projects. The State is not entitled to reimburse-

ment for expenses incurred for engineering services or rights of way on Federal Aid projects.

Federal Aid projects on secondary or feeder roads are handled in much the same way as the regular projects. Before proceeding with any secondary project, the Department arranges with the municipalities for their share of the cost, which is fifty per cent.

The Department took early advantage of the Federal Aid secondary program. The following schedule shows construction work in progress on Federal Aid secondary projects since 1936, and the value of work actually performed in each year:[778]

Federal Aid Secondary Program

Construction in Progress and Value of Work Actually Performed, 1936-1941

Year	*Mileage*	*Stream bridges*	*Grade separations*		*Value*
			Railroad	*Highway*	
1936	20.317	1	13	1	$1,142,741.12
1937	22.197	1	19	1	2,103,217.98
1938	8.308	5	6	1	473,165.15
1939	24.397	14	6	..	780,115.28
1940	21.006	9	5	..	674,073.53
1941	28.474	15	15	..	1,141,967.02

Projects included are those worked on during the year in question and were not necessarily worked on during the entire year, nor begun or completed during any one year.

An examination of statistics made available by the Chief Auditor and Accountant shows that municipalities have not taken full advantage of the secondary or feeder road Federal Aid program. Balances carried over since 1937 have been well above the Federal apportionment for the several years:

[778] *New Jersey State Highway Department Annual Reports, 1936* to *1941,* reports of the Construction Engineer.

Federal Aid Secondary Program, Allotments and Balances, 1937-1941

Year	*Allotment*	*Balance Forward*
1937	$340,365	$340,365.00
1938	332,408	507,947.63
1939	198,205	460,804.95
1940	198,357	488,865.71
1941	223,025	374,838.50

Apparently the matching requirement is a barrier to complete municipal cooperation. Municipalities have been so generously treated under the State Aid program that they seem to hesitate when fifty per cent, participation is requested. Their contribution need not be as great on State Aid work. Every effort should be made to encourage municipalities to use up the balance of the secondary funds. There are roads on which the money could be used to real advantage.

The procedure followed in Federal Aid grade crossing elimination work has already been touched upon.[779] The annual program is formulated by the Grade Crossing Engineer, and is based on the schedule that he has prepared giving priority ratings to grade crossings on each railroad system and as between the crossings themselves, in the order of their importance and necessity. Under the rules and regulations established by the Secretary of Agriculture, the basic program of projects shall be apportioned among the railroads of New Jersey in such manner that the total cost of the project or projects on any railroad shall have approximately the same relation to the total annual apportionment to the State as the road mileage of the railroad bears to the total road mileage of all railroads in the State. This basic program may be modified in the light of such factors as (1) the total combined use by railroad and highway, vehicular and pedestrian traffic; (2) the elimination of the greatest traffic hazards, and (3) the possibility of immediate construction.[780]

[779] See *p. 400, supra.*

[780] "Rules and Regulations for Carrying Out the Provisions of Section 3 of the Act of June 8, 1938 (*52 Stat. 634*), and Acts Amendatory Thereof or Supplementary Thereto, Which Relate to the Elimination of Hazards of Life at Railroad Grade Crossings in Accordance with the Provisions of the Federal Highway Act," approved by the Secretary of Agriculture April 11, 1939, *s. 22.3*, "Application of Funds to Projects."

After the Grade Crossing Engineer has arranged agreements with the several railroads affected by the program, and the program has been approved by the Commissioner, it is handed the Federal Aid Engineer. Grade crossing projects are initiated and submitted in the same way as regular Federal Aid and Federal Aid secondary projects and carried out in the same manner insofar as the Public Roads Administration is concerned.

The Federal Aid program has been of great value to New Jersey. Over 870 miles of highways, 82 stream bridges of over 20-foot span, 27 highway grade separations, the elimination of 59 railroad grade crossings which necessitated the construction of new structures and approaches, and the reconstruction of 26 existing railroad grade separation structures which were inadequate for present day traffic, were constructed with Federal grants-in-aid.

Since the inception of the Federal Aid program States have learned a great deal about working together and planning their arterial highways. They have exchanged information concerning improved practices and on numerous other matters. The American Association of State Highway Officials, formed in 1914, has become a powerful organization with the backing of the Bureau of Public Roads, now the Public Roads Administration. Department officials, such as the Engineer of Survey and Plans, the Bridge Engineer, and the Chief of the Testing Laboratory, have taken an active part in the work of the Association leading to the establishment of higher standards in highway work. By insisting on the Highway Planning Survey program, the Federal Agency has laid a solid basis for constructive highway work in the future.

Federal Aid is undoubtedly here to stay. The Department has enjoyed the confidence and full cooperation of the Federal officials in carrying out the regular, secondary and grade crossing programs. Working relations have been smooth despite the many technical requirements surrounding the submission and carrying out of projects. The quality of the final product achieved under the direction of Department engineers has received high commendation.

Roadside Improvement:

Since the advent of the Federal Aid program for landscape development, New Jersey has taken full advantage of roadside improvement along its State Highways. All operations are under the direction of the Supervising Landscape Engineer whose forces, while devoting a major part of their time to landscape maintenance, play an important role in the installation of landscape projects on newly constructed highways.[780a]

The Federal Aid one per cent. fund referred to above is devoted to roadside improvement on projects approved by the Public Roads Administration.

The Supervising Landscape Engineer supervises the preliminary planting surveys for Federal Aid projects, selects the location and quantities of materials that are to be used, and prepares the project proposals. He also is in charge of the plans, specifications and estimates, which are checked by the staff of the Office Engineer in the Survey and Plans Bureau. The plans are then blueprinted and the specifications and estimates mimeographed. The project is then handed over to the Federal Aid Engineer who submits it to the Public Roads Administration through its local representative and Albany, New York, office. After the project has been let and during the life of the contract, the Supervising Landscape Engineer keeps in touch with the Construction Division Engineer. The landscape personnel inspects all plant materials at the nursery and follows through with numerous inspections on the job until the project is completed by the contractor and ready for final acceptance.

There has been relatively little opportunity for landscape planning in connection with regular State construction projects. There are several reasons for this. One is that there are many roads already built that require landscaping. This work is done on the regular maintenance program. Another reason is that the road program has, until recently, been carried on so rapidly that it has been impossible to keep up with landscaping work. In this connection, it should be remembered that a full-time Supervising Landscape Engineer did not

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[780a] See *pp. 96* to *98* for the role played by the Supervising Landscape Engineer and his staff in Federal Aid projects.

come upon the scene until 1937. Finally, the main concern of the Department has been to construct roads along the shortest and most convenient routes possible, rather than to build them on alignments that give the motorist the benefit of the most picturesque route. This has certainly been the case with the main through roads and superhighways.

The policy is in direct contrast with that followed on Federal Aid projects. One of the requirements in connection with these projects is that roadside improvement projects be constructed on highways which are not considered commercial, in the sense that they are lined with billboards, poorly constructed commercial stands, and other objectionable roadside blemishes, so few of which can be screened by practical plantings of native material. The policy of the Public Roads Administration is to assist the State in improving the appearance of roadsides where the commercial aspect is least existant. This may be accomplished by economically and efficiently merging plantings with the surrounding country to such an extent that the newly constructed artery becomes an integral part of the picture; and by using natural landscape effects, healing construction scars, reducing soil erosion, and screening out undesirable roadside features.

Construction Work and the War:

The work of the entire Highway Department, and particularly of the Construction Division, was radically affected during the past year as events shaped themselves towards war. The declaration of hostilities in December put an end to the normal program of the Division. The one controlling factor for the duration will be the defense effort.

Early in 1941 the Public Roads Administration announced that its policy would be to promote and give preference to matters pertaining to the improvement of the strategic network and access roads to military establishments and industries engaged in defense production. The program of the Construction Division was adjusted to that policy.[780b]

[780b] This and the following material have been taken from the annual report of the Construction Engineer. *New Jersey State Highway Annual Report, 1941.* Statistics concerning apportionments under the Defense Highway Act were provided by the Federal Aid Engineer.

The summer months witnessed an increasing uncertainty as to labor and material costs and the ability to obtain deliveries. Contractors hesitated to submit bids without definite priority ratings. It was not until the Public Roads Administration outlined the general classification of highway projects and the preference ratings that would apply to them that the acuteness of the situation was relieved. This was early in September. In the latter part of October the Department obtained preference ratings for projects under contract and for those programmed. For a time it seemed that construction work could be resumed on a full schedule.

On November 27 the Public Roads Administration issued a memorandum emphasizing the need of conserving critical materials by the substitution of non-critical materials and the deferment of non-essential projects. It stressed the desirability of selecting projects essential to defense. Two days later it advised the Department that preference rating certificates previously issued for highway projects below A-4 classification were not to be applied unless the projects were actually under contract by November 1, 1941. The effect of this was to limit the application of preference ratings to projects of military significance. A stop order, effective December 2, limited consideration of Federal Aid projects to those certified by defense agencies as essential to the national defense.

The outbreak of war on December 7 brought in its wake a memorandum from the Public Roads Administration rescinding the approval previously given to regular Federal Aid programs and outlining the procedure to be followed in submitting such projects for consideration individually. It seems clear that from now on the Department's construction program will be limited to only those projects deemed essential to the national defense. This means, of course, an extreme revision downward of the entire program. In terms of personnel it means that far fewer men will be required to carry on the work than heretofore. In all probability this situation will be resolved by the entrance of many of the departmental forces into the armed service, and the transfer of others to positions in defense industries.

Division engineers cooperated with the Federal authorities in 1941 by attending conferences called by the Army, Navy and other Federal agencies and giving the benefit of their judgment and experi-

ence in connection with engineering problems requiring early solution. The Survey and Plans Bureau undertook surveys and the preparation of plans for access roads to Fort Dix, Picatinny Arsenal and the Bayonne Naval Dry Dock and Supply Base. Surveys were also undertaken and plans prepared for road and drainage facilities required inside Fort Dix, Fort Monmouth and Fort Hancock. The cost of this work was financed by moneys allotted by the Federal Government.

In the case of the access roads financed by the Federal Government, the Division gave careful study to their location and design in relation to ultimate improvement of the State Highway System so that the State might benefit by the investment after the war.

On November 19, 1941, Congress passed the Defense Highway Act which authorizes the appropriation of funds for defense highways. New Jersey's share of the amount authorized under section 4 of that act is $318,420, to be expended on a strategic highway network, the State to match Federal funds on a 25%-75% basis, including rights-of-way. From the amount authorized under section 6 for access roads, over $3,170,000 has been certified for projects located in New Jersey, at 100% Federal cost. Further, New Jersey will receive $127,368 of the amount to be apportioned under section 9 of the same act for advanced engineering studies. This sum must be matched by the State. The funds so apportioned under the Defense Highway Act are in addition to the regular Federal Aid, Federal Aid secondary and Federal Aid grade crossing funds mentioned heretofore.

Reorganization:

A consideration of the work of the Division leads to the recommendations made in Chapter III concerning reorganization.[780c] To be included in the proposed Construction Bureau are the two Construction Districts, the Bridge Bureau, the non-Federal Aid work of the Grade Crossing Engineer and the duties of the Designing Engineer. The work done by the Federal Aid Engineer, the W.P.A. Bureau, the Technical Engineer now reporting to the Highway Engineer, and by the Grade Crossing Engineer in connection with the Federal Aid

[780c] See *p. 157, supra.*

grade crossing program, is to be transferred to the proposed Federal and State Aid Projects Bureau. This work, like that of the State Aid projects Division which is to be included in the proposed Bureau, is concerned with inter-governmental relationships in the administration and expenditure of grants-in-aid. A great part of this work consists of the preparation of data, statements and other material involved in projects where part or all of the funds are provided by the Federal or State government. Functionally, the work of these offices is essentially the same.

The isolated investigations and research being carried on by the Engineer of Special Assignments and the Traffic Engineer in the Survey and Plans Bureau should be integrated into a centralized program of research carried on by the proposed Research and Testing Bureau. The work of these two engineers is of the highest order and should be encouraged in every way possible. At present they carry on their studies apart from the rest of the Department, reporting directly to the Engineer of Survey and Plans. It is felt that they will be even more effective when given the facilities and cooperation of a combined research organization.

MAINTENANCE DIVISION[781]

Annual Maintenance Program:

Early in the fall of each year, the Assistant Superintendent of Maintenance prepares a draft of the Maintenance Division budget for the ensuing calendar year. This is based upon the experience of the Division during the current and the preceding calendar year, and takes into account any contingencies that can possibly be foreseen. One important item included in the budget estimate is that covering the annual snow removal program. This can never be estimated exactly because snow removal costs depend entirely upon the severity of the winter to come. The practice of the Department has been to

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[781] See *pp. 91* to *104, supra,* for the organization and duties of the Maintenance Division.

R. S. 27:7-11 requires the Highway Commissioner to take charge of all work on State highways and to maintain them in good order. All maintenance work is to be done at the expense of the State, either as an independent contractor or employer, or through contracts made in the name of the State. See, also, the broad maintenance powers he has under the 1927 State Highway Act (*R. S. 27:7-21*) set out on *pp. 34* and *35, supra.*

use a figure approximating the highest cost experienced during recent years.

The Assistant Superintendent then takes up the budget with the Superintendent of Maintenance. After it has been put into proper shape, the Superintendent of Maintenance goes over the budget with the Highway Engineer and it is then made part of the budget submitted to the Governor by the Commissioner on or before October 15th, in accordance with the provisions of the statute. The accuracy of the Maintenance Division budget request is testified to by the fact that the maintenance requirements for the next year, as estimated by the Supervisors of Highway Maintenance months later, come very close to the amount requested in the budget.

In December the Assistant Superintendent of Maintenance sends out the annual estimate forms to the Supervisors of Highway Maintenance in which they set out in detail the quantities of materials which they will need for maintenance work under their supervision. These forms are divided into sections dealing with the eight types of maintenance work. Four concern ordinary maintenance operations involving repair to existing road structures, and are designated as M-1 (repairs to the main pavement), M-2 (repairs to paved shoulders), M-3 (repairs to drains, ditches and unpaved shoulders), and M-4 (repairs to existing guard rail, fences and walls, including the painting thereof). The remaining four concern what are known as extraordinary repairs: E-5 (reconstruction of existing or construction of new main pavements, either in whole or in part, as well as reshaping main pavements and heavy patching on gravel and cinder pavements), E-6 (reconstruction of existing or construction of new paved shoulders, in whole or in part, as well as reshaping them), E-7 (reconstruction of existing or construction of new unpaved shoulders, drainage structures and ditches, either in whole or in part), and E-8 (reconstruction of existing or construction of new guard rail, fences and walls, either in whole or in part).

The Maintenance Division maintains a so-called "Job Number Book" which is kept up to date by the Engineer of Permits. The various routes on the State system are broken down into maintenance sections, each of which is assigned a code number known as a "job number". Roads approaching and within the grounds of State insti-

tutions, and which are maintained by the Division, are also given job numbers. The Job Number Book contains a complete list of these job numbers, listed consecutively, with a brief description of each section, type of pavement, length, right-of-way width, graded width, paved width, and other pertinent information. This compilation, with its code-numbered sections, serves as a basis for maintenance cost accounting and for determining the mileage under the maintenance.

The Supervisors make out an estimate form for each job number and sketch any special features relating to the section on the reverse side of the form. At the beginning of the year, each Supervisor holds a series of conferences lasting two to three days with the Assistant Superintendent of Maintenance and the Supervisor of Materials, at which time the estimate forms are very carefully reviewed. If any major question arises, it is taken up with the Superintendent of Maintenance. Previous to the conference, each Supervisor has his foremen make up an inventory of materials on hand, and this inventory is deducted from the amounts set out in the estimates. The annual maintenance program is prepared on the basis of all the estimates. It is approved by the Superintendent of Maintenance after review, and then by the Highway Engineer. The Supervisor of Materials then makes a tabulation which is sent to each Supervisor showing what has been allowed on each approved maintenance job. The Supervisor of Materials computes the amount of the various materials that will be required under the approved estimate for each job number. He enters this information on separate sheets for each job in his "Route Book."

Pending the passage of the annual State Highway Fund Appropriations Act, the Maintenance Division is authorized to expend such moneys in the State Highway Fund as are necessary for the maintenance of the State Highway System, which amount may not exceed the sum spent for maintenance purposes during the whole of the preceding calendar year.[782] After the Legislature has acted, it may be necessary to revise the annual maintenance program downward if the amount requested by the Division has been cut. All regular maintenance work proceeds on the basis of the annual maintenance program.

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[782] *R. S. 52:22-20 (g).*

The total amount of the various types of maintenance materials that will be required during the year is then compiled by the Supervisor of Materials from his Route Book and sent, after approval by the Superintendent of Maintenance, Highway Engineer, and Highway Commissioner, to the State Purchasing Department for advertising and bids. This is done through the Supervisor of Purchase and Stores. The Supervisor of Materials cooperates in preparing the bid forms to be used by the Purchasing Department. Upon receipt of the bids, the Purchase Commissioner sends them to the Maintenance Division to be tabulated. This is done under the supervision of the Supervisor of Materials, and the Highway Commissioner then recommends to the Purchase Commissioner the award of contracts to the lowest responsible bidders, except in the case of certain tied bids.[783] Maintenance materials that are to be put "in place" by the vendors are bought directly by the Department through the Supervisor of Purchase and Stores.[784]

Because of the fact that the State Highway Fund Appropriations Act is not passed until May or June, there is a delay in the purchase of the annual maintenance material requirements. The Maintenance Division has found that this interferes with its program. This is another example of the benefits that could be achieved by placing the Department on the regular State fiscal year basis. If this were done, the Maintenance Division, like other divisions, would know what funds had been made available to it before the working season began. Bids could be advertised for and contracts awarded in plenty of time for the prompt carrying out of the work of the Division, most of which should be done in the late spring, summer and fall, except, of course, for snow removal work.

Road Maintenance:

When a Supervisor is ready to proceed with work on a particular road section, he sends in his request for materials on a specified form. A separate form is used for each job number and indicates the type of maintenance work to be done, the various amounts of materials that

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[783] See *pp. 266* to *268, supra,* for the procedure followed in purchasing maintenance materials.

[784] See *pp. 264* and *265, supra,* for description of these purchases.

will be needed, and the manner in which they are to be shipped to the job. This form is approved by the Assistant Superintendent of Maintenance and by the Superintendent of Maintenance. The Supervisor of Materials then prepares a regular order request form (white) against the appropriate contracts covering the materials needed. This is made up in quintuplicate, two copies being retained by the Division. Three are signed by the Assistant Superintendent of Maintenance and Superintendent of Maintenance, the original copy going to the Supervisor of Purchase and Stores and two copies to the Auditing and Accounting Bureau. The Supervisor of Purchase and Stores then arranges for the furnishing of the contract materials.[785]

Often it becomes necessary to order a greater quantity of the materials set out in the annual estimate form for the job than was originally estimated. The Supervisor must justify the purchase of this excess material and on occasion the Superintendent of Maintenance himself goes out on a job to determine the need for the material. The extra maintenance materials are then ordered by the Supervisor of Materials, who uses an excess order request form (yellow) for the purpose. The Supervisor of Materials notes all materials ordered under the original estimate, as well as in excess of it, on the back of the job number sheets in his Route Book.

A pink order request form is used to purchase unanticipated items, as in the case of emergencies. In such instances, the Highway Engineer must add his approval to the order, and the Chief Auditor and Accountant must approve as to availability of funds. If the amount involved exceeds $1,000, the Highway Commissioner must approve.

The Maintenance Division uses a good deal of gravel in connection with maintenance work. This material is purchased by the State Purchasing Department under an agreement with the owner of the gravel pit. The arrangement until recently was for a representative from the Maintenance Division to go along with the Purchasing Department representative to advise him. Under the present arrangement the Purchase Commissioner has the Maintenance Division make all the arrangements for the purchase of gravel, the agreement finally being submitted to and signed by the Commissioner. Bids are not

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[785] See *p. 267, supra.*

requested; the aim is to get the best material available in a particular area. There is, therefore, no uniformity in procedure. Gravel may be purchased at prices ranging from ten cents a cubic yard when dug and loaded by the Maintenance Division's own forces to as high as seventy-five cents loaded on the trucks by the owner of the pit. The terms of the gravel agreements cover the calendar year at a fixed price per cubic yard for either dug or undug material. The Division distributes the material in either its own or rented equipment, and obtains the gravel either from a classified dug pile or digs and piles the material for transport, in which latter case the price per cubic yard is less.

Soil for fill in maintenance work is purchased by the State Purchasing Department under a similar type of agreement, as is top soil. However, not very much top soil is purchased by agreement; most of what is needed is bought on open bid.

It is recognized that gravel, soil for fill, and top soil are materials which do not readily lend themselves to competitive bidding because of the limited sources available in a particular area where maintenance operations are being conducted. An important consideration is the proximity of the pit to the job. However, open competition should be encouraged wherever possible.

In order to store materials and equipment near maintenance projects, the Maintenance Division leases premises throughout the State. There were about thirty-five leases in existence in 1941, at varying rentals. Leases are negotiated by the Supervisor of the district, and the terms are approved by the Superintendent of Maintenance, although in some cases he seeks the advice of the Highway Engineer. The lease is then drawn up and executed by the owner and the Highway Commissioner. In thirteen instances leases were executed where the monthly rental was shared by the Maintenance and Equipment Divisions because both made use of the premises. These leases were negotiated by the Equipment Division.

Maintenance work is carried out pursuant to "work orders." These are issued by the Supervisor of Materials (in the name of the Superintendent of Maintenance) for annual routine maintenance work as well as for authorizing work for which material has been ordered.

There are several different printed forms of work orders covering various types of work, such as ordinary maintenance, necessary repairs to washouts during the entire year, minor repairs to existing guard rail structures and fences during the entire year (not including general painting), cleaning and painting of guard rails, pouring joints and cracks in the pavement, repair of pavements with cold patch, etc. These work orders come in quadruplicate, copies going to the Supervisor of Highway Maintenance, the foreman in charge of the job, the Auditing and Accounting Bureau, and the Maintenance Division files.

Upon receipt of a work order, the Auditing and Accounting Bureau sets up the funds for the job and charges the amount against the annual appropriation for the Division. Each work order shows the amount set up for material, for carrying charges, and for supervision, labor, equipment and miscellaneous items. The Auditing and Accounting Bureau issues a maintenance cost statement monthly showing, for each job number, the work order estimate and the total amount of expenditures that have been charged up against it to date. This total is broken down into two items, one covering supervision, labor, equipment and miscellaneous, and the other covering material and freight. It sometimes happens that an original work order must be amended; in that case the Auditing and Accounting Bureau adjusts the amount of funds set up for the job.

The monthly maintenance cost statement is analyzed by the Assistant Superintendent of Maintenance. In this way the Division as well as the Auditing and Accounting Bureau are informed of the exact status of each job as well as the annual program in general.[786]

The work orders drawn up by the Supervisor of Materials are those based upon the estimates made at the start of the year. Special work orders, covering larger projects, most of them of a construction

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[786] It should be noted that the monthly maintenance cost statement includes not only the expenditures for maintaining the roads, but also those for the repair of bridges, detour road work, mudjacking operations, landscaping, directionary and cautionary sign work, stop street signs, route markers, bridge and stream markers, traffic line work, acetylene lights, State and Federal route markers, airway markers, construction work, WPA "Betterment" and "Institutional" projects, institutional road work, traffic light stop lines, snow removal work, etc. All of these types of work are included in the maintenance program and are put in motion by work orders.

nature, are issued by the Assistant Superintendent of Maintenance at the direction of the Superintendent. From time to time the Maintenance Division is called upon by the Construction Division to do construction work, such as the installation of drains, work on the center island of roads, and road widening. The Construction Division draws up a set of plans for the job and the Supervisor of Materials notes the quantities of materials that will be required and prepares an order request therefor on the pink ("miscellaneous") form referred to above. He draws up a construction work order, with three extra copies for the Construction Engineer, Construction District Engineer and Resident Engineer. This work order requires the signatures of the Construction Engineer and Highway Engineer, and the Superintendent of Maintenance acknowledges the order. The construction work order is treated by the Auditing and Accounting Bureau as a commitment against Construction Division funds. The Maintenance Division makes the necessary expenditures in the first instance and is reimbursed from the construction funds periodically.

When materials are received in the field, the person in charge of the job must make a report of the deliveries. Two different forms are used, according to whether delivery is by truck or by railroad car. The report shows the job on which the material was delivered, a description of the material and its weight or quantity, and other required information. Truck deliveries must be accompanied by a delivery slip, the original of which is signed by the foreman on the job or his authorized representative. He is required to get copies of these slips which he sends in with his report of materials received. Where delivery is by railroad car, there must be an accompanying railroad freight bill which the foreman signs. Copies of these bills must be attached by the foreman to his report of materials received by railroad car. These delivery reports go to the Division Office where they are reviewed by the Supervisor of Materials who then records them in a regular ledger and files them away for seven years.

Where materials are transferred from one job to another, the foreman from whose job the material is transferred makes up a transfer record form indicating the job from which the material is being transferred, the kind of material, and its weight or quantity. The foreman to whose job the material is transferred adds his signature to this

record and forwards it to the Division office where it is checked and priced by the Supervisor of Materials. He then makes out a work order for the foreman to whom the material has been transferred. The Auditing and Accounting Bureau then respectively credits and debits the two jobs involved.

The Supervisor of Materials cooperates with the field forces and producers of material in order that shipments will be regulated in a routine manner. He checks all railroad charges as to the correctness of weights and rates. He keeps the Laboratory informed of any material being shipped that will require inspection, so that it will not be sent until properly inspected and approved as to compliance with the specifications.

The vendor submits his bill for materials shipped on a regular form provided by the Department. The Supervisor of Materials checks it as to correctness of quantity and cost. It is then audited by the Division Auditor, who, on the basis of his receiving records, fills in certain information on the copy of the bill which is used in charging out the materials against a particular job. The invoice is then approved by the Superintendent of Maintenance and forwarded to the Auditing and Accounting Bureau for final audit. It is then approved by the Chief Clerk as Approval Officer and, where the purchase has been made through the Purchasing Department, is approved by the State Purchase Commissioner before payment.

Where tools and supplies are required on a maintenance job, a regular requisition form is used for that purpose.[787] A copy of this form goes to the Auditing and Accounting Bureau. The foreman in charge of the job is held responsible for all tools requisitioned by him. In order to be relieved of the charge, he must make out a regular form advising what disposition had been made of the tools—whether transferred, stolen, lost or condemned—and this form must be signed by the foreman and the Supervisor in charge. The Auditing and Accounting Bureau makes an annual inventory of maintenance tools and materials. This is usually done during the winter under the supervision of the Cost Accountant, who uses some of his staff for the purpose.

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[787] See *p. 275, supra,* for details as to these requisitions.

The Assistant Superintendent of Maintenance coordinates and assigns equipment for maintenance operations, so as to achieve a maximum efficient use thereof. Although the equipment situation is much better today than it was when the Highway Commissioner took office, because of the equipment purchasing program instituted by him, there are still deficiencies. The Department is using 65 Mack trucks for snow removal work which were given to it by the War Department in 1917. The inefficiency of this equipment was pointed out 15 years ago.[788] The Commissioner limited his requests for the purchase of equipment to $200,000 a year. Good use was made of this money, but it was not sufficient for the purpose, being used largely for the purchase of lighter and smaller items of equipment. The 1917 trucks cannot travel more than four to five miles an hour. They require constant repair, and replacement parts are not available. There can be no economy in their continued use.

The Department needs forty to fifty EF Mack trucks to replace this antiquated equipment. It will be necessary to purchase a similar number of snow plows for attachment to these new trucks, since the snow plows being used in connection with the 1917 trucks cannot be adapted to the modern equipment. Cinder spreaders will also have to be purchased so that they can be attached to the trucks for use in treating slippery surfaces.

Although the Department now has eight Walters "Snow Fighter" trucks, an additional four should be purchased over the next few years. The Department has two cranes and shovels mounted on trucks. There is a need for an additional two. There are twenty old graders in use, ten to twelve years old, and these should be replaced with more modern and efficient equipment.

The Department is well equipped with lighter trucks, this part of the equipment program having been completed in 1941. Forty-five tar kettles of the oil burning type were purchased in 1941 to replace the wood burning variety, and six compressors bought, four replacing old

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[788] *New Jersey State Highway Department Annual Report, 1927;* report of the Maintenance Division. The Superintendent of Maintenance again recommended the replacement of this war surplus equipment in his 1940 report. He stated that if the snow equipment were thoroughly modernized, it would be possible, throughout one-half of the State, to reduce the number of pieces of equipment on a snow section, thus cutting the cost and improving the quality of the work.

equipment and two being additional equipment. The Department is adequately supplied with these items at the present time. However, there is a need of two new mixers to replace old equipment. About two dozen tractor mowers are also required to replace those now used which are drawn by trucks. Only one man is required to handle a tractor mower, whereas three men are needed for the present type of mower.

The purchase of the indicated items will be justified by increased efficiency in operations and decreased cost, particularly in the case of the replacement of the 1917 trucks.

The Maintenance Division rents a great deal of equipment under agreements made with owners. Competitive bids are not sought, but rentals are at the following rates:[789]

Maintenance Division—Equipment Rental Rates

Description	*Truck*	*Driver and Truck*
½ Ton	$0.75 per hour	$1.25 per hour
2½ Ton	1.00 per hour	———
3 Ton	1.25 per hour	1.75 per hour
5 Ton	2.00 per hour	2.50 per hour
7 Ton	2.50 per hour	———

Truck rental agreements are on an hourly basis and may cover the truck only or the truck and driver. Generally, the foreman in charge of a job, and sometimes the Supervisor, arranges for the signing of the agreement by the owner, upon authorization from the Division office in Trenton. By long custom the Superintendent of Maintenance signs on behalf of the Department, although the better practice would be to have the Commissioner sign, as in the case of other agreements.

The rental of trucks depends on their type and availability. Common equipment, such as 1½-ton trucks, are not hired outside of the county where the maintenance work is being done, if available therein.

[789] *Source:* Office of the State Highway Engineer. The figures represent 1939 and 1940 rates. Trailers were rented at $5.00 per day, and in two instances it was necessary to pay a rate of $2.65 per hour for a 5-ton truck and driver, the increase in rate being due to the increased amount paid the driver, and a rate of $1.50 per hour in the case of one 1½-ton truck with a special three-yard body.

Although the Superintendent of Maintenance signs the truck rental agreement on behalf of the Department, the actual direction as to whose trucks are to be hired usually comes from the office of the Highway Engineer. Special equipment, such as shovels, buckets, cranes, tractors, and large trucks, where special terms prevail, are rented from the owners on the approval of the Highway Engineer and the Commissioner.

The Maintenance Division spent $232,609.50 for hired trucks in 1939, and $302,789.64 in 1940. In addition, the Division spent $27,634.31 for trucks furnished by snow removal contractors in 1939, and $61,110.01 in 1940.[789a] Rates for snow removal trucks were $6.50 an hour while working and $4.50 an hour on a stand-by call. These rates covered two operators and one helper, all gasoline, oil, compensation, liability and property damage insurance, and all meals for crew and superintendent.

An examination of the schedule of trucks hired for the years 1939 and 1940 shows that certain owners received a comparatively large share of the Division's business. There may be an explanation in some cases, but there is more than a suspicion that a few owners were favored.[790]

Those in charge of the maintenance field forces must make daily time and cost reports showing the name of the foreman or foremen in charge, monthly salary laborers, hourly laborers, Department trucks and equipment by number, and outside teams and equipment working on the job. These reports also show the time spent by each and the distribution of this time in hours and money on each job number. The original is sent to the Division office where it is audited and forwarded to the Auditing and Accounting Bureau. The copies are kept in bound form by the foreman making out the report. These copies are used by the foreman in making up his semi-monthly time book, listing the time for each man under him. The time book is sent to the Division office, and the payroll made up from it. The Superintendent of Maintenance signs these semi-monthly payrolls which are then sent to the Auditing and Accounting Bureau where they are checked against the

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[789a] *Ibid.*

[790] The owner who received the largest amount of rentals was a former associate of the Highway Engineer. Total rentals in 1939 amounted to almost $16,000 and in 1940 to over $19,000.

totals of the daily time records. The payrolls are then sent to the Civil Service Commission and the Finance Commissioner in the usual manner for checking, and the pay checks are then drawn and distributed by the Paymasters.[791]

The Cost Accountant in the Auditing and Accounting Bureau is able to keep an accurate and current record of payrolls and of labor and material distribution by using punch cards that are put through tabulating machines rented from the International Business Machine Corporation. These cards can also be used for the preparation of summary statements.

Road Patching and Bituminous Applications:

A large proportion of road maintenance work involves patching with cold mix, hot mix patching, and the application of bituminous materials ("oiling" of roads). Cold mix patching is spread and rolled by the regular maintenance forces under the supervision of a foreman. Patching with hot mix is a contract arrangement, where the vendor does the work. It has already been pointed out that in the case of the purchase of materials where the vendor does the work "in place" the purchase is made through the Supervisor of Purchase and Stores.[792]

The Senior Supervisor and his inspectors go over the roads each spring, note the patching work which has to be done and estimate the materials that will be needed. After the Superintendent of Maintenance has approved of the estimates, the material is purchased. It is to be noted that these estimates are not included among those reviewed by the Assistant Superintendent of Maintenance and the Supervisor of Materials, referred to above.

Before the plant producing the hot mix begins operations, the Laboratory Division sends an Inspector who takes samples of all the ingredients to be used. These are tested at the Laboratory and if approved, the plant begins to prepare the hot mix. A representative from the Laboratory is present during production and each batch of material is weighed before going into the mix. The Laboratory In-

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[791] See *p. 256, supra.*

[792] See *pp. 264* and *265, supra.*

spector sends a delivery slip out with each load. The Maintenance Inspector who has been assigned to the particular road job by the Senior Supervisor, takes up the delivery slips as the materials are delivered. He inspects the work done by the contractor, and sees to it that the road is properly cut and painted, and the material properly placed.

This Inspector makes a daily report showing the patching work done on the job or jobs assigned to him. The report shows such details as the weather and temperature, total amount of material laid, distribution of material, temperature of mixtures, square yards cut out and laid, condition of mixture and of pavement, rejections, etc. The report is made up in triplicate. The Inspector retains a copy and sends the original with the delivery slips attached to the Division office, a copy going to the Laboratory. He also sends samples of materials used on the job direct to the Laboratory for check testing.

Bituminous materials for application to road surfaces are purchased through the State Purchasing Department. Before the vendor ships the material, a representative from the Laboratory Division takes a sample at the refinery and sends it to the Laboratory after sealing the inlet of the tank from which the sample was taken. The Laboratory tests the material and if it is approved the refinery may begin shipments by railroad or truck. The refinery tank remains sealed until empty. In case of tank car delivery, the Laboratory representative seals the car at the refinery and the Inspector assigned to the job by the Senior Supervisor unseals it at its destination.

Bituminous materials sent by truck are accompanied by delivery tickets, copies of which are given to the foreman in charge of the job. Every bituminous material distributor used by the contractor must be calibrated. Before the material is applied to the road, the Inspector checks the content of the distributor and notes this on the delivery slip. When the flow from the distributor has stopped, the Inspector again checks the volume and notes his findings on the delivery slip. The Inspector also takes a sample from the truck and sends it for a check test at the Laboratory.

The Inspector makes a daily report of bituminous applications showing, among other things, the weather and temperature, the source

of supply, Laboratory tank car seal number, delivery slip number, distributor number, job number, location of each load, the gauging at the start and finish, temperature of material when gauged, square yards covered, and gallons applied. The delivery slips are attached to the report. This report also is in triplicate, copies being distributed exactly as in the case of the daily report of patch work.

The Laboratory sends the Supervisor of Materials analyses of samples sent in from road patching and bituminous application jobs. In the latter case the Laboratory determines from its records of the calibration for each truck, the number of gallons at 60°F. for each delivery slip. This information is the basis of payment to the vendor. The Supervisor of Materials reviews the analyses before approving payment of invoices rendered by vendors. He also checks the invoices against the daily reports of patching work and of bituminous applications as to quantities received before approving them.

Bridge Maintenance:

Work orders for bridge maintenance are issued by the Supervisor of Bridges and Structures and are approved by the Superintendent of Maintenance. These orders are very much like the work orders used for road maintenance, and set out the cost estimate for the job, broken down into supervision, freight, materials, labor and other items. Copies are prepared for the foreman, Auditing and Accounting Bureau, Division office and Supervisor. The Auditing and Accounting Bureau sets up funds for the work order in the usual manner.

The work of maintaining the bridges is carried out by three foremen and their labor forces. Another foreman is in charge of painting operations when the weather is favorable. The Supervisor of Bridges and Structures is responsible for 1300 to 1400 structures throughout the State, ranging from five feet in length to the Pulaski Skyway. Until March 1936, the maintenance of operating machinery on movable span bridges was in charge of the Maintenance Division. By order of the Commissioner, this maintenance work was transferred to the Electrical Division.[793] However, the bridge maintenance forces look after the superstructure of these bridges.

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[793] Order effective March 1, 1936. See *Minutes of Meetings of the State Highway Commissioner,* minutes of March 3, 1936.

The bridge forces also do some construction work, such as the occasional construction of small bridges and of temporary bridges in emergencies. Once in a while they will build a bridge on State institutional grounds.

The Supervisor of Bridges and Structures inspects bridges after they have been built to determine, on behalf of the Superintendent of Maintenance, whether they should be taken over for maintenance. Road supervisors do similar work upon the completion of a highway construction contract.

Bridge foremen are required to make daily time and cost reports like those filed by road foremen. At the close of each job, the foreman in charge makes an informal summary report. The Supervisor of Bridges and Structures inspects each bridge maintenance job before it starts and after the work has been completed.

Institutional Roads:

By law, all roads and driveways on land owned by the State are constructed under the supervision of the Highway Commissioner. Improvements to roads and driveways already constructed on State property are likewise made under the supervision of the Commissioner.[794] Any funds appropriated to the Department for the construction and maintenance of roads may be expended by it for roads on grounds under the control of the Department of Institutions and Agencies or the State Board of Education, or for State parkways, or roads in State reservations or at the State Camp at Sea Girt.[795]

The present Maintenance Engineer Investigator (Supervisor of Institutional Roads)[796] was brought back into the Department to study types of construction for institutional roads. The Division's program of construction, maintenance and repair of roads approaching and within the grounds of State institutions was developed by him under the direction of the Superintendent of Maintenance.

Annually, on or before October 1, the various interested agencies send in their requests for the construction of roads on their institutional

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[794] *R. S. 27:7-53.*

[795] *R. S. 25:7-57.*

[796] See *p. 96, supra.*

grounds. The Supervisor of Institutional Roads estimates the cost of construction and formulates a program which must be approved by the Superintendent of Maintenance, Highway Engineer and Commissioner. The Maintenance Division, rather than the State agency, decides what institutional roads are to be built. These roads are constructed mainly of penetration macadam. Practically all of them are built by the Department with its own equipment, although sometimes outside equipment will be rented. The labor forces in charge of the Supervisor of Institutional Roads, build whatever small bridges are required, and these are of concrete slab. The plans, specifications and other details connected with new construction work are prepared by the Survey and Plans Bureau in the case of roads, and by the Bridge Bureau in the case of bridges.

Maintenance on institutional roads is handled in the same way by the foremen and laborers in charge of the Supervisor of Institutional Roads as maintenance work is on the State system by those in charge of the Supervisors of Highway Maintenance. The mileage of institutional approaches and roads under maintenance in 1941 was 195.45 miles. In 1935, the first year of institutional road maintenance, the mileage was 81.335 miles. The largest increase in this work came in 1938 when 84.4 additional miles of institutional roads were placed under maintenance.[797]

The institutional road forces occasionally construct parking lots on State lands.

Signs and Traffic Line Work:

Until 1930 the Department disclaimed any jurisdiction over traffic line painting and referred inquiries to local governmental authorities on the ground that traffic lines came within the provisions of the Traffic Act, and therefore were a matter for the State Police and local jurisdictions.

Traffic line painting and the erection and maintenance of signs are in charge of the Senior Supervisor of Maintenance. Lines are painted

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[797] *New Jersey State Highway Department Annual Reports, 1935* and *1941,* reports of the Maintenance Division, Table 1.

twice a year on the average, and sometimes three or four times on much traveled roads. A few roads in South Jersey are painted once a year. The traffic line program of the Division has increased very rapidly during the past decade. Only 2,856,791 lineal feet were painted in 1931. The present figure is almost 300% higher. On a six-inch line basis, the cost in 1931 was 1.284 cents per lineal foot, compared to .876 cents in 1941.[798] The largest number of lineal feet of this work was done in 1941 when 6,700,279 feet of six-inch line and 826,041 feet of 12-inch line were painted. This amounts to 8,352,961 lineal feet in terms of a six-inch line. Changes in the specifications for line paint, based upon experience, have finally resulted in a product which gives good service.

The Senior Supervisor determines the annual traffic line program. During the winter the men engaged in this work are used in replacing guard rails. As in the case of those doing sign work, the line-painting gangs are shifted about to meet seasonal conditions.

The Senior Supervisor is responsible for working out the annual program of sign erection. Except for electrical signs, all of this work is handled by the Maintenance Division through him. When a new highway is constructed, he takes the "as built" plan and makes sketches of each section of the highway for the purpose of determining the location, size and type of the various signs. The Superintendent of Maintenance passes on this work, and the sketches are then handed to the field men so that they can proceed with the placing of the signs. Once a sign is erected, the Division continues to maintain it.

In recent years, the coating of cast iron and aluminum signs has given considerable trouble to the Maintenance Division because of rusting. The problem has been solved by sand blasting the signs down to the metal, painting them with a coat of red lead paint, and then applying the final coats and lettering.

The following will indicate the types of signs erected by the Maintenance Division (except for the electrical signs) and the number of each type maintained in 1941:[798a]

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[798] *New Jersey State Highway Department Annual Reports, 1931* and *1941,* reports of the Maintenance Division.

[798a] *Source:* Maintenance Division.

Maintenance Division Sign Program, 1941

Type	*Number*
Cautionary (plain)	5,799
Cautionary (reflector button)	3,592
Directionary (electrical)	272
Directionary (plain)	10,798
Directionary (reflector button)	742
Stop (plain)	7,306
Stop (reflector button)	111
Miscellaneous (wooden)	1,332
Reflectors (hexagonal)	2,541
Route markers	13,067
Miscellaneous	47
Total	45,607

The Maintenance Division also erects and maintains the posts for these signs.

Sign work has been carried on in the Division for many years. The first indication of a major program was in 1927, when a large number of cautionary and directionary signs were erected.[799] Experiments in the use of reflector button signs were begun in 1929. The buttons were found not entirely satisfactory. A study of various types of buttons finally led to their increased use on signs during the next few years.[800]

A great deal of metal sign and post erection work was carried on after 1932 for a period of several years, during which time most of the State system was thoroughly covered. During the past few years sign work has consisted mostly of routine maintenance.[801]

The type, erection and maintenance of signs is controlled by the provisions of the Traffic Act of New Jersey.[802] The statute permits cau-

[799] *New Jersey State Highway Department Annual Report, 1927,* report of the Maintenance Division.

[800] *New Jersey State Highway Department Annual Reports, 1930* and *1931,* reports of the Maintenance Division.

[801] See, for example, *New Jersey State Highway Department Annual Reports, 1933* to *1939,* reports of the Maintenance Division.

[802] *R. S. 39:4-146* to *183. R. S. 39:4-184,* controls curb and pavement markings.

tionary, restrictional, directional and informational signs. New Jersey roads are well-signed and the signs are maintained in good order. For the most part, they are suitable for their purpose and properly located. The Electrical Division, as will be seen, does electrical sign work.

Each of the foremen in charge of sign and traffic line work must make a daily time and cost report, like other maintenance foremen.

Permits:

The work of the Engineer of Permits and his four inspectors was touched upon in Chapter II in the discussion of the organization and duties of the Maintenance Division.[803]

Most permits are of a routine nature, but a good many involve engineering difficulties. Applications for road openings are made on regular forms provided by the Department.[804] The application indicates the location and purpose of the opening and must be accompanied by five copies of a plan. The applicant must pay in advance the cost of replacing the pavement, charges being $7.50 for a near side and $22.50 for a far side opening in an unimproved pavement, and $25 for a near side and $50 for a far side opening in a pavement on a macadam base. The rates for pavements with a concrete base or a concrete surface are $50 for a near side and $100 for a far side opening, or tunnel.[805] Openings in improved or unimproved shoulders carry a $7.50 charge. In return for these charges the Maintenance Division does the replacement work on the openings.

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[803] See *pp. 98* and *99, supra. R. S. 27:7-13* requires the consent of the Commissioner before a person may lay any tracks, pipes or conduits on, over or under any public viaduct or bridge constituting a part of the State Highway System, or connect any wires, cables or other appliances thereto. Public utilities subject to the regulation of the Board of Public Utility Commissioners may use such bridges and viaducts under such reasonable terms and regulations as the Commissioner may prescribe, which are to be embodied in an agreement between the Commissioner and the public utility.

[804] Where an owner or tenant or a public utility desires to make an opening in a highway before the expiration of five years after it was constructed or reconstructed, application must be made to the Commissioner for permission to do so, and permission may be granted upon such terms as the Commissioner prescribes. *R. S. 27:7-28.*

[805] "Near side" refers to the pavement lying on the side of the center line of the highway adjacent to the property for which the opening is being made. "Far side" refers to that portion of the pavement beyond the center line of the highway and away from the property for which the opening is being made.

Municipalities and public utilities do not have to pay the charges where the municipality has entered into an agreement, or the public utility filed a bond, in which the applicant binds itself to maintain the replacement for a period of one year. In such cases, the municipality or public utility does its own replacement work. Replacements are inspected by the Permit Inspectors for the period of a year to determine whether the work has held up in accordance with the conditions controlling the issuance of the permit.

Permits for pavement openings come in six copies, two going to the permitee, and one each to the Supervisor of Highway Maintenance, the foreman in charge of the road section, Permit Inspector and Engineer of Permits. The Inspectors in charge of the Engineer of Permits inspect all replacement work made under an opening permit. Each Inspector must file a daily report of the work done under the permits issued in his territory. This report not only details the nature of the work, but also his own expenses on the job. In the case of replacement of large sections of pavement, use is made of the services of the Inspectors in charge of the Senior Supervisor who ordinarily inspect road patching and bituminous application work.

Applications for the erection of poles are similar to those for pavement openings and must be accompanied by five copies of a plan showing the location and nature of the work. Permits are issued in six copies, distributed in the same manner as permits for openings. The Engineer of Permits himself checks this work. There is no Inspector's report.

Applications for permission to construct an entrance from the highway on to private property are similar to the ones just described and are accompanied by four copies of a plan showing the proposed location, width and arrangement of drives and other details. These are usually issued in connection with gasoline stations and roadside enterprises. Applications are checked by two of the Inspectors in charge of the Engineer of Permits. The permit comes in four copies, a copy going to the permitee, Supervisor of Highway Maintenance, the foreman in charge of the road section, and the Engineer of Permits. The Inspector checks the work done under the permit, but there is no inspection report. The Division has issued an informative booklet concern-

ing construction of entrances which is given to all applicants for this type of permit.[806]

There is a regular form of permit for attachment to a storm drain. A standing regulation of the Department is that no abutting owner may attach to a drain for any other purpose except to carry off natural precipitation. There is no form of permit for attachment to bridges and viaducts, permission being granted by letter setting out the conditions that control in the circumstances.

All permits are issued by the Superintendent of Maintenance, acting for the Department. The following five-year record indicates the volume of permit work handled by the Maintenance Division:[806a]

Maintenance Division—Permits Issued, 1937-1941

Year	*Service stations (entrances) and miscellaneous permits*	*Pavement openings and pole permits*
1937	587	1098
1938	636	1230
1939	775	1269
1940	703	1273
1941	678	1220

Highway Encroachments:

Highway encroachments have long been a problem to the Maintenance Division. As early as 1927, the Superintendent of Maintenance noted the increase in the number of encroachments, and recommended legislation that would provide a ready means of preventing their establishment. This would obviate the long and drawn-out legal proceedings required to abate encroachments once they were established. He urged that the monumenting work on rights-of-way be pushed to a conclusion in order to help the Division check the number of encroach-

[806] "Regulations and Instructions Concerning the Construction of Driveways", issued by the Maintenance Division (Trenton, 1940). The Superintendent of Maintenance has pointed out that the increase in the number of roadside enterprises has made it more difficult to control the size and type of entrances. The volume and character of traffic passing in and out from these establishments creates a serious problem in the maintenance of normal shoulders. It was his opinion that the owners ought to be required to construct curbs, as well as a durable type of pavement between the existing road and curb. *New Jersey State Highway Department Annual Report, 1940,* report of the Maintenance Division.

[806a] *New Jersey State Highway Department Annual Reports, 1937* to *1941,* reports of the Maintenance Division, Table 1.

ments.[807] Subsequent reports repeated the recommendation for effective legislation, usually in conjunction with a plea for a law that would give the Maintenance Division a check on what was considered the unwarranted increase in the number of gasoline stations and roadside stands.[808]

The situation was apparently very much aggravated in 1934. The report of the Superintendent of Maintenance for that year referred to the encroachment problem as a nuisance, and termed the new policy of eliminating the monumenting of rights-of-way from construction contracts as "short-sighted economy." He was of the opinion that monumenting should be done at the time the road was constructed or reconstructed, because monuments aided the Division in detecting and preventing encroachments. He again recommended legislation that would stop those caught in the act of encroaching on the highway, and provide an expeditious method for abating established encroachments. Incidentally, the work of monumenting the highways, begun in the 1920's and in charge of one of the Resident Highway Engineers in the Survey and Plans Bureau, has not yet been completed.[809]

Despite these many recommendations of the Superintendent of Maintenance, the Legislature has done nothing to provide adequate legislation for controlling the encroachment problem. The work of the Division in maintaining effective roadside control and preventing encroachments has been made very difficult because of this lack of clear-cut and readily enforceable laws. Nonetheless, the maintenance personnel does what it can. It is continually on the alert for encroachments and is usually able to prevent them.

Each maintenance foreman is required to make a report as soon as he notices that ground has been broken for the construction of a building of any type within 200 feet of a State highway. This requirement is not observed as carefully as it should be. When such a report is received, it is immediately referred to an Inspector in the area for checking and report. A report of any encroachment on the right-of-

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[807] *New Jersey State Highway Department Annual Report, 1927,* report of the Maintenance Division.

[808] See, for example, *New Jersey State Highway Department Annual Reports, 1928, 1930, 1932, 1933* and *1941,* reports of the Maintenance Division. See also, National Institute of Public Administration report, *op. cit., pp. 302* and *303.*

[809] See *pp. 342* to *348,* for a discussion of roadside control.

way must be made by a foreman or an Inspector as soon as the encroachment is noted.

It is recommended that legislation be enacted which will give the Department a more effective and quicker method to suppress encroachments before they are fully established, or to remove them where they already exist. The presently available legal remedies are entirely too cumbersome and slow to be of real use to the Division.[809a]

Heavy Construction Work:

The Maintenance Division has been carrying on a program of heavy construction projects since 1935, consisting of the moving of concrete road slabs in order to dualize highways.[810] This work is in charge of a Superintendent of Heavy Construction assisted by eight foremen and gangs of laborers. It was found that contractors would not bid properly on these projects; the Division therefore undertook the work itself. Like other foremen, those in charge of slab-moving work must make daily time and cost reports.

An Auditor is assigned to field audit construction work done by the Maintenance Division. The cost of this work is paid by the Division in the first place, and then charged to the Construction Division for reimbursement purposes.

Mudjacking:

A special type of maintenance work carried on by the Division is known as mudjacking. A common experience on State highways, especially those built over five years ago, is the settlement of the concrete slabs at joints and other places. Mudjacking first appeared in the maintenance program in 1932, when almost 250,000 square yards of this work was done.[811] The problem of eliminating settlement at joints

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[809a] *R. S. 27:7-44.1* provides that any person entering upon or constructing any works in or upon any State highway, except under such conditions and regulations as the Commissioner may prescribe, is liable to a fine of $100 for each day's violation, and the costs of prosecution. The Commissioner may proceed in Chancery to have the encroachment removed as a trespass.

[810] See *p. 391, supra.*

[811] *New Jersey State Highway Department Annual Report, 1932,* report of the Maintenance Division.

The work of mudjacking consists of drilling a hole in the concrete slab and forcing a mixture of cement, water and topsoil beneath the surface of the slab with a mechanical device known as a mudjack until the pavement is brought back to its original level.

led to studies by the Engineer of Special Assignments and the development of a new type of joint.

Mudjacking has continued during the past decade in varying volume, the high point having been reached in 1933, when over 400,000 square yards of work was done. Operations have been carried out on all routes. Many of these projects were on the W.P.A. program, the men working under the regular Supervisors of Highway Maintenance.

Roadside Improvement:

The first contract for planting trees along State Highways was let and completed in 1926.[812] A Landscape Engineer was employed by the Department from 1930 to 1933, and since 1937.[813]

Landscape construction was carried on along Route 26, from Trenton to New Brunswick, during the years 1931 and 1932.[814] Until the employment of a full time Landscape Engineer in 1937, landscaping was confined almost entirely to maintenance operations, such as mowing, tree trimming, the removal of dead trees and the seeding of slopes to prevent erosion. Mowing methods and mowing equipment were studied in 1935, and new equipment bought in order to achieve better results.[815] The increasing volume of landscaping work, particularly by reason of new highways built by the Construction Division, finally made it necessary to employ a Landscape Engineer and to expand the forces and increase the amount of equipment available for the landscaping operations.

The importance of roadside improvement has been realized during the past few years. Landscaping has a definite economic as well as an aesthetic value, especially in the prevention of soil erosion. It is now a standard minimum procedure to topsoil and seed all highway slopes because it results in the eventual reduction of maintenance costs. The use of honeysuckle as a ground cover affording a complete mat over

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[812] *New Jersey State Highway Department Annual Report, 1926,* report of the Maintenance Division. The first contract covered 1,100 trees.

[813] See *pp. 96* to *98,* supra.

[814] *New Jersey State Highway Department Annual Reports, 1930* and *1931,* reports of the Maintenance Division.

[815] *New Jersey State Highway Department Annual Reports, 1933* to *1937,* reports of the Maintenance Division.

slopes is a common practice.[815a] Native shrubs with long and fibrous root systems are also used for the same purpose. Further, landscape treatment of roadsides prevents damage to road shoulders, lowers mowing costs, and reduces reflection and road glare.

The sharp increase in landscaping work during the past four years has been largely due to the increased mileage of dual highways built by the Construction Division and the greater emphasis placed upon this type of program. The entire program has been given impetus by the encouragement of roadside improvement and landscape development by the Federal Government under the Federal Aid program.[816] As more miles of dualized highways are laid down, and in the measure that the public interest in roadside improvement continues to increase, the cost of landscaping work will become greater with the passing of time.[817]

The landscaping operations of the Maintenance Division include the mowing of over 1,200 acres of lawn areas, including all center islands, multiple intersections and traffic circles; the cultivation and necessary maintenance of over 100 acres of planting areas, together with tree trimming, tree removal and replacements on nearly 1,700 miles of State highways.

Mowing operations commence during April and continue through October. Planting is done in the spring and fall, depending upon weather conditions. A schedule is made up in advance to cover the required replacements on all Federal Aid projects that have been completed by the contractor, after the expiration of the one-year guarantee that has been included in the construction contract. These replacements, together with various shade tree and slope protection plantings, constitute the landscape operations for the planting seasons. Special projects of a small nature may be included, depending upon various request from garden clubs, municipalities, and the like. All projects must be first approved by Superintendent of Maintenance and the Highway Engineer. All plant material, fertilizers, grass seed, etc., are

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[815a] The Superintendent of Maintenance has pointed out that far too much work is being done on an arbitrary 1½ to 1 slope, without due consideration of the nature of the soil involved. This results in the necessity of major repair work during the first year or two because of instability of the slopes. He also noted that too much seeding is done when weather conditions are unfavorable. As a consequence, the results obtained are unsatisfactory and excessive maintenance costs are involved in making good the deficiencies. He urged greater use of ground cover planting, such as honeysuckle. See, *New Jersey State Highway Department Annual Report, 1941,* report of the Maintenance Division.

[816] See *pp. 433* and *434, supra,* for the 1% Federal Aid program.

[817] *Cf., New Jersey State Highway Department Annual Report, 1939,* report of the Maintenance Division.

bought through the State Purchasing Department. Rigid specifications are drawn up and it is required that all plant materials be inspected and sealed at the source.

In a preliminary survey of new alignments, all plant materials between curb lines suitable for salvage must be transplanted to predetermined locations or placed in the Department's salvage nursery at Fernwood for later use. Numerous residents of New Jersey are intertested in roadside improvement to the extent that they permit the Highway Department to dig various plant materials from their properties for use on highways in their respective localities. In both instances, savings to the State are considerable.

The outstanding roadside improvement project on the State Highway System is that on Route 40, which route is known as the John Davison Rockefeller Memorial Highway. Three years of intensive landscape operations have produced approximately fifteen miles of tree and shrub plantings, extensive lawn areas, and rustic guard rail installations on a stream-lined cross section. This project has been favorably commented on by experts and is the finest example of roadside improvement in the State.

New Jersey is among the leading States in the scope and emphasis placed on roadside improvement, and ranks in the East with Connecticut, New York, and Virginia in this aspect of highway work.

Landscape foremen make the same sort of time and cost reports as other maintenance foremen. The Division does not do landscaping work on institutional roads or grounds.[818]

W.P.A. Projects:

Maintenance projects have been used for the purpose of providing work for the unemployed since the beginning of the depression. Thus, in November of 1930 the Highway Commission directed that an organization be set up consisting of existing personnel and non-departmental employees, to handle unemployment relief. This resulted in a program that required the services of almost 1,300 persons on the relief rolls.[819] Unemployment relief on maintenance projects continued under departmental auspices for several years, during which time a great amount of sewer and drain construction work was done, guard rail replaced

[818] However, planting work was done on the lands adjacent to the State House Annex.

[819] *New Jersey State Highway Department Annual Report, 1930,* report of the Maintenance Division.

and signs erected. Persons so employed were also used in clearing rights-of-way and in widening graded widths.[820]

With the setting up of the W.P.A. Program under the W.P.A. Coordinator in 1938, an opportunity presented itself for carrying out various maintenance projects using men from the unemployment rolls. In all, there were 112 maintenance projects put into operation during 1938, representing a total value of $3,942,268. The largest of these were the two slab moving and widening projects on Route 26 already mentioned. Good results were obtained, many of the projects being carried out at a cost comparable to that obtained under other operating conditions. There was a definite saving to the Department, and the Maintenance Division was able to clean up many drainage conditions requiring attention.

Forty-nine W.P.A. projects were put into operation in 1939, representing a total value of $3,090,316.17. A considerable amount of bituminous concrete work was done on institutional roads, and light bituminous resurfacing on five State highways where the old concrete pavements had begun to disintegrate. There was also a large amount of guard rail construction made necessary because of deterioration. The 1940 program involved 25 W.P.A. projects valued at $2,094,279 and marked the beginning of the falling-off of the program. The 1941 W. P. A. program had a project value of only $582,859.[821]

W.P.A. projects consist of the so-called "Betterment" and "Institutional" projects. "Betterment" projects include construction, reconstruction, repair, widening, right-of-way, drainage, and other similar work on the existing State Highway System. "Institutional" projects include work on the grounds of State institutions. Projects are written up on regular proposal forms that must be signed by the State Highway Engineer. Instead of the contract method used in carrying out "Primary" projects, maintenance projects are done by "force account",

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[820] The 1931 unemployment relief maintenance program required the services of almost 2,900 men and 125 extra outside trucks. The peak of employment was reached in March, 1932, when over 3,900 men were employed and 190 extra outside trucks hired. See, *New Jersey State Highway Department Annual Reports, 1931* and *1932,* reports of the Maintenance Division. Expenditures and commitments for unemployment relief amounted to $1,000,000 in each of these two years. See Schedule 2, *p. 187, supra.*

[821] *New Jersey State Highway Department Annual Reports, 1938* to *1941,* reports of the Maintenance Division.

where the W.P.A. personnel, supervised and directed by W.P.A. Supervisors, operate the proposed project for the State as sponsor. The interests of the Department are protected by the Division representatives. The sponsor's share is a direct contribution of materials, equipment and machinery, delivered to the W.P.A. personnel for incorporation and use on the project. This accounts for the increase in maintenance materials, particularly in 1938 and 1939, which the Maintenance Division provided for "Betterment" and "Institutional" projects.

The Assistant Superintendent of Maintenance is responsible for setting up the "Betterment" projects and obtaining the materials and equipment necessary to the work. The "Institutional" projects are worked up by the Supervisor of Institutional Roads and are reviewed by the Assistant Superintendent of Maintenance. All projects require final approval of the Superintendent of Maintenance himself.

The following figures show the State's share on W.P.A. projects carried out by the Maintenance Division from the time the program was instituted in 1938 until the end of 1941.[822]

Maintenance Division W. P. A. Projects—Sponsor's Share, 1938-1941

Year	*Total sponsor's funds*	*Expenditures to December 31*	*Balance of commitments*
1938.....	$1,197,003.85	$1,093,246.60	$103,757.25
1939.....	902,991.96	395,043.46	507,948.50
1940.....	1,367,811.86	675,403.99	692,407.87
1941.....	692,407.87	461,047.04	231,360.83

Although the balance of the W.P.A. program at the close of 1939 amounted to over $1,400,000, and to over $1,000,000 in 1940, only $153,162.85 was available at the end of 1941. None of this money is for use on maintenance projects. These figures indicate the rapid falling off of the W.P.A. program.

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[822] *New Jersey State Highway Department Annual Reports, 1938* to *1941,* Auditing and Accounting Bureau reports.

The following statistics show the Federal and State shares on projects completed and projects operating as of the end of each year:[823]

Maintenance Division W. P. A. Projects Completed and Operating, 1938-1941

Year	*Completed*		*Operating*	
	Federal	*State*	*Federal*	*State*
1938				
Betterment	$ 959,485	$322,008	$1,537,943	$742,795
Institutional	62,741	51,883	94,502	80,404
1939				
Betterment	1,926,298	920,405	2,658,391	501,774
Institutional	70,955	84,427	2,322,560	139,146
1940				
Betterment	895,845	229,191	2,709,083	403,793
Institutional	83,944	72,677	2,517,849	127,396
1941				
Betterment	388,078	128,181	2,846,860	654,133
Institutional	1,108,448	79,037	1,409,407	48,359

Snow Removal:

The details of the organization and some of the work connected with the snow removal were described in Chapter II.[824] The entire program is in charge of the Assistant Supervisor of Maintenance.

As soon as the annual program has been set up in the late Fall, a mimeographed copy of the regulations governing snow removal activities for the season is sent to each contractor. There are separate regulations for contractors using departmental trucks and those using non-departmental equipment. These regulations are divided into five distinct classifications: (a) general instructions, including permissible charges, (b) the contractor's daily labor report, (c) his daily equipment report, (d) rendition of bills, and (e) payrolls. Each of these is covered in detail, the instructions for the last three categories being further supplemented by illustrated forms.

[823] *Ibid.*, reports of the W.P.A. Coordinator.

[824] See *pp. 102* to *104, supra.*

The general instructions state the snow section assigned to the particular contractor and the number of trucks, if any, to be furnished by him. The permissible charges are set out clearly and in detail. These changes are in line with what should reasonably be paid for work of this type, especially in view of the fact that the contractor must be ready at all times and never knows whether he will be called upon to do much or little work during the winter. Waiting time, or the period elapsing between the time the contractor has been instructed by the main office to stand by after completing the assembling of his forces, and the time he is authorized to begin plowing, is allowed at a reduced rate. An extra fifteen per cent. is allowed on the cost of hand shovelers, workmen's compensation and employer's liability insurance (not including insurance covering truck crews), and sundry purchases, including food for men (when allowed) and miscellaneous items. Time and one-half is allowed for work done by foremen and ordinary labor on Sundays and certain holidays.

The contractors must file daily time reports covering all employees on the job, including the superintendent and, when their employment was authorized beforehand by the Trenton office, timekeeper and paymaster, foreman and ordinary labor (hand shovelers). These reports set out the number, length, and beginning and end of the section, the snow station (garage), and the date and hour of notification received from the main office to report for operations. It also sets out the rate, time and amount due for each man. Reports are signed by the contractor's superintendent.

The contractor must file a similar daily report covering equipment used, with a statement of the location of any bad drifts encountered, equipment trouble, and when the road was opened to traffic.

Bills must be rendered in duplicate promptly after the completion of each snow removal and in accordance with the sample form accompanying the mimeographed regulations. Bills include charges for labor (in accordance with an accompanying payroll), superintendent, and timekeeper and paymaster; workmen's compensation and employer's liability on the labor payroll; equipment; the ballasting of trucks, removal of ballast, and attaching and detaching of snow plows, at the regular rate; and sundry purchases. All receipts covering these purchases must be attached. Contractors must support their charges for those employed on the job by a payroll, properly made out in the manner indicated in the regulations.

The regulations sent to contractors using trucks provided by the Department include complete directions covering the operation of this equipment as well as the purchase of gasoline and fuel. Wherever possible, fuel is to be obtained from stations operated by a designated oil company with whom the Department has an agreement, or agents operating its stations. Truck drivers and equipment operators obtaining gasoline and oil sign a delivery slip for each purchase, retaining a duplicate copy. These duplicate slips are sent in by the contractor at the completion of each snow removal, together with a regular report form showing, with respect to each purchase, the date, delivery ticket number, station number, number of truck or equipment, quantity of gasoline or oil purchased, and miscellaneous purchases. Where fuel is obtained from stations other than those mentioned, payment is made in the first instance by the contractor, who is reimbursed after sending in an itemized bill, properly receipted.

Contractors using State equipment include in their daily time reports a statement showing the operating time of these trucks, the location of bad drifts, equipment trouble, and the time the road was opened to traffic.

The Division foreman, who are the Department representatives on snow removal jobs handled by outside contractors, must make complete daily reports.

The Division Auditor checks the various daily reports, and audits the contractors' bills. After being approved by the Superintendent of Maintenance, the bills pass to the Auditing and Accounting Bureau and are charged against the funds set up for snow removal. The Cost Accountant keeps a record of costs on each snow section.

The annual cost of the snow removal program depends entirely upon the weather. A winter that has several large snow storms will increase the total cost. In recent years large sums have been spent in controlling ice conditions. These seem to be increasing from year to year. The upward trend in temperatures has brought freezing rains, rather than snow storms. Moreover, the increased use of balloon tires on heavy buses and trucks tends to pack snow as fast as it falls, causing an ice formation. Slippery roads have made necessary a greater use of abrasives, like cinders, and increased the cost of cleaning the pavements. The public insists that the roads be safe

for travel and is quick to complain if slippery conditions are not corrected or snow removed with all possible speed.[825]

The following record shows the mileage and cost of the snow removal program for the past five years:[826]

Maintenance Division Snow Removal Program, 1937-1941

Year	*Snow program mileage*	*Cost*
1936-1937	1572.271	$165,001.43
1937-1938	1590.157	294,407.51
1938-1939	1593.107	436,123.43
1939-1940	1601.963	665,724.21
1940-1941	1607.261	835,254.68

The early years of this period were featured by unusually mild winters. The 1941 snow program is the largest and costliest on record.

Costs could be reduced materially if the Department were to buy the additional snow fence which it needs. The practical value of fencing the roads—particularly the heavily travelled highways—has clearly been demonstrated during the severe storms of recent years. Fences keep the snow from drifting, thus cutting down the amount of snow removal work required. Due to an inadequate quantity of fence, making it impossible to erect a sufficient length at many important points, drifts have formed around the ends of fences. The result has been interference with traffic and increasing difficulties in removing the snow. Heavy drifts call for the use of the heavier type of equipment and sometimes require a resort to hand labor.[827]

Attention has been called to the fact that the Maintenance Division is still compelled to use heavy trucks dating back to the first World War. These are totally inadequate for the task. If they were replaced and a certain amount of additional modern equipment purchased, as indicated above, real economies could be effected. The Division would

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[825] *New Jersey State Highway Department Annual Report, 1939,* report of the Maintenance Division.

[826] *New Jersey State Highway Department Annual Reports, 1937* to *1941,* reports of the Maintenance Division and Auditing and Accounting Bureau.

[827] *New Jersey State Highway Department Annual Report, 1940,* report of the Maintenance Division.

not have to rent as much equipment as it does now. Modern equipment could do the job faster and better. Fewer men would be required. The Department has practiced false economy in trying to carry on some of its snow removal operations under present day conditions with 1917 army trucks.

The need for modern equipment and additional snow fence is particularly important in view of the war effort. The roads must be kept clear, even under the most adverse conditions, so that vehicles servicing defense industries as well as those used by our armed forces may move over the highways rapidly.[828]

Property Damage and Personal Injury Reports:

Maintenance foremen must report all accidents resulting in damage to highway or bridge structures, or injuries to employees, at once. Regular forms are provided for the purpose.

In the case of a vehicular accident happening on a State highway or bridge, the report sets out the location of the accident, the description of the vehicles involved, the damage done to the State property, persons injured and the nature and extent of their injuries, medical aid given, and the witnesses. Another form of report is used to report marine accidents causing damage to a bridge. These reports are sent to the Division Auditor.

After the damage has been repaired, the foreman sends in a cost statement describing the work done and summarizing the costs for supervision, labor, equipment and materials. The Division Auditor forwards the statement to the Auditing and Accounting Bureau which sets the amount up as an account receivable and charges the Division with the sum expended. The responsible party is then billed. If not paid within a month, the bill is referred to the Legal Division for collection.

Reference has already been made to the number and total of accounts receivable arising out of damage done to highway structures.[829] Most of them are for small amounts, and some are of many years standing. There seems to be no reason why these accounts cannot be

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[828] *Ibid.*

[829] See *pp. 231* and *232, supra.*

collected or settled within the two-year period of limitations, or a judgment recovered.

Where an employee is injured in the course of his duties, his foreman or immediate superior makes out a report on a regular form which is completed by the employee. This is sent to Workmen's Compensation and Claims Clerk.[830] The attending physician is then requested to fill out a medical and surgical report form. If the injury is non-compensable, a request for a bill is made of the physician and the Department pays his fees. Where the time lost by the employee is compensable, a regular report is made to the Workmen's Compensation Bureau, a copy being kept for the files. Where the injury was caused by an outside third party, the Division Auditor notifies him that he will be held for medical expenses and compensation payments made. Eventually a bill is sent to him itemizing the costs. When the employee returns to work, the Workmen's Compensation Bureau is duly notified as to the time lost and compensation paid.

The Division Auditor makes up compensation payrolls semi-monthly, for permanent as well as temporary compensation cases. Both types of payrolls go to the Auditing and Accounting Bureau, but only the permanent compensation payroll goes to the Comptroller for payment. Temporary compensation is paid, along with other labor payrolls, from the Department's Labor Payroll Fund. The Division keeps an individual record of payments made to each injured employee.

Expense Accounts:

The procedure on expense accounts is the same in the case of the maintenance personnel as for other departmental employees and is briefly described at this point.

At the close of each year the Maintenance Division Auditor makes up a "request for authorization to incur reimbursable expense". This sets out for each employee entitled to traveling expenses, his name, home station, usual mode of transportation, duties requiring travel and the estimated monthly cost. The request is based on previous experience and is approved by the Superintendent of Maintenance, Highway Engineer and Commissioner. It then passes to the Governor for final approval. If any additions are made, a supplemental form is made out

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[830] See *pp. 294* to *296, supra.*

and approved in the same manner. Reimbursable expenses include hotel charges, meals, transportation, and all other expenses occurring in the line of duty within the boundaries of the State, exclusive of attendance at conventions, conferences and meetings of like character.

Expense accounts are submitted on a regular reimbursement invoice form and are audited by the Division Auditor, approved by the Assistant Superintendent and Superintendent of Maintenance, as well as by the Chief Auditor and Accountant.

Expense accounts are admittedly difficult to check up on and control. No attempt was made in the course of this study to analyze the number of these accounts or the total amount involved. It does appear, however, that an unusual number of employees throughout the Department have been given the privilege of using their own cars and charging mileage at the rates established for all State employees. It would seem that in some cases savings would be effected by requiring employees to use cheaper forms of transportation, or by arranging to have certain employees picked up by others passing their home stations on the way to and from work.

Maintenance Costs:

A comprehensive summary of maintenance expenditures on roads and bridges on the State Highway System is presented in Schedule 8 on page 479.[831] Institutional roads and approaches are not included,[832] nor are the amounts spent on work done for other Divisions, in which case reimbursements are made.

One feature of this schedule that is apparent at first glance is the increase in the labor payroll from $604,732.93 in 1931 to $1,172,163.02. This increase of $567,430 represents, within a few thousand dollars,

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[831] Electrical installations and maintenance, the maintenance, repair and operation of electrical bridge machinery and the operation of movable span bridges were taken over by the newly created Electrical Division in March 1936. See *p. 115, supra.*

[832] Expenditures and commitments for institutional roads and approaches since the start of this program in 1933 are:

Year	*Amount*	*Year*	*Amount*
1933	$ 11,916.08	1938	$400,000
1934	9,706.28	1939	400,000
1935	240,247.45	1940	400,000
1936	170,130.19	1941	400,000
1937	175,000.00		

See Schedule 2, *p. 187, supra.*

Schedule 8

NEW JERSEY STATE HIGHWAY DEPARTMENT
Maintenance Division
Maintenance Expenditures on Roads and Bridges, 1931 - 1941

Year	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
Salaries	$ 316,549.58	$ 320,343.20	$ 278,899.10	$ 243,874.20	$ 223,921.75	$ 243,224.92	$ 294,676.81	$ 301,873.14	$ 254,973.27	$ 259,982.54	$ 242,952.30
Labor	604,732.93	702,105.79	561,186.36	664,095.66	699,884.99	799,858.85	1,040,983.46	1,196,687.30	1,237,190.01	1,279,928.25	1,172,163.02
Outside Equipment	10,312.10	27,909.39	16,559.67	35,551.50	41,407.98	38,120.36	62,952.26	84,978.85	65,297.59	72,826.22	70,621.38
Department Equip.	180,297.79	149,279.97	289,361.35	291,550.66	253,304.53	252,443.43	327,299.82	222,134.60	381,932.14	360,171.12	306,823.72
Material	545,250.25	481,956.50	435,644.28	240,083.07	591,748.77	498,126.97	428,254.57	491,308.20	470,831.19	497,855.39	518,041.70
Maintenance by Contract						101,412.20	22,036.32	21,577.46			11,525.06
Miscellaneous	252,366.90	158,528.21	163,490.35	188,445.81	165,331.86	93,946.99	154,603.44	146,273.31	221,312.95	241,799.96	148,048.48
Total Maintenance of Roads & Brs.	$1,909,509.55	$1,840,123.06	$1,745,141.11	$1,663,600.90	$1,975,599.88	$2,027,133.72	$2,330,806.68	$2,464,832.86	$2,631,537.15	$2,712,563.48	$2,470,175.66
Snow Removal	87,491.60	99,418.37	162,473.90	447,135.75	512,636.35	497,463.47	165,001.43	294,407.51	436,123.43	665,724.21	835,254.68
Electrical	20,939.37	42,502.13	118,680.10	145,912.23	127,314.95	0	0	0	0	0	0
	$2,017,940.52	$1,982,043.56	$2,026,295.11	$2,256,648.88	$2,615,551.18	$2,524,597.19	$2,495,808.11	$2,759,240.37	$3,067,660.58	$3,378,287.69	$3,305,430.34
Commitments	270,727.75	94,981.20*	168,581.20	54,047.17	159,467.01*	121,444.87	44,492.98	251,404.13	343,704.81	105,748.46*	7,514.94
TOTAL	$2,288,668.27	$1,887,062.36	$2,194,876.31	$2,310,696.05	$2,456,084.17	$2,646,042.06	$2,540,301.09	$3,010,644.50	$3,411,365.39	$3,272,539.23	$3,312,945.28

* C r e d i t

Source: New Jersey State Highway Department

the increase in the cost of maintaining the State roads and bridges. Reference is made to the chart of hourly basis employees in the Maintenance Division on page 239 and the discussion of the increase in the number of these men on pages 237 and 238.

An average of 866 more hourly basis employees were employed in maintenance work in 1940 than in 1931. The first reduction in the number of these men and their total payroll in nine years occurred in 1941, the year of the Governor's highway investigation.

Part of the increase in labor costs and in the annual maintenance totals generally, may be explained by the increase in landscaping work. The greater attention given to icy roads and the erection and removal of snow fences may also account for some of the increased expenditures.

One reason advanced for these greater maintenance costs is the fact that many roads have been dualized or widened, and although the mileage of these roads has not increased, the number of square yards requiring maintenance has. Just how much weight can be given to this argument is doubtful. It would seem that the improvements in question, all made during the past few years, would, if anything, reduce the amount of maintenance work, particularly as regards drains, ditches and unpaved shoulders. This is borne out by a consideration of the costs for Route 26, dualized in the period from 1935 to 1939. Maintenance costs per mile in 1934 were $1,450.25. The costs for 1940 were $1,148.91, and in 1941, $1,244.30.[833]

Giving full weight to those factors which might reasonably be expected to increase maintenance costs in the 1931-1941 period, a considerable amount of the increase must be put down to the fact that men were hired when there was no real need for them. The rise in the number of hourly basis laborers employed at primary and election time, as shown by the chart referred to, points to one of the main reasons for the increase.[834]

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[833] *Source: New Jersey State Highway Department Annual Reports, 1934, 1940* and *1941,* reports of the Auditing and Accounting Bureau. The mileage was the same in all years.

[834] Immediately after he took office, the Highway Commissioner held conferences with maintenance foremen and supervisors in order to raise the efficiency of the labor forces. *Minutes of Meetings of the State Highway Commissioner,* minutes of May 14 and May 21, 1935. He also instituted a rating system, calling attention to the fact that laborers working for contractors were doing more work for less pay, and that foremen would be held accountable for their men. *Ibid.,* minutes of June 4, 1935. At this latter meeting he announced the appointment of five Special Investigators, who reported to him on the work done by the men in the field. The subsequent performance of the Commissioner ran directly counter to the purpose of this announced program, as brought out in the hearings held by the Governor's Highway Examiner.

One should not lose sight of the fact that during the period from 1938 to 1940, when there was a marked increase in labor costs and in the total maintenance figures, the Division had the benefit of an extensive program of W.P.A. "Betterment" projects. These projects not only resulted in extensive savings, but also accomplished a great deal of maintenance work which would have had to be carried out by the regular forces. The cost figures in Schedule 8 do not, therefore, tell the whole story. Without W.P.A. the rise in cost would probably have been much more.

The following figures show the mileages of State highways under maintenance as of the end of each year. The first column sets out the actual mileage of the routes. The figures in the second column include extra mileages represented by parallel highways, elevated highways, the high level viaduct, by-passes, dual highways, ramps, widened concrete highways, etc. The mileage for concrete pavements has been set out separately:[835]

State Highway Mileage under Maintenance, 1931-1941

Year	*Maintenance mileage* I	II	*Concrete mileage*
1931	1314.072	1372.926	1026.074
1932	1395.338	1452.730	1115.096
1933	1470.573	1528.812	1164.377
1934	1506.433	1565.254	1199.437
1935	1561.698	1637.326	1266.044
1936	1549.813	1617.472	1282.785
1937	1588.350	1660.894	1335.983
1938	1608.342	1679.431	1344.900
1939	1630.987	1700.083	1362.022
1940	1620.282	1690.743	1348.231
1941	1628.245	1714.045	1366.323

There is relatively little unimproved road under maintenance. Gravel, brick, earth and asphalt block roads, and new right-of-way total less than 85 miles. The highways are chiefly of concrete, and many of them are relatively new. These roads require a minimum of maintenance except for ditches, drains, unimproved shoulders and guard rail.

[835] *New Jersey State Highway Department Annual Reports, 1931* to *1941,* reports of the Maintenance Division, Tables I and II.

As the system grows older the problem of maintenance will assume increasing importance. Extraordinary repairs—the resurfacing, rebuilding and heavy patching of the main pavement, the rebuilding of paved shoulders and drains, new ditching, and the replacing of guard rails and fences—will be a much greater problem than today.

Future plans must take careful account of the expanded program that lies ahead, particularly in developing a coordinated field organization such as has been suggested heretofore.[836]

An analysis of maintenance expenditures for the roads on the main system indicates that the average costs are well in line with what one might expect in view of the volume of traffic, weather, labor and material costs, and the geography of the system. The condition of the roads is good and every effort is being made to keep them safe and open for traffic. The snow removal and ice program is especially well organized, landscape work is now in full stride, and the regular maintenance programs are set up so as to protect the large investment made by the State.

The following schedule is taken from the annual analysis of road maintenance costs by route, type of pavement and class of work, made by the Auditing and Accounting Bureau. In making up the average costs, only those sections of highways are included which were under maintenance during the year:[837]

State Highway Maintenance Costs, 1931-1941

Year	*Mileage*	*Cost per mile (all pavements)*	*Cost per mile (concrete pavement)*
1931	1,255.044	$1,740.05	$1,535.86
1932	1,335.092	1,259.93	1,228.35
1933	1,450.680	927.32	808.73
1934	1,470.715	827.03	785.05
1935	1,548.777	1,020.70	811.09
1936	1,556.322	967.80	856.71
1937	1,599.794	1,120.56	1,069.46
1938	1,615.060	1,225.94	1,178.70
1939	1,631.793	1,240.74	1,232.85
1940	1,660.016	1,195.67	1,147.55
1941	1,666.043	1,116.08	1,139.39

[836] See *p. 161, supra.*

[837] *New Jersey State Highway Department Annual Reports, 1931* to *1941,* reports of the Auditing and Accounting Bureau.

It is to be noted that the average cost per mile for maintaining concrete pavements has at last caught up with and passed the average for all pavement types. Decreases have been registered in average costs for the second year in succession after a rise continuing over several years.

It should be mentioned, incidentally, that calculating maintenance costs on the basis of mileage is no longer a proper or an accurate method. The system under maintenance should be reduced to square yards if cost figures are to be exact and appropriate for comparison purposes.

There can be no doubt that if the labor cost problem mentioned above were solved by the elimination of political and personal considerations in the employment of maintenance laborers, further decreases in costs could be effected. Every effort should be made to improve the efficiency of the labor forces. One way, perhaps, would be to follow out a suggestion made in the Abell Committee report,—to analyze the cost on various operations comprised in maintenance work and, particularly, to compare these costs between various parts of the State. "These would be of value in bringing to the attention of all units of the organization the methods which are producing the greatest performance, and so promote a competitive effort by all units to increase their performance."[838]

A reorganization of the field forces of the whole Department, a carefully managed rating system for laborers, the encouragement of better performance by basing promotions on merit rather than on influence, will do much to improve the quality and amount of maintenance work and keep costs at a minimum.

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[838] National Institute of Public Administration report, *op. cit., p. 301.*

STATE AID PROJECTS DIVISION[839]

New Jersey has provided grants-in-aid for county and municipal road improvement for half a century.[840] Starting with a modest contribution of $75,000 the State Aid program now falls just short of $10,000,000 annually. In 1941 grants to counties and municipalities for road purposes amounted to practically one-third of all the expenditures and commitments administered by the Highway Department.[841]

The history of this greatly expanded program of State Aid is the history of much of the "good roads movement" throughout the nation in the past forty to fifty years. Local governments, and particularly the rural areas, have never been without influence in legislative halls. The power of their road lobby has become increasingly evident since the World War. Any bill which might conceivably affect State Aid unfavorably is sure to draw its immediate fire.

The State Legislature has increased the funds available to counties and municipalities for road purposes and broadened the State Aid program again and again. But it has failed to reexamine the basis of that program in its relation to the highway policies and needs of the State as a whole. The need for such a comprehensive reexamination has been suggested on many occasions.[842] Scant attention was given any of these recommendations. This very important subject will be considered after the work of the Projects Division has been discussed.

The entire program of State Aid to counties (Motor Vehicle Aid, or MVA), and to municipalities (Township and Borough Aid, or T & BA) is carried out under the direction of the Supervisor of State Aid Projects and his staff. A great deal of the work of the Projects Division centers in the review of applications, surveys, plans, specifications,

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[839] See *pp. 107* to *112, supra,* for the organization and duties of the State Aid Projects Division.

[840] See *pp. 1,* and *2, supra.*

[841] See Schedule 2, *p. 187, supra.*

[842] See, particularly, National Institute of Public Administration report, *op. cit., pp. 312* and *313;* Princeton Survey report, *op. cit., pp. 205* to *209; New Jersey State Highway Department Annual Report, 1929,* report of the Projects Division; *Report of the State Highway Engineer to the New Jersey State Highway Commission, op. cit.,* in which a secondary system was recommended (1926).

contracts and estimates for payment made by the agencies who are the beneficiaries of the State Aid program. An office staff of twenty is responsible for the great volume of paper work involved. Thirteen Traveling Inspectors, 56 Highway Inspectors, 35 Junior Inspectors, and two others—a total of 106—make up the staff which supervises and inspects operations in the field in order to determine whether State Aid projects are being carried out in accordance with Department standards.

No funds may be expended for State Aid to counties and municipalities unless the roads constructed therewith conform to standards prescribed by the Department, and the county or municipality has first entered into an agreement with the Department that the road will be kept in repair by patrol or such other method as shall be adopted by the Highway Commissioner.[843]

All expenditures of State Aid funds for the improvement, maintenance or repair of highways, or for the building, maintenance or repair of bridges, must be in accordance with annual work program prepared by the governing bodies of the several counties and municipalities, filed with and approved by the Commissioner. These work programs are submitted on blanks provided by the Department and must differentiate between State Aid for highway construction, highway maintenance, bridge construction and bridge maintenance.[844]

The Commissioner has the power to fix the date on or before which counties and municipalities shall file their annual work programs. However, amendments may be filed and approved at any time in the case of emergencies. Prior to approving the programs and extending State Aid to the projects included therein, the Commissioner may hold hearings with the governing bodies of the counties and municipalities concerned, with a view to recommending such additions to, removals from or changes in the programs as will best enable these agencies to develop the highways under their jurisdiction in cooperation and coordination with the State Highway System as well as with each other. The Commissioner is empowered to deny State Aid to any project which in his judgment does not comply with this requirement.[845]

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[843] *R. S. 27:13-1.*

[844] *R. S. 27:13-2.*

[845] *R. S. 27:13-3.*

State Aid to Counties:

The amount of State Aid to counties (MVA) has increased over the years until it now totals $6,735,000 annually.

The 1917 act establishing a State Highway Department and defining its powers and duties provided that an amount equal to the State road tax then in effect should be expended for the extension and construction of State highways. "The remainder of State funds (the State Road Fund) may be expended for State Aid to counties and municipalities, as provided by law, in the improvement of roads, in maintenance and repair of improved roads and in the building and repair of bridges and culverts * * * as the State Highway Commission shall direct and approve * * *."[846] This was the beginning of the MVA program of our times.[847]

It is to be noted that the amount of State Aid to be distributed was left entirely to the discretion of the State Highway Commission.[848] It was under no obligation to give the counties any road aid whatsoever, but it did. This continued to be the situation down to 1933, when the act amending the 1931 Budget Act was passed. It provided for various mandatory dedications from the State Highway Fund,[849] among which was the following:

> "(d-2) State-aid projects which shall include * * * * *
>
> First: Six million dollars ($6,000,000) for the construction, reconstruction, maintenance and repair, operation, policing and lighting of county roads and bridges, and for the payment of principal or interest of obligations heretofore incurred for any of such purposes, and for the extension of the county highway system under the following formula:
>
> Percentage of population of each county to the total population of the State, according to the last Federal census;

[846] *P. L. 1917; c. 15, s. 13.*

[847] The Permanent Improvement Road Act of 1891, as already noted, provided $75,000 for State Aid, the sum not to exceed one-third the cost of the improvements. After several revisions of the act (*P. L. 1895, p. 424; P. L. 1903, p. 145,* and *P. L. 1905, p. 94*) the amount of State Aid had reached $400,000 annually. The act of 1912 (*P. L. 1912, c. 395, s. 2*) increased the sum to $500,000.

[848] The point was made in the course of the Abell Commission hearings that in distributing $2,800,000 of MVA funds annually, the Highway Commission was spending funds that could otherwise be used on the State system. In so doing it was setting back, *pro tanto,* the development of the primary system. *Minutes of the Abell Commission, op. cit.,* minutes of September 8, 1930, *pp. 21* and *34.*

[849] See *p. 196, supra.*

Percentage of each county road mileage as against total county road mileage in the State;

Percentage of each county in area as against total area in the State * * * * *."[850]

The area-population-road mileage formula was laid down in 1924 by the State Highway Commission on the recommendation of the Highway Engineer. It had no legal sanction until the 1933 Legislature enacted the formula into law.[851] Metropolitan counties have been critical of this basis of apportionment. Their claim is that they do not receive back an amount anywhere near the sums paid by residents in motor vehicle fees. They argue that rural counties have been favored at the expense of the urban areas. The equity of the formula continues to be a moot point which the Legislature has carefully avoided.

The history of county aid up to the time of the 1933 act is indicated by the following figures:[852]

State Aid to Counties, 1922-1933

Year	*Amount*	*County road mileage*
1922	$2,100,000	2743
1923	2,500,000	2743
1924	2,600,000	2951
1925	2,600,000	3029
1926	2,700,000	3205
1927	2,800,000	3340
1928	2,800,000	3486
1929	2,800,000	3646
1930	2,800,000	3789
1931	4,000,000	3922
1932	4,000,000	4078
1933	4,000,000	4279

[850] *P. L. 1933, c. 193, s. 1,* amending *P. L. 1931, c. 142, s. 18. R. S. 52:22-20(d).*

[851] *New Jersey State Highway Department Annual Report, 1933,* report of the Projects Division. The formula was obviously modeled after that found in the 1916 Federal Aid Road Act (*39 Stat. 355*).

[852] *Minutes of the Abell Commission, op. cit.,* minutes of September 8, 1930, *p. 18,* and *New Jersey State Highway Department Annual Report, 1930,* report of the Projects Division. County road mileage source: Projects Division.

These figures do not include an additional $735,000 per year made available under the 1930 act about to be mentioned, nor grants from the so-called "Emergency Fund."

The "Emergency Fund" was originally set aside by the Highway Commission to assist counties in emergency conditions involving an extraordinary, unforeseen expenditure, as in the case of extensive damage to roads or bridges resulting from a devastating storm. The practice developed of granting each county about $25,000 a year for some particular road improvement project, particularly one that might be important in relation to the State Highway System.[853] In some cases, apportionments were made for projects in an amount considerably above this average sum per county. In one or two instances, the Highway Commission approved allotments to take care of deficiencies in county maintenance budgets. Expenditures from the "Emergency Fund" were $730,000 in 1928 and about $800,000 in 1929.[854]

In 1930 the Legislature sought to put an end to the practice of making grants-in-aid from the "Emergency Fund" by providing that the Highway Commission should annually apportion $35,000 to each county from the State Highway Fund, to be used for the construction or reconstruction of county roads. The provision was mandatory and added $735,000 to the amount already being distributed to the counties for road purposes. Counties were obliged under the act to match the State funds by paying not less than one-half of the cost of the improvement.[855]

Some of the counties professed to be unable to raise their share.[856] The result was an amendatory act in 1933 which eliminated the matching requirement entirely and widened the uses to which the funds could be put by providing that they could be expended

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[853] The Abell Commission Examiner was very critical of the misuse of the word "emergency" in connection with these additional expenditures. *Minutes of the Abell Commission, op. cit.,* minutes of September 8, 1930, *pp. 38, 39* and *42.*

[854] National Institute of Public Administration report, *op. cit., p. 311.* It was recommended that consideration be given to distributing these funds among the counties on some basis similar to the old State Aid, where the county would match the money apportioned.

[855] *P. L. 1930, c. 178.*

[856] *New Jersey State Highway Department Annual Report, 1933,* report of the Projects Division.

for the construction, reconstruction, maintenance and repair of county roads and bridges.[857]

At present, therefore, counties are not required to match any definite percentage of the money apportioned out of the $6,000,000 MVA fund. Further, the State may pay 100% of the cost under the act providing for an additional $35,000 to each county.

In some counties, MVA allotments may represent the entire county road project. Counties have done relatively little construction and reconstruction work on roads for almost a decade. MVA funds have been spent principally for maintenance, debt service, lighting, policing and the operation of bridges.[858]

A surprisingly large portion of MVA allotments are used by counties to pay the principal and interest of obligations incurred by them for the construction, reconstruction, maintenance and repair of county roads and bridges. In 1939 and 1940 an average of over 25% of the MVA funds was used for debt service. In 1941, the average was 24.06%. The percentage has been almost 24% over the past five years. The highest average was that for 1936, when 26.04% went for principal and interest on road and bridge bonds.[859]

Allotments made from MVA funds do not lapse but are carried over into subsequent years. Counties usually spend their annual allotments, but if they fail to do so, the unexpended balance remains available to them. The minutes of the State Highway Commissioner show many instances where such balances were allotted for the current annual program of counties many years after the original apportionments.[860] Counties sometimes find it impossible to spend the funds

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[857] *P. L. 1933, c. 132,* amending *P. L. 1930, c. 178; R. S. 27:14-1.*

[858] *New Jersey State Highway Department Annual Reports, 1933* and *1934,* reports of the Projects Division.

[859] *New Jersey State Highway Department Annual Reports, 1934 to 1941,* reports of the Projects Division. See Schedule 9, *p. 500, post.* Counties sometimes spend much more than this average on debt service. Among them in recent years have been Bergen, Camden, Essex, Hudson, Monmouth, Morris and Union.

Under a 1919 amendment to the Permanent Road Improvement Act (Revision of 1912), the Highway Commissioner may in his discretion approve and permit the use of not more than 50% of the MVA allotment made to any county for the payment of principal or interest on bonds issued by the county to pay for the extraordinary repair or reconstruction of an improved public road. However, the amount allowed for such purpose must not be so great that the balance left will be insufficient for the proper repair and maintenance of other existing roads. *P. L. 1919, c. 10,* amending *P. L. 1912, c. 395, s. 27; R. S. 27:14-48.*

[860] See, for example, *Minutes of Meetings of the State Highway Commissioner,* minutes of July 27, 1936, when 1931 and 1932 MVA funds were transferred in Cumberland County to the current program, and 1924 funds were transferred in Warren County. See, also, minutes of January 17, 1939, when 1931 and 1932 matched MVA funds were transferred in Passaic County.

granted them within the year in which they are apportioned because of the lateness of the date on which the Legislature passes the State Highway Fund Appropriation Act. Although counties prepare their road schedules and maintenance material requirements and submit them to the Supervisor of State Aid Projects in time, approval cannot be given until the Legislature has acted. This delays the advertising for bids and the letting of the contracts. The work cannot, therefore, be done within the season as planned.

The total amount of MVA funds allotted since 1933 has continued at the $6,735,000 level. Expenditures and commitments, and the miles of county roads constructed and maintained since 1931 follow:[861]

State Aid to Counties, 1931-1941

Year	*Expenditures and commitments*	*Miles of roads constructed and reconstructed*	*Miles of roads maintained and repaired*
1931.....	$5,000,000.00	38.55	3,922
1932.....	4,995,486.76	55.04	4,078
1933.....	4,735,000.00	21.23	4,279
1934.....	6,735,000.00	32.12	4,557
1935.....	6,735,000.00	39.32	4,994
1936.....	6,735,000.00	44.48	5,227
1937.....	6,735,000.00	31.13	5,380
1938.....	6,735,000.00	54.87	5,559
1939.....	6,735,000.00	32.26	5,726
1940.....	6,735,000.00	13.28	5,919
1941.....	6,735,000.00	16.72	6,112

It is obvious from this schedule that scarcely any county roads are being constructed despite the large amount of MVA funds available for that purpose. What counties have been doing each year is to take over some of the mileage built by towns, townships, boroughs and villages. Some counties follow the policy of taking over important rural roads as promptly as they can, in the measure that the State enables them to do so by bringing county roads into the State system.[862]

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[861] *Source:* New Jersey State Highway Department.

[862] *New Jersey State Highway Department Annual Report, 1928,* report of the Projects Division; Princeton Survey report, *op. cit., p. 207.*

Considering the two tabulations above, which cover the period since 1922, it is to be observed that although county road mileage increased from 2,743 to 4,557 between 1922 and 1934, representing an increase of 166%, the amount of MVA funds rose from $2,100,000 to $6,735,000, or an increase of 320.7%. The amount of State Aid to counties increased out of proportion to the growth in county road mileage. By 1941, the county road system had increased to 6,112 miles, representing an increase of 222.8% over 1922. The amount of MVA assistance still remains disproportionate to the increase in county road mileage.

The Projects Division notifies the Board of Freeholders of each county on or before December 10th, annually, as to the amount of MVA funds allocated to it for the ensuing calendar year.[863] This sum includes:

(a) The amount of the $6,000,000 fund apportioned to the several counties under the formula.

(b) The $35,000 each county receives pursuant to the 1930 act, as amended, and

(c) Funds allocated from the balances of previous years.

The counties may include the amount of their allotments in their respective budgets whether such budgets are adopted before or after the Legislature enacts the State Highway Fund Appropriation Act. After the MVA allotments have been made, the Chief Auditor and Accountants sets up the various lump sums on his records.

The counties submit their annual work programs to the Supervisor of State Aid Projects early in the spring, using forms provided by the Department.[864] Each program is broken down into several schedules, as follows:

Schedule A: Allocation for principal and interest requirements on bonds issued for road and bridge purposes only; and the estimated cost of policing the county roads, traffic lights, lighting of county roads, and operation of bridges.

Schedule B: Estimated cost of construction and/or reconstruction of county roads.[865]

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[863] *R. S. 52:22:20 (f).*

[864] All forms used in State Aid work are those prepared and supplied by the Department.

[865] Construction or reconstruction work costing more than $2,000 must be done by contract unless formal approval has been given by the Commissioner.

Schedule C: Estimated cost of construction and/or reconstruction of bridges.[865a]

Schedule D: Estimated cost of maintenance and extraordinary repair of county roads. This is broken down by types of maintenance and extraordinary repair.

Schedule E: Estimated cost of bridge and culvert maintenance and repair.[866]

Schedule F: Estimated cost of administration and engineering. This amount must in no event exceed ten per cent. of the total allotment.

These schedules show in detail the nature of the work to be done and all further information which will give the Division and the Commissioner an adequate picture of the manner in which it is proposed to spend the funds. An official list of county roads is attached to each annual work program, showing various pavement types. A map of the county accompanies this list.

Each work program is signed by the Director of the Board of Freeholders of the county and the County Supervisor of Roads.[867] The program must be approved by the Chief Auditor and Accountant as to funds allotted, and then by the Supervisor of State Aid Projects, Highway Engineer, and finally by the Commissioner.

Accompanying each work program is an agreement to be executed by the Highway Commissioner and the county. Under the terms of this contract, the State binds itself to set aside a named sum as Motor Vehicle Aid, subject to funds being made available by the Legis-

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[865a] *Ibid.*

[866] When submitting certificates of expenditures for Schedules D and E, a statement of charges for county-owned equipment must always be attached covering the equipment charges from January 1 to the end of the period covered by the certificate. The rates charged for such equipment must be in accordance with the list of rates attached to Projects Division Order 515, dated October 1, 1937, and any subsequently approved charges.

[867] The Board of Freeholders of each county must appoint a County Supervisor of Roads and a County Engineer. *R. S. 27:14-24.* Either may be dismissed at any time by the Board after a proper hearing, upon proof sustaining charges preferred by it or the Commissioner, for incompetency, neglect, disability or other cause. *R. S. 27:14-25.* The County Engineer prepares the plans and specifications for construction and reconstruction work. Maintenance and repair operations are carried out by the county forces under the supervision of the County Supervisor of Roads.

lature, and to reimburse the county on submission of statements in proper form and if the roads are kept in proper condition. The county, on its part, binds itself to keep all the roads on which State Aid moneys are applied in a state of repair satisfactory to the Commissioner; to use road materials that comply with the Department specifications; to keep proper accounts and render any reports requested; to provide the amounts necessary to meet the remainder of the estimated cost of all the work shown in the annual schedule; to submit plans and specifications for the approval of the Highway Commissioner before advertising for bids for the extraordinary repair or reconstruction of any improved road, and to obtain his approval of the contract before commencing work thereunder; and to submit specifications for materials and equipment to be used in maintenance or repair work to the Commissioner before advertising for bids, and to obtain his approval of the award before finally executing the contract. The agreement may be revoked and cancelled at the option of the Commissioner for any failure on the part of the county to comply with any condition thereof.

Motor Vehicle Aid (Construction and Reconstruction):

The County Engineer prepares the plans, specifications and estimates for every MVA construction or reconstruction project. The specifications are supplemental to the Department's own standard specifications for road and bridge construction. The Board of Freeholders of the county approves the plans and specifications by adopting a required form of resolution. This resolution also sets out the advertisement that is to be used in obtaining bids for the project. The plans, specifications, estimates and resolution, accompanied by a certificate signed by the County Solicitor certifying that the necessary right-of-way for the project has been acquired, are sent to the Projects Division. After the Projects Engineer has checked the plans, specifications and estimates, they are approved by the Supervisor of State Aid Projects, Highway Engineer and Commissioner. (The Bridge Engineer checks plans and specifications on a bridge project.)

The county then proceeds to advertise the contract. Each bidder must accompany his proposal with a statement of equipment owned or to be leased by him for use on the project. After the bids have

been tabulated and the County Engineer has recommended the award of the contract, the Board of Freeholders passes a resolution making the award, subject to the approval of the Highway Commissioner. The affidavit of advertising, proposals, tabulation of bids, contract and contractor's surety bond are forwarded to the Highway Department. The Chief Auditor and Accountant then certifies that funds are available for the project in accordance with the county's approved annual work program. The Commissioner approves the award after the Supervisor of State Aid Projects and the Highway Engineer have recommended that he take such action.

The procedure followed in MVA construction or reconstruction work is in many respects similar to that used in regular State highway construction. Many of the forms are identical. Reference to the section dealing with the work of the Construction Division will indicate in greater detail the content of the forms and the procedure followed.

After the contract has been approved by the Highway Commissioner, the Supervisor of State Aid Projects sends a questionnaire to the contractor on which he is to designate the source of supply of the various materials to be used in the execution of the work. The Laboratory is notified of the award of the contract so that it can look after the inspection of the materials. When the questionnaire has been completed and returned, a copy is sent to the Laboratory and it proceeds to check the quality of the materials. The materials are either approved or rejected; in some cases where they almost meet the specifications, a warning is sent to the producer, cautioning him that future samples not meeting specification requirements will probably be rejected. As in the case of construction on the State system, the Laboratory assigns an Inspector to the concrete plant or to the plant producing the bituminous material. These Inspectors report daily to the Laboratory.

As soon as the job goes into operation, one of the Senior Engineering Clerks in the Projects Division assigns an Inspector to the job. The Inspector, who is in the field, is notified of his new assignment by a letter which outlines his duties generally. Each Inspector is sent a set of instructions regarding the method of sampling construction materials and the use of equipment on the job. Upon receipt

of the letter the Inspector mails a form postcard to the Division office and the Laboratory notifying them that he has reported on the job. Inspectors make daily reports to the Trenton office of concrete or bituminous work done. These are exactly like those submitted by Construction Division Inspectors. They also send concrete or bituminous mix samples to the Laboratory for testing. Each Inspector must send in a report semi-monthly of the time spent on the job daily.

Where it is necessary to make a change in the original construction plans, a change order is made out by the County Engineer stating the nature of and reason for the change. The order is approved by the Traveling Inspector and Supervisor of State Aid Projects, and finally by the Highway Engineer. This change order may lead to a supplemental agreement, extra work order, or a reduction order, as in the case of State highway construction contracts. Either of these must be recommended by the Supervisor of State Aid Projects, audited by the Chief Auditor and Accounting for sufficiency of funds, and approved by the Highway Engineer.

Should the contractor require an extension of time for the completion of the contract, he makes application to the Board of Freeholders. The Board acts upon the recommendation of the County Engineer. The Highway Commissioner approves after the Supervisor of State Aid Projects and Highway Engineer have recommended that the time be extended.

The Traveling Inspectors supervise the Inspectors in the field and have jurisdiction over from one to four counties. They make daily reports of their inspection on MVA construction projects. A report is made for each project, setting out the progress being made and other details regarding the work. Traveling Inspectors render monthly reports of the distribution of their time on the various jobs.

Payments for MVA construction work done by contract may be made on partial or final estimates. Ten per cent. of every partial payment is withheld until the job is completed and accepted, at which time the amount retained is paid to the contractor.

Estimates must be approved by the County Engineer, the Traveling Inspector and Projects Engineer. They are then audited by the Chief Auditor and Accountant and recommended for approval by the

Supervisor of State Aid Projects. Partial estimates require the approval of the State Highway Engineer, but in the case of final estimates the Highway Commissioner must also approve.

When an MVA contract construction job is finished, the Traveling Inspector reports it completed and ready for final inspection. The Supervisor of State Aid Projects or the Projects Engineer makes the inspection. The final statement is then submitted and approved in the manner indicated.

In some cases, MVA construction work is done by force account —that is, the county uses its own labor and equipment to carry out the job. In such a situation, the county enters into a force account price agreement with the Highway Commissioner. This sets out the share to be paid by the county and by the State, and details the labor and equipment to be used on the job, and the rates that are to apply. The agreement must be executed by the county and recommended by the Traveling Inspector. The Chief Auditor and Accountant then approves the contract as to funds, and the State Highway Commissioner executes it after the Supervisor of State Aid Projects and the Highway Engineer have respectively given their approval to the arrangement.

The county submits force account statements to obtain reimbursement. These may be partial estimates or a final estimate. Each estimate sets out the various items for which reimbursement is sought. The statement is supported by detailed lists giving the time, rate, and total charge for the superintendent, foreman, each laborer, and every item of equipment, as well as the cost of the various materials used. Receipted bills must be submitted covering all items of material.

These force account statements must be signed by the County Road Supervisor and Traveling Inspector, recommended for approval by the Supervisor of State Aid Projects, and audited by the Chief Auditor and Accountant. The State Highway Engineer's approval is sufficient in the case of partial estimates, but the Commissioner's signature is required on final estimates. As in the case of contract construction jobs, there must be a final inspection by the Projects Engineer or head of the Division before final payment will be authorized.

Motor Vehicle Aid (Maintenance and Repair):

Mention has already been made that counties do little, if any, construction or reconstruction work with MVA funds. Their programs are largely devoted to maintenance and extraordinary repairs of roads and bridges. This work is carried out in the several counties under the supervision of their respective County Supervisors of Roads.

Following the approval of its annual work program, the county submits to the Projects Division a complete set of specifications for maintenance and repair materials that has been approved by the Board of Freeholders. The specifications are supplementary to the standard specifications of the Department. Unlike Department specifications for maintenance materials, they provide for a maximum increase or decrease in the estimated amounts of 25%, at the unit price bid. This is preferable to the "open end" type of specification used by the Department.

The specifications include a schedule of the roads to be surface treated, indicating their length, width, area in square yards, type of oil to be used, estimated gallons, kind of cover material and estimated total tons. The work to be done is specified in some detail by kind and type of material, amount, and whether it is to be furnished, delivered and supplied F.O.B. or plant. In many cases alternates are called for, and the contractor may submit a price on any or all types of materials on which bids are requested.

The specifications are checked by one of the Senior Engineering Clerks of the Division and must be recommended for approval by the Supervisor of State Aid Projects and the Highway Engineer. Final approval is given by the Commissioner. The county then advertises for bids and, after the proposals have been tabulated, recommends the awards of the contracts to the lowest responsible bidders. Here again, the approval of the Supervisor of State Aid Projects, Highway Engineer and Commissioner is required.

The Division notifies the Laboratory so that it can inspect the materials to be supplied. The procedure is like that followed in maintenance work on the State system. The Laboratory maintains a check on the products of the hot mix plant and refinery through its Inspectors. The Projects Division sees that the standards of the Department are lived up to by assigning its Inspectors to the various jobs. There may

be one, and very often several Inspectors, on a county maintenance project. The Division Inspectors send in daily reports on patching work (or oiling work) like those rendered by Maintenance Inspectors, accompanied by delivery slips covering the material used on the job. They send samples of the materials to the Laboratory for check testing. The Laboratory sends reports of its tests to the Projects Division, as well as information concerning the number of gallons at 60° F. on the basis of which payment is to be made for the bituminous application material. This latter information is passed on to the County Supervisor of Roads.

The Traveling Inspector in charge of the district renders daily reports of maintenance work being supervised by the Inspectors in his charge. These reports indicate, among other things, the general condition of the pavement, shoulders and drainage, and the organization, equipment, progress made and quality of materials for each maintenance project.

The county obtains reimbursement for expenditures by filing a certificate of expenditure which may cover a partial or the final payment. Each certificate consists of a number of separate certificates bound together and covering, in addition to maintenance and repair work on roads and bridges, principal and interest requirements on bonds, the policing of county roads, lighting of county roads, expenditure for operation of bridges, and administration and engineering.

Attached to and made part of the complete certificate is a statement of bituminous materials used, indicating the various roads and the amount and kind of material required on each, as well as a statement of county-owned equipment employed in maintenance and repair work on county roads and bridges, setting out the time the various items of equipment were in use, the rate and the amount due.

Each separate certificate, as well as the summary certificate which serves as a cover sheet for the set, must be certified by the County Treasurer as to the payment made for the purpose stated. (The summary certificate must also be signed by the County Supervisor of Roads.) These certificates are audited by the Chief Auditor and Accountant and recommended for approval by the Supervisor of State Aid Projects. The Highway Engineer gives the final approval in each case, whether the payment be partial or final.

It should be mentioned that in the case of all State Aid matters, involving either MVA or T & BA funds, statements, expense accounts and similar matters are first checked and passed on by the Division Auditor before going to the Chief Auditor and Accountant for audit or approval as to funds.

The Division maintains a card record system which is very helpful in following up the progress and payments made on each MVA project. There are different cards for the MVA construction projects done under contract and those carried out by force account, and for MVA maintenance materials. The construction cards show the details relating to the road or bridge, the dates when the various papers were submitted and approved (*e.g.,* plans, specifications and estimates, construction contract, force account price agreement), when the work was begun, completed and accepted, etc. A record of payments is kept on the back of each project card. In the case of the maintenance materials card, information concerning the quantities, specifications and contracts are kept for each county.

Another card is used as a summary audit record for each work program, showing the amount set up, payment made, balance remaining to the county's credit, and the percentage of State funds paid out.

A comprehensive picture of the uses to which MVA funds have been put, can be obtained from Schedule 9 on page 500, setting out the approved allocation of funds for the five-year period from 1937 to 1941, inclusive.[868]

Administration and engineering costs have remained at the fairly constant level of less than seven per cent. of the total amount allocated. Funds allotted for debt service have averaged almost 24% for the period. This is about twice as much as the average of 12.39% for construction and reconstruction of county roads and bridges. Maintenance and extraordinary repair, as already pointed out, account for the larger part of all the sums allocated. Thus, 46.93% of the funds allotted went for maintenance and extraordinary repair of roads and another 5.95% for similar work on bridges, making a total of 52.88%.

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[868] The figures are as of December 31st of each year.

Schedule 9

Purpos

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	rcent	Amount	Percent	Average Percentage
Principal Road and b	25.68	$1,690,673.50	24.06	23.904
Policing a	.76	56,517.59	.80	1.036
Lighting	.72	43,233.32	.62	0.416
Operation	3.05	232,478.72	3.31	2.79
Constructi reconstruc	5.53	803,162.45	11.43	9.386
Constructi reconstruc	1.26	133,550.78	1.90	3.00
Maintenanc repair of	50.04	3,238,745.97	46.09	46.934
Maintenanc repair of	6.09	342,816.67	4.88	5.948
Administra	6.88	485,093.36	6.90	6.644
		7,026,272.36		
Previous y		291,272.36		
Current ye		6,735,000.00		
		$ 7,026,272.36		

Source: New Jersey State Highway Department
Auditing and Accounting Bureau

Township and Borough Aid (Construction):

In 1916 the Legislature passed the Herrick Act which provided that $105,000 be set aside each year from the net receipts of the Motor Vehicle Fund to meet the State's share of the cost of the construction, grading and drainage of unimproved township roads. The State Commissioner of Public Roads was to reserve the sum of $5,000 for each of the twenty-one counties until July 1, annually. If this amount was not applied for by a county on or before that date it was to be distributed among the other applicants, in the discretion of the Commissioner. The share of the State could not exceed fifty per cent. of the cost. In addition, the State was to pay for the surveys and plans, and this work was to be done by the State Commissioner of Public Roads. All roads improved under the act were to have a 33-foot minimum right-of-way width.

Any township committee accepting State Aid under the act was to maintain the roads improved with State funds in a condition satisfactory to the State Commissioner of Public Roads. The Commissioner might agree in any year to assume not more than one-half the cost of such maintenance, and to pay the same out of receipts of the Motor Vehicle Fund.[869]

The 1916 act has been amended several times, both in its title and content, and the annual amount set up for T & BA construction increased. The history of these latter changes is indicated by the following:[870]

Township and Borough Aid Construction Funds, 1916-1941

Year	*Total amount*	*Amount per county*
1916	$ 105,000.00	$ 5,000.00
1920	210,000.00	10,000.00
1922	525,000.00	25,000.00
1925	840,000.00	40,000.00
1928	1,050,000.00	50,000.00
1929	2,100,000.00	100,000.00
1937	2,625,000.00	125,000.00

[869] *P. L. 1916, c. 217.*

[870] *P. L. 1916, c. 217,* as amended by *P. L. 1920, c. 53; P. L. 1922, c. 67; P. L. 1925, c. 216; P. L. 1928, c. 230; P. L. 1929, c. 256; P. L. 1937, c. 149. R. S. 27:15-1.*

The act was extended to include incorporated boroughs in 1924,[871] incorporated towns and villages in 1930,[872] and cities having a population of not more than 14,000 inhabitants in 1938.[873]

Under the provisions of the law as it stands today, the sum of $2,625,000 must be set aside each year on October 1, or as soon thereafter as available, from the net receipts of the Motor Vehicle Fund, to be used to meet the State's share of the cost of the work hereinafter described. The Highway Commissioner is required to reserve $125,000 annually until January 1, to meet the State's share in each county. Of this sum, $75,000 is available for the construction in each county of unimproved town, township, village and borough roads and unimproved roads in cities having a population of not more than 14,000 inhabitants. The remaining $50,000 is available for the maintenance and repair of such unimproved roads,[874] and is known as the Dirt Road Fund.

Any part of the $50,000 which is not applied for by requisition of the Board of Freeholders of the county by October 1, is to be added to the $75,000 available for the construction of the unimproved roads described.[875]

Any part of the $75,000, together with as much of the $50,000 as may be added thereto under the circumstances just described, which is not applied for by January 1, must be paid by the Highway Commissioner to the Board of Freeholders of the county in question. The Board may in its discretion distribute this money to, and supervise its expenditure by, the municipalities mentioned for the construction, grading, drainage, maintenance and repair of the municipal roads of the county.[876]

Any municipality entitled to funds under the act may, on its own motion, apply to the Board of Freeholders of the county in

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[871] *P. L. 1924, c. 172,* supplementing *P. L. 1916, c. 217.*

[872] *P. L. 1930, c. 250.*

[873] *P. L. 1938, c. 427.*

[874] *R. S. 27:15-1.* "Unimproved road" is defined as "any road which, in the opinion of the State Highway Engineer, is unsuitable for present day traffic." *R. S. 27:15-17.*

[875] *Ibid.*

[876] *Ibid.*

which it is located for aid in the maintenance and repair of its unimproved roads. This is called a Dirt Road Fund request. Application is made by resolution of the governing body of the municipality setting forth the road or roads for which State Aid for maintenance or repair is desired, the nature of the work to be done, and the estimated cost thereof. The Board of Freeholders must then determine which of the applications received by it will best serve the public interest, and forward a requisition to the Highway Commissioner by January 1 for such sums as it approves. This requisition must state the roads for whose maintenance and repair State Aid is desired, the nature of the work to be done on each, and the amount desired for each.[877] The amount contributed by the State for the maintenance and repair of any road cannot exceed 90% of the total cost of such work.[878]

Any town, township, village or borough, and any city having a population of not more than 14,000 inhabitants, may on its own motion, apply to the Highway Commissioner for State Aid in construction work on its unimproved roads. The application is by resolution of the governing body of the municipality adopted at any meeting. The resolution must state the road or roads on which it is proposed to do construction work, the beginning and end points of such work, and the amount of money the governing body may be authorized to spend, including contributions thereto. The Commissioner decides which of such applications in any county will best serve the interest of the municipality, the county, and the State. He is required to notify the governing bodies of the municipalities of his approval of their applications, and enter into a written agreement with each of them for the necessary surveys and plans and for doing the actual construction work and the inspection thereof. The work may be performed, in whole or in part, by the labor of prisoners or by contract, either with or without advertisement. However, bids must be advertised for when the Commissioner so directs.[879]

The "work" contemplated under these T & BA programs includes, in addition to the construction of the road, the survey and preparation of plans, profiles and cross sections in grading and drainage of the road, and the construction of the necessary culverts

[877] *R. S. 27:15-2.*
[878] *R. S. 27:15-3.*
[879] *R. S. 27:15-4.*

and bridges whose construction and maintenance is by law imposed upon the municipal authorities, together with the cost of necessary embankments and retaining walls, engineering fees and the cost of the acquisition of necessary right-of-way.[880] The State's share of the cost of such work cannot exceed 90%.[881]

Roads on which construction work may be done must have a right-of-way of at least 33 feet.[882] Municipalities may raise the funds necessary for the work by taxation, by assessment for local improvements, or by temporary loans. When the cost of work exceeds $10,000, a municipality may issue bonds therefor.[883]

In accepting State Aid for construction work on unimproved roads, the governing body of a municipality is required to appropriate not less than $100 per mile annually to maintain these roads in a condition satisfactory to the Highway Commissioner. The Commissioner may agree in any year to assume not more than 75% of the cost of such maintenance, to be paid out of the receipts of the Motor Vehicle Fund.[884]

Under the State Budget Act, as amended, the $2,625,000 to be expended for T & BA construction work on unimproved municipal roads must be set up as a mandatory dedication in the Governor's annual highway budget recommendations, along with the $6,000,000 and $735,000 for MVA work and the $525,000 for T & BA maintenance work, discussed hereafter. The annual State Highway Fund Appropriation Act contains a separate section devoted to mandatory dedications entitled "State Aid to Counties and Municipalities," which includes appropriations in the amounts and for the purposes indicated.[885]

From the figures cited above for T & BA construction, it is to be observed that the amount provided by the Legislature has increased from $5,000 to $125,000 per county since 1916, or 2500% in 25 years. When one considers this fact in connection with the MVA funds appropriated annually to counties, it is quite clear that the legisla-

[880] *R. S. 27:15-5.*

[881] *R. S. 27:15-6.* The percentage was increased from that set out in the original act of 1916, to 75% by *P. L. 1920, c. 53.* *P. L. 1936, c. 237* increased the share of the State to 90%.

[882] *R. S. 27:15-8.*

[883] *R. S. 27:15-7.*

[884] *R. S. 27:15-9.* *P. L. 1920, c. 53* amended the provisions of the original 1916 act.

[885] *R. S. 52:22-20 (d)* and *(g).*

tive scheme for highways is much broader than the State Highway System laid out under the 1917 and 1927 statutes and their amendments.[886] The Legislature would seem to be concerned not only with developing a primary system, but a secondary system as well—if one considers the amounts appropriated for State Aid, without more.

If the real purpose of State Aid is to help build up the roads not included in the State system, then it would appear that the municipalities are making much better use of the funds received from the State than the counties. They construct a substantial mileage of improved rural roads annually, while counties expend a quarter of the $6,735,000 apportioned to them each year for debt service on road and bridge bonds, and only a very small percentage for construction and reconstruction of county roads. Applying MVA funds toward the payment of principal and interest on bonds may be a good way of keeping the county tax rate down, but is of no value at all in building up the county secondary system as rapidly as possible.

A grand total of 3936.54 miles of municipal roads have been completed with the aid of State grants since 1921, no mileage figures being available for the years preceding that date.[887] The volume of construction work since 1931 is as follows:[888]

Township and Borough Aid Construction Mileages, 1931-1941

Year	*Expenditures & commitments*	*Mileage*
1931	$2,100,000	269.90
1932	2,100,000	167.86
1933	2,100,000	192.49
1934	2,100,000	216.77
1935	2,100,000	172.11
1936	2,100,000	188.25
1937	2,100,000	252.85
1938	2,625,000	246.10
1939	2,625,000	240.93
1940	2,625,000	195.32
1941	2,625,000	234.72

[886] *Cf., Minutes of the Abell Commission, op. cit.,* minutes of September 8, 1930, *p. 5.*

[887] *New Jersey State Highway Department Annual Report, 1941,* report of the Projects Division.

[888] *New Jersey State Highway Department Annual Reports, 1931* to *1941,* reports of the Projects Division.

Applications for T & BA construction funds come in from the municipalities of the several counties before the first of the year. A separate application must be filed for each individual road, although in the case of a borough a single application often covers several streets which are described in an attached schedule. A map sometimes accompanies the application.

The form filed by the municipality is that prescribed by the Department, as are the other forms used in T & BA work. It is known as an "application and agreement" and consists of a resolution adopted by the municipality describing the section of road to be improved, whether the work is to be done by contract or force account, the type of construction contemplated, and the amount the municipality will authorize as the entire cost of the project by ordinance to be considered immediately upon approval of the application by the State and a copy of which is included on the last page of the form. The resolution sets out the terms of the agreement between the Highway Commissioner acting for the State, and the governing body of the municipality, which are to control.

Under this agreement the State binds itself to set aside a designated amount of T & BA funds to meet its share of the cost of construction, payment in no case to exceed 90% of the cost. The municipality agrees, among other things, to have the work executed in accordance with the Department specifications; to have a survey made and plans, specifications and contract prepared by a licensed engineer, if so requested by the Commissioner, and to acquire necessary right-of-way;[888a] to submit the plans, specifications, contract and cost of right-of-way to the Commissioner for approval, and thereupon, to advertise for bids and award the contract to the lowest responsible bidder subject to the approval of the Commissioner. If a survey is unnecessary and plans are not needed, but the work is to be performed by contract, the municipality agrees to have specifications prepared for the Commissioner's approval, and thereafter to advertise for bids and make the award to the lowest responsible bidder meeting with the approval of the Commissioner.

[888a] Under the terms of the agreement the State may share in all expenses incurred for such survey, plans, specification, and right-of-way. This is permitted under the statute, as already indicated. *R. S. 27:15-5.*

The municipality further agrees, in case the work is to be done by force account, and before operations begin, to enter into an agreement with the State covering the rates to be paid for labor, equipment, materials, etc., and to keep accurate accounts of these items. The municipality also agrees to have work begin within nine months after approval of the application and agreement, or to have the allotment cancelled and revert back to the Motor Vehicle Fund; to submit bills as required; and to maintain the road properly after completion of the work by expending not less than $100 per mile annually for that purpose.

The application and agreement form is signed by the presiding officer of the governing body on behalf of the municipality. Upon receipt of the application by the Projects Division, a form, accompanied by a map of the county in which the municipality is located, is sent to the Traveling Inspector in the area for a field report on the application. He indicates the road on the map and fills out the report, giving his estimate of the cost after visual inspection, various details describing the existing road, the location of cross roads, connecting roads, railroad crossings, and bridges, and finally, his classification of the importance of the road and what value the improvement would have.

Field reports and applications are reviewed by the Projects Engineer and the Supervisor of State Aid Projects. The field representatives are called in for consultation so that the most important projects may be chosen. Some of the factors considered in making the selection are the relation of the proposed improvements to other municipal roads, the county highway system and the State system; the number of people who will be served; and the location of the roads to schools, churches, firehouses, etc. After the Projects Engineer has signed, the Supervisor of State Aid Projects and then the Highway Engineer recommend the various applications for approval by the Commissioner. Allotments are made by the Commissioner, who considers one county at a time.

The amount of T & BA construction funds requested by municipalities annually far exceeds the appropriation for the purpose. Since $50,000 is available for Dirt Road Fund requests in each county, this

money decreases by so much the maximum $125,000 available for construction. The following figures indicate the excess of T & BA requests over the funds available:[889]

Township and Borough Aid Construction Fund Requests, 1938-1942

For year	*Estimated cost of work*	*State's share requested*	*Dirt Road Fund requested*	*State's share available*
1938.....	$8,064,415	$7,257,974	$850,000	$2,625,000
1939.....	6,925,910	6,233,319	905,000	2,625,000
1940.....	6,199,908	5,579,917	925,000	2,625,000
1941.....	6,148,404	5,533,563	925,000	2,625,000
1942.....	7,978,180	6,370,362	950,000	2,625,000

Deducting the Dirt Road Fund requests, only $1,675,000 to $1,775,000 was available to meet the State's share in these years. The amount requested from the State has been about four times the funds available. The desire of municipalities to obtain State Aid grants in the construction of their roads is understandable in view of the large percentage of township and borough roads still remaining unimproved. This matter will be referred to shortly.

After the Commissioner has apportioned the T & BA funds among the municipalities of a county, the amounts of the allocations are sent to the Chief Auditor and Accountant who sets up the funds for the various projects.

T & BA construction work may be done by contract or by force account. In the case of contract jobs, the municipal engineer proceeds with the survey and the preparation of plans, specifications and estimates. These are adopted by resolution of the governing body of the municipality, the resolution setting out the text of the advertisement which will be used in obtaining bids. The specifications are supplemental to those of the Department and contain the municipal engineer's description of the project.

The plans and specifications are submitted to the Projects Division, accompanied by a certificate signed by the solicitor of the

[889] *New Jersey State Highway Department Annual Reports, 1937* to *1941,* reports of the Projects Division. The figures show applications for the calendar year indicated.

municipality, certifying that the necessary right-of-way has been acquired. They are then reviewed by a member of the Projects Engineer's staff. The Projects Engineer must recommend them for approval, and in the case of a bridge project the recommendation of the Bridge Engineer in the Construction Division is required. The Supervisor of State Aid Projects adds his recommendation, the Highway Engineer approves, and the plans and specifications are then approved by the Commissioner officially. In the case of certain minor projects, surveys and plans are not required. In such case the municipal engineer merely prepares the specifications, and these are approved by the Commissioner in the usual manner.

In recent years a large amount of T & BA construction work has been carried out under W.P.A. auspices.[890] In such case, the specifications indicate that the work is to be done with W.P.A. labor and set out the provisions which are to apply.

After the Commissioner has given his approval to the plans and specifications, the municipality proceeds to advertise for bids. As in the case of MVA projects, the Projects Division sends out a notice twice a week to contractors listing bids that are about to be let, in order to encourage competition. Each bid must be accompanied by a statement of the equipment owned or to be leased by the contractor for use on the project. The proposals are tabulated and the municipality then makes the award on the basis of its engineer's recommendation, subject to the approval of the Commissioner.[891] The proposal, tabulation of bids, affidavit as to publication of advertisement, contract and

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[890] *P. L. 1938, c. 10 (R. S. App. A: 3-30 to 35)* authorizes the Highway Commissioner, with the approval of the State House Commission, to make all applications on behalf of the State that are necessary in order to obtain the benefits of any funds to be expended by the Works Progress Administration or of any other funds that may be provided by the Federal Government for the employment of those on relief, where such funds are to be spent on any county or municipal road. The Commissioner is further authorized, with the approval of the State House Commission, to enter into contracts on behalf of the State with the Federal Government, whereby the State agrees to act as sponsor for these projects, and to furnish any materials, supplies, equipment, engineering, or other services required as a condition precedent to the furnishing of Federal aid. When a project contemplates work on a county or municipal road or bridge, the Commissioner may, with the consent of the county or municipality, enter into a contract setting forth the share to be borne by the Federal Government, the share to be paid from State Aid funds, and the share, if any, to be borne by the county or municipality from its own funds.

[891] The Project Division's Traveling Inspector is usually present when bids are received, as in the case of MVA contracts, and sends in a record of the bids and the award made by the municipal governing body.

surety bond, are then forwarded to the Department. The Chief Auditor and Accountant certifies the availability of funds, the Supervisor of State Aid Projects recommends the award for approval, to which the Highway Engineer adds his recommendation, and the Commissioner finally approves the award by taking official action at a meeting.

Sometimes the amount bid by the lowest responsible bidder is in excess of available funds. In such a case the contractor and municipality enter into an agreement for the reduction of items in the proposal, in order to bring the contract within the amount alloted by the Commissioner. Any change of plan, whether requiring a supplemental agreement, extra work order, or reduction order, is handled in the same way as in the case of MVA projects. The same is true for the granting of an extension of time to the contractor to complete the work.

Where the construction work is to be done by force account, the municipality enters into a force account price agreement with the Highway Commissioner. The form of this agreement, and the procedure followed to obtain the Commissioner's approval, is exactly the same as in the case of MVA work.

The policy of the Department is to allow work to be done by force account where the amount involved is less than $2,000.[892] Many municipalities like to carry out State Aid projects under a force account arrangement because it enables them to provide employment for local residents. In some cases persons employed can thus pay off part or all of their taxes from wages earned.

The grading and the low and intermediate types of road surfaces used on T & BA construction present no great difficulties, and consequently force account would seem to be the best method of handling

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[892] For the advantages and disadvantages of the force account method in highway construction, see Agg and Brindley, *op. cit., c. XIII.*

In 1935 the Highway Commissioner declared that where force account work was authorized on T & BA projects, it was for the purpose of affording employment to local residents. He called attention to the fact that in a number of cases the money expended for the rental of equipment represented a large percentage of the total amount, and that the percentage for labor had been correspondingly low. *Minutes of Meetings of the State Highway Commissioner,* minutes of July 2, 1935. In the course of time the policy was adopted that at least 40% of the T & BA funds allotted must be used for labor on force account projects. *Ibid.,* minutes of January 14, 1936. This was in contrast to the 25% which had previously gone for labor payrolls.

this type of work, particularly when the amount involved is not large. Under the force account system, the municipality saves the cost of overhead and the contractor's profit. The amount of the savings may range from 10% to as high as 25%. However, these savings can be realized only when conditions surrounding the project are favorable. Ideal conditions require that the supervisor in charge of the project be experienced, able and energetic; that the governing body and politicians maintain a "hands off" policy as regards employment, the purchase of materials and the use of equipment; that the local labor situation be stable, and that proper equipment be available.

The force account method can also be used where the construction is of an experimental character and not susceptible of exact specification, or where it involves special methods and equipment, as in the case of the soil stabilization and cotton fabric road work mentioned hereafter.

Other advantages claimed for the force account method are that it is easier to control the rate of progress of the work in the interest of the traveling public, and to make changes in the work as necessity requires. Contract work is usually conducted without much reference to the convenience of the public, despite provisions in the specifications which attempt to control this phase of the administration of the contract. Contracts provide for changes in plans as the work progresses, but if the changes are numerous or constitute a wide departure from the specifications, the question of extras may present difficulties.

The disadvantages of the force account system are widely recognized. Local jurisdictions do not have the personnel or the background of experience required for carrying out the construction work in the most economical manner. There is a lack of high-type supervision. Public officials often interfere in the details of the construction work, or attempt to use their influence in obtaining favors for those interested in the project. The equipment used on the job is frequently unsuitable. Finally, the incentive found in contract work, of doing the job as efficiently, quickly and economically as possible, is absent.

On the other hand, under the contract system the total cost of the project is known with a fair degree of accuracy before the work begins.

The contractor bears the risks of unfavorable weather, labor trouble, casualties of various kinds, and other cost-increasing factors that arise during the progress of the work. It is easier for the governing body to secure good inspection than to provide expert supervision. The necessity of investing in equipment is eliminated. Construction equipment is expensive, and just how much use will be made of it and the price it will bring when sold is unknown.

The Highway Department has studied the comparative advantages and costs of work done by force account and by contract. It is generally agreed that the contract system is the more advantageous method, except in the case of projects involving a relatively small expenditure of funds or those which are of an experimental nature.

The trend of expert opinion is that the force account system has proved satisfactory in cases where the county or municipality has been building a single type of roadway surface year after year, and especially when the amount of new construction undertaken each year is too small to allow the advantages of the contract method to be realized. Routine maintenance work and miscellaneous construction offer the best fields for the force account method. In almost all other cases the consensus is that the contract system is better. Although small jobs done by force account show a savings, and have therefore served to encourage the continuance of that method, similar savings have not been realized on any considerable volume of work.[893]

In order to insure that the municipality has taken proper steps to finance the construction work adequately, the Projects Division requires it to submit a statement prior to or at the time when the plans and specifications, price agreement, or other papers are submitted to the Highway Commissioner, setting out the method in which it intends to finance the work. One of the following statements must be made: (1) that the municipality has provided for financing the project by including the amount required in its annual budget, adopted on the date indicated; (2) that an improvement ordinance was adopted for the project on the date and for the sum designated; or (3) that an improvement ordinance has been introduced or is about to be introduced, and will be adopted on the date indicated. This form was drawn up in collaboration with the Depart-

[893] Agg and Brindley, *op. cit., pp. 312* and *313.*

ment of Local Government as a means of controlling the financing of works projects by municipalities.

As soon as the contract has been let or the force account agreement signed, the Division office assigns an Inspector in the same way as for MVA projects. The subsequent duties and responsibilities of all individuals and agencies acting for the Department and the municipality are likewise the same, as are the forms. Payment on contract or force account work, whether partial or final, follows the same procedure as in MVA construction.[894]

An additional form used in connection with T & BA force account construction work is a road report which must be submitted to the Division weekly by the Road Supervisor of the municipality. These reports are used by him in making up partial and final statements requesting payment from the State. These statements must be approved by the Traveling Inspector. The road report includes complete details as to labor employed, equipment used, and work performed. It also sets out information concerning material purchased during the week and its cost. These reports must be approved by the Inspector assigned to the job.

Quite often municipalities desire to transfer funds allocated by the Commissioner for the construction of a certain project, to another project.[894a] This situation may arise where the original project has been completed to the satisfaction of the Commissioner and final payment has been made, leaving an unexpended balance, or where the improvement of the original road is not considered necessary at the time. In either case, the municipality passes a resolution in the form of an application and agreement. The resolution describes the road to which the transfer of funds is sought, indicates whether the work is to be done by contract or force account, and sets out the type of construction contemplated. The municipality agrees to be bound by the terms of the agreement under which the funds were originally allotted. When the application and agreement for transfer

[894] The Department has promulgated a schedule of engineering costs which will be shared in by the State for T & BA work when engineering has been requested and approved in accordance with the Department rules concerning engineering and the submission of projects.

[894a] T & BA funds, like MVA funds, do not automatically lapse after a given period. Transfers are allowed years after the original allotment. The Highway Commissioner, for example, allowed a transfer of 1930 funds to the 1937 program in Ocean County, and of 1934 funds to the 1940 program in Atlantic County. *Minutes of Meetings of the State Highway Commissioner,* minutes of February 2, 1937 and May 13, 1940.

is received in the Projects Division, it is reviewed and approved in the regular manner by the Projects Engineer, Chief Auditor and Accountant (as to availability of funds), Supervisor of State Aid Projects, Highway Engineer and Commissioner.

The Projects Division also maintains a card system for T & BA construction projects similar to that used for MVA projects. There are separate cards for contract jobs and for force account jobs, describing the road, the dates when various papers were submitted and approved, the time when work was started, completed and accepted, etc. There is space on the back of each card for a statement of payments made, and for special information relating to projects carried out under the W.P.A. program.

The State's share of the cost of municipal roads built with T & BA funds was 81% in 1941, the figure for the five years preceding being 86%.[895] About 86% of the work started in 1941 was completed during the year. The best percentage obtained during the preceding decade was 80% in 1939.[896] The State's share of engineering costs in 1941 was 3.2%. This is about the average for the decade. The State's share does not, of course, represent all the engineering costs on T & BA projects, since the municipalities themselves pay for part of the cost. Engineering costs on T & BA construction are naturally much lower than for State highway work, or even county road and bridge work. Municipal roads are of simple design and construction, and this fact is borne out by the average cost per mile of road constructed with T & BA funds. Figures for the past five years are:[897]

Township and Borough Aid Construction Costs, 1937-1941

Year	*Average cost per mile*
1937	$8,641
1938	7,615
1939	8,564
1940	6,656
1941	8,934

[895] *New Jersey State Highway Department Annual Reports, 1936* to *1941,* reports of the Projects Division.

[896] *New Jersey State Highway Department Annual Reports, 1931* to *1941,* reports of the Projects Division.

[897] *New Jersey State Highway Department Annual Reports, 1937* to *1941,* reports of the Projects Division.

Most municipal roads are constructed with a low or intermediate type of surface since they serve rural areas where the volume of traffic is not heavy. Gravel roads are most common, and relatively little mileage is built of bituminous or reinforced concrete. The following figures represent the more common types of roads constructed from 1937 to 1941 and the mileage of each:[897a]

Township and Borough Aid Construction Road Types, 1937-1941

Type of road	*Mileage* 1937	1938	1939	1940	1941
Gravel	120.80	100.15	117.65	90.53	110.50
Gravel Bituminous Surface Treatment	34.75	29.95	41.95	37.42	40.20
Gravel, Calcium Chloride	—	—	11.01	10.41	14.62
Bituminous Surface Treatment	41.49	55.12	56.47	53.10	29.66
Bituminous Penetration Macadam	18.21	24.60	20.84	18.06	22.87
Type "A" or "T"	10.49	15.48	19.93	13.00	20.54
Bituminous Concrete	13.02	14.04	16.93	15.41	19.63
Reinforced Concrete	12.27	4.01	3.90	3.85	4.01
Total Mileage for Year	252.85	247.89	299.46	250.00	269.95

Most of the mileage built with T & BA funds is located in townships and boroughs. Only about five per cent. of these roads is to be found in cities entitled to receive State Aid, and an even lesser percentage in towns and villages. The following tabulation shows the location of the roads built in the five-year period from 1937 to 1941:[897a]

Township and Borough Aid Construction Road Locations, 1937-1941

Year	*Townships*	*Boroughs*	*Towns*	*Villages*	*Cities*	*Total miles built*
1937	163.10	73.22	2.56	1.02	12.95	252.85
1938	148.42	77.34	10.13	1.48	10.52	247.89
1939	205.74	70.44	8.82	0.42	14.04	299.46
1940	167.18	62.10	9.66	—	11.06	250.00
1941	184.34	61.10	6.73	0.23	17.57	269.97

[897a] *Ibid.*

The construction of T & BA gravel roads is often postponed until late in the season because of the delay in passing the State Highway Fund Appropriation Act. The result is that after the required bituminous surface application is made, it does not cure properly and the roads break up under the influence of the winter and spring weather. The Projects Division, therefore, no longer permits bituminous applications to be made late in the year, but requires the work to be carried over into the next season. This accounts for the fact that in some years more than 25% of municipal road construction work remains uncompleted. Thus, by force of circumstance, the cost of construction is increased and traffic inconvenienced.[898]

In recent years, the Projects Division has carried out some interesting experiments in road stabilization work in connection with the State Aid program for municipalities. In 1934 stone was mixed with earth road surface and treated with calcium chloride on certain roads in Hunterdon and Middlesex Counties. The results were not entirely satisfactory, but they represented an improvement over the existing surfaces.[899] Soil stabilization with cement was tried on a Hunterdon County road in 1939, and experimental sections of soil stabilization with tar were built on Mercer County roads in 1940 and 1941. Results indicated that the latter method might be used in South Jersey where good gravel is scarce.[900]

Experiments with cotton fabric roads have been carried out in several counties in recent years. The work consists of covering the existing bituminous surface-treated gravel road with cotton fabric. The fabric is then coated with hot tar and given a stone cover, and

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[898] *New Jersey State Highway Department Annual Reports, 1934* to *1936,* reports of the Projects Division. MVA maintenance work involving bituminous surface treatment on county roads is likewise delayed until midsummer, with the result that traffic is inconvenienced.

The amount of work begun in each of the past five years and remaining uncompleted on December 31 was: 1936—28.6%; 1937—21%; 1938—33%; 1939—20%; 1940—26%. *New Jersey State Highway Department Annual Reports, 1936* to *1940,* reports of the Projects Division.

[899] *New Jersey State Highway Department Annual Report, 1934,* report of the Projects Division.

[900] *New Jersey State Highway Department Annual Reports, 1939* to *1941,* reports of the Projects Division. Soil stabilization with cement cost $29,878 per mile because of large W. P. A. labor costs. Soil stabilization with tar cost $2,507 per mile in 1940 and $4,038 in 1941. The 1940 report contains an illustrated account of the latter work.

the road rolled. These experiments have been carried out in cooperation with the Public Roads Administration. The value of this type of improvement is questionable.[901]

Township and Borough Aid (Dirt Road Fund):

It has already been noted that $50,000 of the $125,000 of T & BA construction funds reserved by the Commissioner annually for each county, is available for maintenance and repair of unimproved municipal roads. Applications for allotments from this so-called Dirt Road Fund must be made to the Board of Freeholders of each county on or before October 1. Any part of the $50,000 not applied for in time is added to the $75,000 available for the construction of unimproved roads.

Before the *Revised Statutes of 1937* were adopted, some of the municipalities used Dirt Road Fund money without matching the State funds on a 90%-10% basis. The *Revised Statutes* made it clear that municipalities must contribute 10% of the cost of the maintenance and repair of the unimproved roads.[902] The Attorney-General ruled in accordance with the statute and the municipalities were notified that thereafter they must contribute their proper share of the cost.

No special form is used by municipalities in applying to the Board of Freeholders of the county for allocations from the $50,000 Dirt Road Fund. The Board of Freeholders determines what roads it would be best to include in the program, and then sends a detailed schedule to the Projects Division before January 1 of each year, setting out the name of each road, length, description of the work to be done, and estimated cost. This is done by letter. Almost all of the counties ask for their full share of the Dirt Road Fund.[903]

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[901] *New Jersey State Highway Department Annual Reports, 1934, 1937* and *1938*, reports of the Projects Division. The 1937 report contains an illustrated account of the work.

[902] *R. S. 27:15-3.*

[903] Counties which do not request the $50,000 to which they are entitled are Gloucester and Hudson. Occasionally, a county asks for less than this sum. The amount requested by counties for each of the years 1938 to 1942 was: 1938—$850,000; 1939—$905,000; 1940—$925,000; 1941—$925,000; and 1942—$950,000. The total amount available in each of these years was $1,050,000. *New Jersey State Highway Department Annual Reports, 1937* to *1941*, reports of the Projects Division.

After the State Highway Fund Appropriation Act has been passed and the funds actually become available the Supervisor of State Aid Projects recommends to the Commissioner, through the Highway Engineer, that the amounts requested by each county be sent to them. The Department makes no careful check of the work done with these funds, although once in a while a Traveling Inspector will go over the roads on which funds are being expended. In some counties, like Essex and Passaic, money from the Dirt Road Fund is used for the construction of municipal roads by contract or under a W.P.A. program. They send copies of their plans and specifications to the Projects Division for its information, although not required to do so. This is a very desirable way of using the Dirt Road Fund because it results in the improvement of roads requiring attention.

It is clear that the Department has no real control over the expenditure of a possible $1,050,000 annually by municipalities. The entire matter is left in the hands of the Boards of Freeholders. This loose practice lends itself to abuse and waste.

Township and Borough Aid (Maintenance and Repair):

In 1929 the Legislature passed an act providing that the sum of $210,000 be set aside annually on October 1, or as soon thereafter as available, from the net receipts of the Motor Vehicle Fund for the maintenance and repair of muncipal roads constructed with T & BA funds. The Highway Commissioner has the power to pay this money to the Boards of Freeholders of the several counties in such proportions as he may determine. In making the distribution, the Commissioner can take into consideration the number of miles of roads constructed with T & BA funds and the cost to the various municipalities of the maintenance thereof.[904]

Although the 1929 act did not mention how much the municipalities in each county were to receive, the practice of the Department was to divide the $210,000 among the 21 counties equally. Some, like Hudson and Essex, had such good roads that their municipalities had little need of their $10,000 share for maintenance. Consequently, the funds not requested were transferred to other counties. The

[904] *P. L. 1929, c. 255, s. 1; R. S. 27:15-10.*

municipalities in counties whose shares were thus redistributed did not like this arrangement. They were able to obtain the passage of the 1938 act permitting them to use T & BA maintenance funds as their share on W.P.A. projects.[905] In 1939, the municipalities in the larger (first class) counties obtained legislation allowing them to use this money for new construction, reconstruction, betterment or improvement of their roads and streets with the permission of the Highway Commissioner, wherever it would be more economical and advantageous to do so.[906]

The $210,000 allowed for T & BA maintenance work annually soon proved entirely inadequate.[907] The mileage of such roads built with T & BA funds was 1,307 miles in 1929. Almost 2,400 additional miles were built before the act increasing the amount available for maintenance to $525,000 annually was passed in 1940. In 1939 and 1940 it became necessary to use T & BA construction funds for the surface treatment of gravel roads that had been built under the T & BA program, because of the lack of maintenance funds.[908] The use of these funds for maintenance purposes was questionable. The action taken was justified under the wording of the 1938 statute which defined "unimproved road" to mean "any road which, in the opinion of the State Highway Engineer, is unsuitable for present day traffic."[909]

Many municipal roads built with T & BA funds have reached the stage where it is no longer economical to attempt to maintain them. Several hundred miles of these roads have become unsuitable for present day traffic, and additional mileage is falling into this category with each passing year. It is impossible to reconstruct them

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[905] *P. L. 1938, c. 10; R. S. App. A: 3-30* to *35.*

[906] *P. L. 1939, c. 380; R. S. 27:15-18.*

[907] See *New Jersey State Highway Department Annual Reports, 1933* and *1934,* reports of the Projects Division.

[908] *New Jersey State Highway Department Annual Reports, 1939* and *1940,* reports of the Projects Division. T & BA construction funds were used for maintenance work on 56.47 miles of municipal roads in 1939 and on 53.10 miles in 1940. Despite the fact that $525,000 was available in 1941, construction funds were used for surface treatment work on 29.6 miles of roads.

[909] *P. L. 1938, c. 362; R. S. 27:15-17.* See *New Jersey State Highway Department Annual Report, 1941,* report of the Projects Division.

under the present Township and Borough Aid Act which provides for the construction, grading and drainage of *unimproved* municipal roads. The Supervisor of State Aid Projects has recommended that the act be amended to allow of the construction, *reconstruction,* grading and drainage of these roads.[910]

The act gives the Board of Freeholders of each county to which T & BA maintenance funds are allotted the power to distribute them among the several municipalities.[911] Municipalities receiving State Aid funds must contribute such sum towards the cost of maintenance and repair as the Commissioner or the Board of Freeholders shall require, but in no event shall this share be less than ten per cent. The Board of Freeholders may agree to contribute a portion of this cost to the municipality.[912]

In order to obtain T & BA maintenance grants, the municipality must submit an application and agreement for State Aid to the Commissioner for approval and allocation of funds. No estimate or bill may be paid unless the work done or the services rendered have first been approved by the Commissioner.[913]

The sum of $25,000 is allotted to the municipalities of each county under the 1940 amendment to the 1929 act. Any municipality desiring T & BA maintenance funds makes application to the Board of Freeholders of the county in which it is located before January 1, on a form prescribed by the Projects Division. The application gives the name and description of the road, the year in which it was constructed under the 1916 Herrick Act, the portion on which it is proposed to spend the funds requested, the type of work contemplated and the materials to be used, as well as the estimated cost. The municipality declares that all work will be done in accordance with an agreement to be entered into between the county and the municipality. The application must be approved at a meeting of the gov-

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[910] *New Jersey State Highway Department Annual Report, 1941,* report of the Projects Division.

[911] *R. S. 27:15-11.*

[912] *R. S. 27:15-13* and *14.* Under the original 1919 act, municipalities were required to pay 25% of the maintenance cost.

[913] *R. S. 27:15-15.*

erning body of the municipality. Two copies are submitted to the Board of Freeholders, which forwards one copy to the Commissioner when it decides to include the application on the annual T & BA maintenance schedule.

An agreement is then entered into between the Highway Commissioner and the county. The county binds itself to execute an agreement with each municipality receiving funds, whereby the municipality will pay the county such sum as the Board of Freeholders may determine, which sum shall not be less than ten per cent. of the cost. The county further agrees that its Supervisor of Roads will do the necessary maintenance and repair work in a manner acceptable to the Commissioner. The work may be done by county forces, by contract after advertisement, or by the municipality under the supervision of the County Road Supervisor if it has a proper maintenance organization.

Among other things, the county agrees that where any of the work is done by force account, agreements must be submitted and approved by the Commissioner before work begins; that materials complying with the Department specifications will be supplied in the quantities necessary; that proper accounts will be kept; and that the county will submit specifications for materials, equipment or workmanship to the Commissioner for approval before advertising for bids, and submit a list of the bids received and the action of the county in awarding the contract for approval before finally executing the contract.

This agreement, executed by the Board of Freeholders, must be approved by the Supervisor of State Aid Projects and the Highway Engineer before the Commissioner signs on behalf of the State. Under the agreement the Commissioner agrees to set aside ninety per cent. of the cost indicated in the detailed schedule submitted by the county.

This schedule contains a complete list of the roads on which it is proposed to expend T & BA maintenance funds. The name of each road is set out, together with a description of the existing right-of-way, repairs contemplated and kind of surface treatment materials to be used, and total estimated cost. The schedule is signed by the County Supervisor of Roads and Board of Freeholders. The Chief Auditor

and Accountant approves as to the availability of funds, and after the Projects Engineer, Supervisor of State Aid Projects and Highway Engineer have each in their turn approved the schedule, the Commissioner signs, noting the amount of the State allotment and the percentage of cost payable.

The procedure followed and forms used, whether the work be done by contract or, as most often happens, by force account, is the same as for MVA work and T & BA construction work. The testing of materials, inspection during the course of the work, final inspection, reports, partial and final estimates and payments—all these follow the same course as described for other State Aid work.[914] The Projects Division maintains a card record for T & BA maintenance work. One type of card is used for counties, showing details relating to its maintenance schedule. Another card is used for each municipality, setting out the several roads, their descriptions, nature of work to be done and estimated cost, the reverse side showing the status of the account.

The Supervisor of State Aid Projects makes a regular report to the Highway Engineer showing the status of plans, specifications, contracts and other papers that must be submitted on MVA and T & BA projects. This statement provides a ready method of determining whether there is any delay in the proceedings leading up to the actual beginning of work on a project.

A special set of forms is provided for use by counties and municipalities where State Aid allotments are employed to meet the sponsor's share on W.P.A. projects. The Department encouraged this procedure when the W.P.A. program was at its height.

Any county or municipality interested in carrying out a project under W.P.A. auspices submits a statement describing the project, the materials that will be required, and what materials and equipment it desires that W.P.A. furnish (this is based on 11% of the labor payroll provided by W.P.A.), and stating that the project is of definite economic value to the general public. This statement is forwarded by the Projects Division to the W.P.A. Coordinator.

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[914] There are no partial payments on T & BA force account maintenance work, however. The Commissioner approves the final force account statement and payment.

The county or municipality must pass a resolution requesting the Highway Commissioner to submit an application to the Works Progress Administration covering the project, and authorizing him to set out the sponsor's share in a designated amount, a given part of which is to be provided by the Commissioner for inspection and the remainder by the county or municipality from its own funds. The resolution further authorizes the Commissioner to enter into the necessary agreement with the Federal agency after the project is approved, and declares that the county or municipality will then enter into a contract with the Commissioner as provided by law.[915]

After the project has been approved by the State W.P.A. office, the county or municipality executes the promised agreement, by whose terms the State agrees to provide supervisory inspection and the county or municipality the required engineering, supervision, materials, equipment and other necessary services, as set out in the project proposal. The agreement states the amounts to be paid by the State and by the county or municipality.

There are a number of other forms used by the W.P.A. Coordinator's office during the course of operations and in connection with employment reports, costs, estimates for payment, etc.

Counties and municipalities have benefitted from the W.P.A. program in probably a greater degree than the Highway Department under the "Betterment" projects submitted through the Maintenance Division. Taking full advantage of the provisions of the 1938 act which permitted them to pay their share from State Aid funds, these governmental agencies have carried out a large program in cooperation with the W.P.A. In this they have had the full assistance of the Department, acting through the Projects Division and the W.P.A. Coordinator.

An indication of the extent of the W.P.A. program of counties and municipalities since it was established in 1938 may be obtained from the following schedule showing the projects completed and operating at the close of each year and the shares of the Federal Government and of the State as sponsor:[916]

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[915] *P. L. 1938, c. 10; R. S. App. A: 3-30* to *35.*

[916] *New Jersey State Highway Department Annual Reports, 1938* to *1941,* reports of the W.P.A. Coordinator.

County and Municipal W.P.A. Projects, Completed and Operating, 1938-1941

Year	Completed		Operating	
	Federal	*State*	*Federal*	*State*
1938				
County	$ 678,988	$ 343,360	$ 3,350,135	$1,188,836
Municipal	221,702	168,762	1,782,345	888,688
1939				
County	3,244,746	1,584,061	7,036,594	2,088,947
Municipal	2,328,776	1,196,499	2,874,844	678,708
Dirt Road	—	—	509,463	173,124
1940				
County	3,088,278	771,481	11,735,873	2,034,807
Municipal	2,297,756	808,420	1,774,028	675,246
Dirt Road	81,904	44,443	542,585	189,228
1941				
County	2,596,212	594,492	13,671,020	3,708,042
Municipal	1,421,802	653,536	990,840	200,149
Dirt Road	123,486	47,997	894,208	352,892

Most of the T & BA maintenance funds are spent for the surface treatment of gravel roads and penetration macadam roads. The extent of the T & BA maintenance program for the five-year period from 1937 to 1941 is shown in the following schedule. Balances from previous years were used in each year to make up the amount of the State's share:[917]

Township and Borough Aid Maintenance Program, 1937-1941

Year	*Schedules submitted*	*State's share*	*Amount available*	*Mileage maintained*	*Cost per mile*
1937	$245,966.46	$221,430.02	$210,000.00	368.823	$667
1938	250,954.80	223,078.61	210,000.00	419.934	597
1939	234,552.92	211,097.66	210,000.00	444.000	528
1940	264,179.61	239,429.01	210,000.00	500.000	528
1941	523,655.28	470,872.30	525,000.00	681.000	769

[917] *New Jersey State Highway Department Annual Reports, 1937* to *1941*, reports of the Projects Division.

There have been 3,936.54 miles of municipal roads built with T & BA funds since 1921.[918] State Aid funds are being used for maintenance and repair on less than one-fifth of this mileage each year. The volume of requests made to Boards of Freeholders annually far exceeds those which are finally presented by the Boards to the Highway Commissioner on the T & BA maintenance schedules. County officials necessarily have to reduce the requests to a figure approximating the $25,000 ($10,000 before 1941) that will be apportioned to each county by the Commissioner. Since the municipalities have very limited funds, and few of their roads possess a high type surface, it follows that the rural system is not receiving the attention it should.

In this connection, one should consider the results of the road mileage survey made by the Highway Department in 1939. This is the most recent study available, but the figures are sufficiently accurate for use here. Schedule 10 on page 526 shows the road mileage for the entire State, by systems and types of road surfaces.

Practically every mile of the county road systems is improved, although about half of this mileage has a low type surface. Township roads, which comprise 41.3% of all the road mileage of the State, are 57.9% unimproved; and of the borough roads, which make up 14.9% of the State mileage, 33.07% are unimproved. In short, less than one-half the township and borough roads are improved, although they constitute 56% of the entire mileage of New Jersey.

The percentage of unimproved roads in townships is by far the largest of any of the classifications. It is mainly responsible for the 32.61% of unimproved mileage of all State roads.

There has been some progress made in building up the rural system, but it has been slow. Road mileage surveys made in 1927 and 1932 show the following for township and borough roads:[919]

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[918] See *p. 505, supra.*

[919] *New Jersey State Highway Department Annual Reports, 1928* and *1931.*

Township and Borough Roads, Improved and Unimproved Mileage

Date	Township Roads		Borough Roads	
	Improved	*Unimproved*	*Improved*	*Unimproved*
January 1, 1927.....	26.10%	73.90%	51.78%	48.22%
January 1, 1932.....	32.87	67.13	57.37	42.63
July 1, 1939	42.10	57.90	66.93	33.07

A Secondary Highway System:

The outstanding economic reason for inaugurating the policy of State Aid was the inequitable plan of highway taxation which prevailed generally throughout the country in 1890. Under the system of local management of highways, the tax burden for road purposes fell almost entirely on rural property. Urban areas generally escaped paying a road tax. Not only was this unjust, but it resulted in insufficient funds for the construction and maintenance of roads and bridges of the type required. New traffic conditions created problems of construction and maintenance which the limited skill of local officials could not solve.[920]

The movement to get the farmer out of the mud and to build farm-to-market roads began to take on increasing proportions. New Jersey was the first State to take action. The 1891 State Aid Law was pioneer legislation. It abolished the practice of paying highway taxes with labor and substituted a cooperative plan of financing highways, embracing the State, the county, the township and abutting property owners.

The new arrangement was followed by many other States. The State Aid program of New Jersey grew as more and more local governments took advantage of the new policy of cooperative financing of road improvements. The results achieved were of a relatively high order for the times and the needs of traffic. Townships wanted to build good roads as rapidly as possible.

The increasing use of the automobile created new problems.

[920] Agg and Brindley, *op. cit., pp. 37* and *38.*

The change in the nature and volume of traffic brought demands for increased State Aid. Paralleling this development was the growing centralization of control in the State government. In return for providing grants-in-aid the State insisted upon a greater degree of regulation over local highway administration. Surveys, plans, specifications and contracts had to be approved by the State agency.

The Highway Commission created under the 1917 statute, and later the Highway Commissioner, succeeded to the powers and duties of the State Commissioner of Public Roads in connection with State Aid. As counties and municipalities gained a greater measure of influence in legislative matters, the amount of State Aid and the uses to which funds could be put, grew. The history of the increase in Motor Vehicle Aid and Township and Borough Aid has been traced. Annual appropriations for MVA today amount to $6,735,000, and the yearly contribution to the T & BA program is $2,625,000 for construction and Dirt Road Fund purposes, and $525,000 for maintenance needs.

Counties and municipalities generally have come to look upon State Aid as a political matter. The pressure is constantly for more funds that may be used for a greater variety of purposes. In the light of the exposition contained in this section, one must agree with the criticism often made that the present system of State Aid does not bear any precise relation to the needs of counties and municipalities, nor does it result in the most effective use of the funds.

The area-population-road mileage formula used in distributing $6,000,000 to counties may have been equitable at some past date. At best, it is a very rough approximation to the relative needs of these agencies. The formula is generally considered as prejudicial to the metropolitan counties. Despite their long and continued objection to it, this method of distribution has remained on the statute books because of the influence of the rural counties. This is only one aspect of the struggle between the agrarian economy and the industrial, urban economy that has been waged in legislative halls with increasing force for a century or more. The $35,000 received by each county from the additional MVA appropriation of $735,000 does not correct the inequities of the formula.

Schedule 10 shows that although more than 99% of the county road systems are improved, half of the roads are of gravel. This explains why more than 50% of the MVA funds go toward maintenance and extraordinary repair of county roads and bridges (Schedule 9). Less than 10% is used for construction or reconstruction. Instead of employing MVA funds for intermediate and high type surfaces, counties are spending almost a quarter of the State Aid money in paying principal and interest on their road and bridge bonds. Essentially, this means that the Legislature, once interested in building up a durable secondary road system, has through amendment of the original act lent itself to helping counties keep their tax rates down.

In the case of T & BA funds, almost a million dollars (the Dirt Road Fund) annually goes into maintaining roads of low type surface. This money is handed over to the county authorities who distribute the funds as their discretion dictates. The State has little or no control. The Highway Department, possessing no power under the statute, is practically limited to being the agency for handing the money over to the Boards of Freeholders. Year after year, the "dirt roads" of the townships, boroughs and villages, swallow up a million dollars worth of maintenance materials.

The balance of the $2,625,000 of T & BA construction funds is used for construction purposes. The fact that more than half of the township and borough roads are still unimproved shows that the program of building up the rural mileage is proceeding at a slow pace.

The point has already been made that even with the increased amount of State Aid money available for maintaining and repairing T & BA roads, $525,000 is not enough to do the job.

The fact remains that the smaller units of government are generally unable to cope with the technical, economic and engineering problems that arise in the construction of highways suitable for present-day highway traffic. The same may be said for most counties where important through routes are concerned.[921]

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[921] *Cf.*, Agg and Brindley, *op. cit., p. 52.*

The present trend in highway administration, as in most governmental activities, is toward larger units of control.[922] Local governing bodies, which have direct control of almost ninety per cent. of the roads in the country, have clung with great tenacity to the powers which they possess over highway matters.[923] Their limited resources and ability to deal with the problem of roads and bridges, and the realization that more efficient administrative methods must be adopted if waste is to be avoided and progress made, has led some States to assume full responsibility for the construction and maintenance of all roads.

In 1931, North Carolina took over the administration of all highway work, following the publication of a survey showing widely varying results in county highway administration. Virginia assumed responsibility for all roads in 1932.[924] Pennsylvania took over 20,156 miles of rural roads in 1931.[925] Other jurisdictions have taken similar action, merging the local systems into the county or State systems. In Connecticut, State-Aid roads, when constructed, become part of the main State system.[926]

A secondary system of roads was recommended by Highway Engineer Sloan in the plan which he recommended in 1926.[927] The Highway Commission did not adopt this excellent suggestion in its report

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[922] MacDonald, *op. cit., c. XIX.*

[923] *Ibid.* The township is the primary unit of road administration in the North and East, the county serving in this capacity in the South and West. See, also, Agg and Brindley, *op. cit., p. 44,* who point out that the control of local governments over road and bridge work is of historical derivation.

[924] Following an exhaustive study of the primary and secondary highway systems of Virginia, a Commission appointed by the Legislature recommended that the two systems be combined into a single system of 45,891 miles, to be "maintained and improved so as to produce a coordinated system of highways adequate to meet expected traffic requirements of the State. Roads carrying like traffic should be treated alike regardless of the system in which they happen to be." *Report of Commission to Study Primary and Secondary Systems of Highways in Virginia,* submitted to the Governor and General Assembly of Virginia; Senate Document No. 6 (Richmond, 1940).

[925] Act 203, June 22, 1931. The taking over of so great a mileage at one time (the existing State System was only 13,521 miles long) put a great strain on the Highway Department and the State. Although the amount appropriated for highway purposes was increased in the decade following, it was necessary to spread the funds thin. *The Organization and Administration of Pennsylvania's State Government, op. cit., pp. 2402* to *2404.*

[926] *Biennial Report of the Highway Commissioner of Connecticut, op. cit., p. 86.*

[927] *Report of the State Highway Engineer to the State Highway Commission, op. cit., pp. 26* to *29.* The secondary system was to comprise 22 routes with a total mileage of 634 miles. See *p. 351, supra.*

to the Legislature, but passed it by with scant consideration.[928] It thus missed the opportunity of making a constructive start on an integrated and efficiently administered secondary system.

In 1929 the Assistant Highway Engineer in charge of the administration of State Aid suggested the desirability of taking over most of the township roads into the county systems. He indicated that since the counties were financially unable to do this at the time, the transfer would have to come about slowly as funds became available. No action was taken on this suggestion by the Department or the Legislature.[929]

A suggestion was made in the Department in 1930 that township roads might advantageously be classified into three groups: (1) those which logically form a part of a comprehensive county system, (2) others that are important from the standpoint of the entire township, and (3) the remainder which are of local significance only. A method would then be worked out of distributing State Aid to the first two classifications. Although the Abell Commission recommended that a legislative committee be authorized to study this suggestion and investigate the needs of local roads, nothing further was done about the matter.[930] The Commission also noted that little attention had been given to the methods used in, and the costs of, the improvement and maintenance of township roads, and indicated that there was a broad field for useful action by the Highway Department in this direction.[931]

By 1932 the importance of the problem presented by rural roads had gained general recognition. The Princeton Survey report attacked the subject on a broad front. Its discussion of this phase of highway administration was one of the outstanding features of its study of the Highway Department.

The report recommended: (1) the transfer of the administration of local roads to the counties, except where the townships were distinctly urban in character and had qualified engineering staffs. The

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[928] *Report of the State Highway Commission of the State of New Jersey to the New Jersey State Legislature of 1927, op. cit.* See *p. 352, supra.*

[929] *New Jersey State Highway Department Annual Report, 1929.* The Assistant Highway Engineer is the present Supervisor of State Aid Projects.

[930] *National Institute of Public Administration Report, op. cit., pp. 309* and *310.*

[931] *Ibid., pp. 312* and *313.*

administration of primary and secondary (county) highways was to be transferred, as designated by the State Public Works Planning Commission proposed by the survey, to the State. (2) As an alternate to arrangement (1), it was suggested that the local roads be transferred to the State, leaving to the counties substantially their existing systems.[932]

The Princeton Survey seemed to favor the first method. It could be effected with little disturbance; both the State and counties would expand their highway work downward. It was pointed out that most townships were not economical areas for highway administration. Their financial resources were too limited to permit of an investment in road machinery, and their area too small to make economical use of equipment. Most of them did not have trained engineering departments. Their administration of highway work increased overhead costs and decreased the effectiveness of the expenditures.

The reply of the Highway Commission to these recommendations was in line with its attitude toward other suggestions made regarding the work of the Department. It was on the defensive. Using the survey's sweeping and often ill-advised recommendations for economies as a stalking horse, it bludgeoned every recommendation, good or bad, including the one under discussion.

It stated categorically that either plan of road transfers recommended by the Princeton Survey report would increase the cost to the State. The Commission then went on to recommend, on its part, an extensive liberalization of the entire State Aid program. It asked that (1) the then $4,000,000 MVA appropriation to counties be continued, and the Legislature approve the Commission's proposed policy to permit the expenditure of these funds without any matching by the counties; (2) the $735,000 provided for MVA work on county roads under *P. L. 1930, c. 178* remain undisturbed, and the Legislature relieve the counties of paying at least 50% of the cost of improvement; (3) the $2,100,000 for T & BA construction authorized by *P. L. 1931, c. 377* be continued, and the Legislature reduce the obli-

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[932] Princeton Survey report, *op. cit., pp. 162* and *207*. The Commission to Investigate County and Municipal Taxation and Expenditures, appointed in 1930 had recommended that the administration of township roads be transferred to the counties. Report No. 5, *Highway Services and Costs* (Trenton, 1931). *Cf.*, Agg and Brindley, *op. cit., pp. 46, 47* and *52*.

gation of municipalities to pay 25% of the cost, to 10%; and (4) the $210,000 appropriation made annually pursuant to *P. L. 1929, c. 255* remain undisturbed, and the Legislature relieve the municipalities of their obligation to pay 25% of the cost.[933]

The Legislature was in a cooperative mood. Counties were not required to contribute any definite percentage on MVA work. The share of municipalities under the T & BA program was reduced to ten per cent. The Legislature went further in the course of time and increased the MVA appropriation from $4,000,000 to $6,000,000 annually, the T & BA construction fund to $2,625,000, and the T & BA maintenance fund to $525,000. In doing all this it never once considered the broad question of the relation of county and municipal roads to the entire State highway problem. The Highway Commission had effectively slammed the door shut on any studied consideration of the administration of county and local road affairs. Neither the Commission, Commissioner, nor the Legislature has given any further study to the very important problem considered in the Princeton Survey report.

Department officials, however, are not unaware of the validity of the point raised by the survey. The problem has been with some of them for at least twenty years. The Supervisor of State Aid has never changed the opinion he expressed as Assistant Highway Engineer. Others concerned with the State Aid program have stated that some action will have to be taken soon.

The Projects Division has done as good a job under the circumstances as possible in carefully administering the State Aid program. The Supervisor of State Aid Projects especially, and the Projects Engineer who is his chief assistant, have tried to get the maximum benefit out of the funds annually distributed among counties and municipalities. Their task has been a difficult one because of the lack of adequate and effective authority under the statutes to follow all of the $9,885,000 into the secondary and local road projects that are carried out in every section of the State. There is some question, too, as to whether the inspection staff is large enough for the many projects involved in the State Aid program annually.

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[933] *Statement of the State Highway Commission on the Princeton Survey, op. cit.*

Highway authorities are agreed that "the time has come to recognize that it is hopeless to expect the governing bodies of the township and county to deal successfully with certain types of highway administrative problems".[934] The entire question resolves itself down to getting the best results from the huge sums spent annually. The desire of local officials to hold on to the authority which they have had over road work since colonial days is understandable. Even more clear is their desire to control the spending of as much money as they can get through their legislators. The political considerations which color their thinking need hardly be stressed.

The first recommendation of the Princeton Survey report still remains generally valid. It accords with the views held by some of those who have studied the problem.

It is recommended that a comprehensive study be instituted and diligently pursued to determine the feasibility of taking over certain county and municipal roads on which State Aid funds are being spent, in order to establish a State-controlled system of secondary roads. The study will develop the method by which the operation of the secondary system would be integrated with the present State highway organization and program.

The Federal Aid secondary system can well serve as a starting point for setting up the new system.[935] It would probably be inadvisable to take over all the roads at one time. The ability of the available highway personnel and budget to absorb the added secondary program must always be considered.

The study would also determine what township, borough and other local roads would be transferred to the counties, and the manner in which this will be accomplished.

Pending the carrying out of this study, there should be an immediate examination made of the present system of grants-in-aid to counties and municipalities. The amount of State Aid and the pat-

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[934] Agg and Brindley, *op. cit.*, *p. 52.*

[935] The Federal Aid secondary program is formulated by the Office Engineer in the Construction Division, in cooperation with the Projects Division. See *p. 74, supra,* for the duties of the Office Engineer in this regard. For the scope of the Federal Aid secondary program since its inception, see *pp. 436* and *437, supra.*

tern of its distribution is the end result of long continued pressure from the beneficiaries of the program. Every indication points to the fact that the distribution does not always meet actual needs, nor does it always obtain the desired results.

Lapsing of State Aid Funds:

Under the present system, State Aid allocations to counties and municipalities do not lapse, but carry over from year to year. Sometimes the Commissioner cancels a T & BA balance after it has been carried for several years. In such cases the money is redistributed at a later date to other projects.

This is of a piece with the policy regarding the State Highway Fund, which is a continuing appropriation.[936] There is no good reason why a State Aid allotment, once made, should continue to be available for years on end. No similar privilege is accorded under the Federal Aid program, where funds lapse at the end of the second fiscal year after the appropriation. The same arrangement should control the use of State Aid funds as long as this program remains in force. If the separate State Highway Fund is abolished, the lapsed State Aid balances will be returned to the general State treasury.

Road Institutes:

One of the important functions of a State Aid program is the collection and dissemination of information on the subject of highway improvement.[937] The Department has emphasized the control and inspection of MVA and T & BA work and paid relatively little attention to the advantages that an educational program presents.

This sort of program has many phases. It consists not only in the Department advising local governmental agencies regarding the technical aspects of highway construction and maintenance, but also as to certain economic and financial problems. An important type of

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[936] See *p. 182, supra.*

[937] This has continued to be one of the principal duties of the Public Roads Administration, from the earliest days when it was known as the Office of Road Inquiry (1893) and continuing through its years as the Bureau of Public Roads.

educational work that can be carried on for the benefit of those who receive State Aid lies in the field of research, whether directed along technical lines, dealing with the general field of highway administration, or pointing up the economic and social advantages of good roads.

As in the case of the administration of Federal Aid under the Bureau of Public Roads, such an educational program would bring about a more orderly, systematic and economical administration of highway affairs. Benefits flowing from a properly conducted campaign of education would be better highway planning, more uniform and desirable standards of design, construction and maintenance, the pooling of information with reference to highway methods, and a better correlation of all aspects of highway work.

A few States, including Massachusetts, Michigan and Pennsylvania, have established road institutes where those in charge of local road building may receive practical instruction under the direction of the engineers of the State highway department. Such institutes can be held at such times and places as are deemed advisable. County and local road officials are required to attend.[938] In Pennsylvania the highway department has the additional duty of furnishing bulletins of information to road officials throughout the State regarding the construction, maintenance, repair and improvement of roads and bridges.[939]

The Department should extend its administration of State Aid work to include a broad program of education of the type indicated, including the holding of road institutes regularly throughout the State.

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[938] MacDonald, *op. cit., c. XIX.*

[939] *The Organization and Administration of Pennsylvania's State Government, op. cit., p. 2406.*

ELECTRICAL DIVISION[940]

The maintenance of operating machinery on movable span bridges and the maintenance and operation of electrical equipment were a function of the Maintenance Division until a few years ago. Soon after coming into office, the Highway Commissioner ordered that the organization chart of this Division be amended to include the establishment of an Electrical Bureau under the immediate supervision of the present Engineer in Charge of the Electrical Division. He further ordered that the Supervisors of the Electrical Division who had theretofore operated under the Construction Division be transferred to the new Electrical Bureau.[941]

One of the new developments in highway work at the time was highway safety lighting. The Highway Commissioner wanted to establish this program in the Department. The result was the creation of the Electrical Division early in 1936.[942] The head of this Division was placed under the Highway Engineer.

Highway Safety Lighting:

The number of accidents and deaths on the highways of New Jersey in the middle 1930's led to the inauguration of an intensive campaign against both day and night accidents on the State system. This program included, in addition to policing and an intensified campaign of safety education, such important elements as highway safety lighting, traffic signals, electric and reflector directionary signs, divided highways, grade separations, traffic circles, line markings, reflecting curbs, guard rails, and other safety features.

Because of the lack of available data showing the relationship between highway safety lighting and night accidents in New Jersey before and after highway lighting was installed, the Department under-

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[940] See *pp. 115* to *121* for the organization and duties of the Electrical Division.

[941] *Minutes of Meetings of the State Highway Commissioner,* minutes of September 11, 1935; *New Jersey State Highway Department Annual Report, 1936,* report of the Maintenance Division.

[942] The Division was established on March 1, 1936, pursuant to an order dated February 27, 1936. *Minutes of Meetings of the State Highway Commissioner,* minutes of March 3, 1936.

took several experimental projects in 1937 and 1938 in order to determine whether expenditures for such lighting could be justified. The three sections on the State system selected for the experiments represented various types of construction as well as different types of volume and traffic.[943]

Accidents patrols were set up on these sections on a 24-hour basis. Three men, alternating every eight hours, maintained a continuous patrol over five-mile stretches of the roads. They recorded complete information for each accident observed,—its cause, the condition of the car and driver, weather, condition of the pavement, and all other details important to a proper analysis of the cause. The information was sent in daily to the central office in Trenton where safety engineers analyzed the contributing factors and classified the accidents.

Knowing the principal causes of most accidents on each type of road studied, the Department was in a position to undertake certain preventive measures, such as divided highways, safety lighting, traffic signals, cautionary signs, reflecting curbs, etc. After the improvements were made, the accident patrols were resumed. In this manner a body of "before" and "after" information was brought together. Using these studies, the Highway Commissioner was able to determine the effect on the number and type of accidents produced by the different corrective measures and to predict, with a fair degree of accuracy, the proper type of safety features required on other roads having similar characteristics.

One of the principal conclusions drawn from the accident studies was that many night traffic accidents occurred in areas where municipalities did not have a proper amount of lighting. This was particularly the case in locations close to the municipal boundaries. At the time the "accident laboratories" were established on the three routes mentioned, municipalities were financially unable to undertake

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[943] These "accident laboratories" were on Route 25 (Elizabeth to Newark Airport Circle, 3.33 miles long), Route 4 (George Washington Bridge to Paterson, 12 miles long), and Route 43 (Absecon to Egg Harbor, 11 miles long). Later, the first project was increased to take in an additional 8 miles from Elizabeth to the Woodbridge Cloverleaf. See, "Oh Say Can You See?", by E. R. Sherbaum, Engineer in Charge of the Electrical Division (Trenton, 1940) mimeo. This article discusses the inauguration of the highway safety lighting program and the details of the procedures followed and results obtained in connection with these studies.

any expanded lighting program. In fact, because of the poor tax collections and heavy relief loads, some were actually eliminating street lighting wherever possible.

The Commissioner pressed his highway safety lighting program and succeeded in having $150,000 set aside in 1937 to give financial assistance by way of reimbursement to municipalities willing to share in the maintenance of highway safety lighting on the State system where it could be justified. After conferring with municipal representatives and safety and lighting engineers, the Commissioner decided not to distribute this money among all municipalities that might need highway lighting. Rather, it was determined that sections of highways be selected without regard to municipal boundaries where, from the standpoint of traffic volume and accident frequency, it was felt that highway safety lighting would result in the largest reduction of night accidents.[944]

The highway safety lighting program of the Department falls into three classifications: (1) 100% State lighting; (2) the municipal reimbursement program; and (3) the joint county and State intersection program.

It was decided from the very beginning that bridges, viaducts, traffic circles, grade separations, cloverleafs, experimental projects and important intersections were potentially the most dangerous locations. Except for intersections (other than the intersections of two State highways) the policy has been that the State pay 100% of the cost of the safety lighting. In cases where installations are warranted and the municipality cannot, for one reason or another, avail itself of State highway lighting reimbursement funds, the Electrical Division has recommended to the Commissioner that a sufficient number of 250 C. P. units be installed to provide adequate safety lighting. The entire cost of such installations, when approved, is borne by the Department. Under this 100% State lighting policy, there were 4927 units in operation at the end of 1941, at 266 locations on the State Highway System.[945]

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[944] "Oh Say Can You See?", *op. cit., p. 12.*

[945] *New Jersey State Highway Department Annual Report, 1941,* report of the Electrical Division, *p. 4.*

In order to meet the requests of the State Defense Council, the Electrical Division will design and install 814 units at 33 drawbridges, and 212 on 14 fixed span bridges, during 1942. This lighting will be installed purely for defense purposes to light the bridge piers and other parts of the bridge structure. The Division also intends to make studies of seasonal lighting, to be used in areas or at locations where safety lighting cannot be justified during the entire year[945a]

More and more municipalities have taken advantage of the municipal reimbursement program in connection with highway safety lighting since the program was established in 1937. This has been due largely to the efforts of the head of the Division and the Supervisors of Traffic Safety directly under him, who have gone out into the field to explain the policy to governing bodies and to obtain their cooperation. At the close of 1941, 194 municipalities had negotiated and completed agreements with the Department for highway lighting reimbursement. These agreements covered 6383 lighting units. The locations of these units are places where the State highway intersects a municipal road or traverses a municipality.

Almost every important intersection of a State highway with a county road is included in the county highway lighting reimbursement program. The only exceptions are the intersections in Morris County, whose Board of Freeholders has refused to negotiate for reimbursement, and a few isolated cases where highway lighting could not be justified. As of December 31, 1941, 958 intersections in twenty counties were included in reimbursement agreements covering 1560 lighting units.

Lighting installations may be requested by individuals, municipalities, the Motor Vehicle Department or the State Police, or recommended by the Electrical Division's own representatives. In any case, the Supervisor of Highway Traffic in charge of traffic lighting collates all the data in the Division's files concerning accidents that have occurred at the location in question, as well as the flow of traffic passing that point. He analyzes this information and then obtains one of the standard lighting plans from the Division files or has a set of plans drafted at the Fernwood office. After he has prepared what he considers

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[945a] *Ibid.*

to be a satisfactory lighting lay-out that will correct the condition, he takes the matter up with the Engineer in Charge of the Division. A recommendation is then made to the Highway Engineer, and if he approves, the matter is presented to the Commissioner for his approval. The plans are also presented to the municipality or county affected, and to the utility company, for their approval.

Reimbursement agreements are entered into on an annual basis.[946] In the case of a county, the agreement provides that the county will pay all electric current bills for highway lighting at the several intersections set out in a schedule attached to the agreement, and present certified copies of receipted invoices of the utility companies to the State. The State agrees to reimburse the county in the amount of 50% of the net charge made by the utility companies. Payment is in quarterly installments. The agreement further provides that all fixtures installed under its terms shall be of a type approved by the Department, and that the pole locations and other details must conform to established standards. The counties can, under the law, pay their share of the lighting costs from their allotments of MVA funds.[947]

The agreements covering municipal reimbursement are similar to the county agreements except that the State undertakes to pay a sum that will reimburse the municipality for the cost of lighting 250 C. P. units. The Electrical Division has determined that these units, staggered approximately 200 feet apart, using 25-foot mounting heights and approved highway lighting fixtures, on mast arms long enough to bring the unit at least three feet over the edge of the paved roadway, produce enough illumination on light colored pavements to permit a careful automobile driver to operate his car in comparative safety. This degree of lighting is considered adequate to eliminate so-called "normal darkness."[948]

Under these agreements, the units installed are of more than 250 C. P. strength in almost every case. The municipality pays the cost of current in excess of the 250 C. P. unit rate. Municipalities may,

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[946] The county lighting reimbursement policy was inaugurated in 1938. *New Jersey State Highway Department Annual Report, 1938,* report of the Electrical Division. Ten counties were participating in the program by the end of that year.

[947] *R.S. 52:22-20 (d).* See Schedule 9, *p. 500, supra,* for the amount of MVA funds spent by the counties annually for highway lighting.

[948] "Oh Say Can You See?", *op. cit., p. 13.*

under the terms of the State Aid law, use T & BA funds for the purpose of lighting roads.[949]

The following schedule shows the growth of the highway safety lighting program since it was established:[950]

Highway Safety Lighting Program, 1939-1942

Under agreement		*1000 C.P. units*	*600 C.P. units*	*400 C.P. units*	*250 C.P. units*	*Total units*
Dec. 31, 1938	141 municipalities ..	115	3,451	1,708	82	5,356
	16 counties at 396 intersections ..	...	154	343	129	626
	210 locations (100% State lighting)	...	980	1,399	1,317	3,696
	Total	115	4,585	3,450	1,528	9,678
Dec. 31, 1939	177 municipalities ..	120	3,596	2,129	81	5,926
	20 counties at 940 intersections..	1	575	736	277	1,589
	266 locations (100% State lighting)	...	1,088	1,803	1,314	4,205
	Total	121	5,259	4,668	1,672	11,720
Dec. 31, 1940	194 municipalities ..	122	3,757	2,441	81	6,401
	20 counties at 959 intersections ..	...	529	754	280	1,563
	256 locations (100% State lighting)	...	1,011	2,164	1,351	4,526
	Total	122	5,297	5,359	1,712	12,490
Dec. 31, 1941	194 municipalities ..	122	3,751	2,429	81	6,383
	20 counties at 958 intersections ..	...	529	748	283	1,560
	266 locations (100% State lighting)	11	1,054	2,518	1,344	4,927
	Totals	133	5,334	5,695	1,708	12,870

[949] *R.S. 27:15-16.*

[950] *New Jersey State Highway Department Annual Report, 1941*, report of the Electrical Division, *p. 21.*

The Electrical Division has estimated that municipalities taking advantage of the highway lighting reimbursement program of the Department will save a total of $135,400 which they otherwise would have to pay in addition to their local street lighting cost.[951]

The Electrical Division has made comparative studies of incandescent and sodium lighting. Prior to 1940, one mile of 6000-lumen sodium vapor lights was installed on Route 43 at Absecon, fifty similar units on Routes 2 and 6 at the Bendix Airport, and 88 units on the boulevard between Camden Airport Circle and Twelfth Street in Camden. Luminaires of various manufacturers were placed alongside of each other in order that, in addition to the studies of the sodium vapor light itself, accurate cost data could be compiled on their respective products. These installations have been discontinued since 1940. The only sodium vapor installation on the State Highway System now in service is located on Route 24 through the Borough of Madison, and consists of seventy-one 1000 C. P. units. The lights have been in operation since 1938.

These experimental studies have established the effectiveness and value of sodium lighting. Because of its peculiar cautionary amber glow, it could be used extensively at grade separations, traffic circles and intersections to warn the motorists of impending hazards or changes in the conditions of the roadway. However, its limited production and high maintenance cost makes the use of the sodium vapor method of lighting impractical at the present time. If the public could be educated to appreciate its proper use, and manufacturers and utility companies would produce and maintain these units at rates that are favorably comparable with the incandescent units, sodium lighting could be made a standard lighting practice at the locations indicated.[952]

Where the lighting installations are of an ornamental type, as on bridges and traffic circles, the installations are made by the Electrical Division and remain the property of the State. Otherwise they are made by the utility company operating in the area. The Engineer in Charge of the Electrical Division has recommended that it be determined whether the Department may not install State-owned lighting equipment and circuits on utility company poles located on the State

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[951] *Ibid., p. 1.*

[952] *Ibid., pp. 2* and *3.* See, also, "Oh Say Can You See?", *op. cit., pp. 15* and *16.*

highway right-of-way. Large savings would accrue to the Department if this could be done. The Department could either buy the metered current for its own equipment, or buy current and maintenance service.

Traffic Signals:

The need of installing traffic signals is determined from data collected by the Electrical Division on accidents and traffic volume at the locations in questions. The Supervisor of Traffic Safety in charge of lighting analyzes the data and makes his recommendation to the Engineer in Charge of the Division. Plans are prepared and the matter referred to the Highway Engineer. His approval, as well as the final approval of the Highway Commissioner, are required.

The policy on traffic signals is about the same as in the case of highway safety lighting. Where the signal is installed at the intersection of two State highways, the State pays the costs of installation and maintenance. However, the Department tries to get the county or municipality to take care of the relamping of the signal. This is necessary because the signal must always be in operating order and it is usually located at a distance from headquarters. It is more practical for the local governmental agency to take care of this maintenance item.

Where the signal is located at the intersection of a State highway with a county or municipal road, the Division arranges for a reimbursement agreement. This agreement provides that the county or municipality pay one-half the cost of installation, take care of all lamps necessary for relamping, maintain and replace all equipment above the ground with the exception of the controller, and pay all electric current bills for the operation of the signal in the first instance. The State binds itself to reimburse the county or municipality for 50% of the cost of the current upon presentation of certified copies of receipted invoices of the utility company, and to maintain and replace, when necessary, the ground conduits, cables, magnetic pads and controller.

Traffic signal installations must be approved by the Traffic Engineer of the Motor Vehicle Department, and the county or municipality agrees to obtain a proper permit from him for the installation and op-

eration of the signal system covered by the agreement. It also agrees to provide the necessary permits for such openings as may be required on rights-of-way owned by it.

Before the Commissioner authorizes negotiation of any reimbursement agreement, whether for highway safety lighting or the installation of a traffic signal, the Chief Auditor and Accountant must check as to the availability of funds.

On December 31, 1941, there were 124 signals in operation at the intersections of roadways with the New Jersey State Highway System, and 28 signals on bridges to control highway traffic during bridge operations, making a total of 152 signals. They represent the following types of operation:[953]

Fully traffic actuated (normal green)		5
Semi-traffic actuated (normal green)	38	
Semi-traffic actuated (normal out)	57	
Semi-traffic actuated	—	95
Flasher		13
Prefixed		7
Manual (on State highways)		4
Manual (on State bridges)		28
		152

The Electrical Division made 2469 inspections of these signals and had 235 emergency calls during 1941.

Thirty-two locations are under consideration for traffic signal installations to be made during 1942. These represent requests received from the United States Army, Federal agencies and defense plants, and will be given priority over the requests received from municipalities wherever justified.[954]

Many traffic signals and flashers on the State Highway System, not under the supervision and control of the Electrical Division, are in need of repair and revamping to conform with standards established

[953] *New Jersey State Highway Department Annual Report, 1941,* report of the Electrical Division, *pp. 5* and *42.*

[954] *Ibid.*

by the Department. A majority of the municipalities and certain counties are not in a financial position to negotiate with the Commissioner for this work or for new intersection installations.

The head of the Electrical Division has recommended that $1,500 be established as a maximum amount to be required of municipalities or counties as their share of the cost of revamping a traffic signal or for such new installation as may be approved by the Commissioner. The recommendation is based on the fact that signal installations such as would be required for local use only would cost no more than $1,500, and the Department ought to assume the extra cost because of the additional requirements to accommodate State highway traffic.[955]

During 1940, the Electrical Division designed and supervised the installation of special five-lane traffic control systems on the depressed highway traversing Jersey City (Route 25), and on the Edison Bridge at the Raritan River and its south approach (Route 35). The depressed roadway is controlled by 26 signal groups and the Edison Bridge installation consists of 19 signal groups. Each signal group controls traffic for both directions in all five lanes. During normal traffic periods, when the volume of traffic is such that the two outside lanes on each side can accommodate the flow, the center lane light is red in both directions. This, in effect, turns the center lane into a theoretical safety island, or emergency lane. When traffic increases in one direction or the other, the center lane light is changed to permit the extra volume of traffic to use the middle lane.[956] These installations involved many intricate engineering problems. The Jersey City police operate the lights on the depressed roadway by manual control, and the State police operate the lights on the Edison Bridge. The bridge system is used continually during the summer months; after October 1 the lights are off except on weekends.

Traffic signals are always installed by the Electrical Division, which uses its own labor crews for doing the work. The same is true of electric signs.

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[955] *New Jersey State Highway Department Annual Reports, 1939* to *1941,* reports of the Electrical Division.

[956] *New Jersey State Highway Department Annual Report, 1940,* report of the Electrical Division, *p. 8.*

Electric Signs:

The Electrical Division installs signs to facilitate safer traffic conditions by giving clearer and more positive information to motorists in the form of directional information and warnings of existing hazards. These signs are equally effective during the day and night hours. They are installed at cloverleafs, grade separations, highway circles and highway junctions.

Just as in the case of highway safety lighting and traffic signals, the Supervisor of Traffic Safety in charge of lighting determines the necessity and location of electric directionary and cautionary signs in the first instance. He analyzes the data in the possession of the Division, has proper plans prepared, and takes up his recommendations for installations with the Engineer in Charge. The installations must then be approved in the usual manner by the Highway Engineer and Commissioner.

The Division has constantly increased the number of electrical sign installations, as shown by the following:[957]

Electrical Signs in Service, 1938-1941

Year	*Cautionary signs*	*Directionary signs*	*Total*	*Number of locations*
1938	55	216	271	29
1939	80	313	393	38
1940	88	340	428	45
1941	125	461	586	62

Fluorescent lighting was first tried on the State Highway System in 1939.[958] Experiments conducted during that year showed that this type of lighting was cheaper and gave a more even distribution of light. Directionary signs were made especially clear and could be seen

[957] *New Jersey State Highway Department Annual Reports, 1938* to *1941*, reports of the Electrical Division. The figures indicate the number of signs in service on December 31 of each year.

[958] *New Jersey State Highway Department Annual Report, 1939*, report of the Electrical Division, *p. 6.*

from greater distances than the incandescent lighting which had been in common use up to that time. The Engineer in Charge of the Division estimated that if all of the electric signs then in operation could be converted to the fluorescent type, a saving of $8,000 a year could be effected in electric current consumption.

Fluorescent lighting was used in most of the signs erected during 1940 and 1941. Experiments in this type of lighting conducted in 1940 and 1941 showed its unquestioned superiority over incandescent lighting.[959]

In 1940 the Electrical Division carried out experiments with flashing neon, regular neon, and other types of tubular lighting, as well as with various plastics to replace glass facings, in order to determine their value and possible use in directionary and cautionary sign installations. These experiments will be continued during 1942.[960] Indications are that the present light-flashed opal glass and the protective wire glass panels can be replaced with a transparent plastic sheet at a saving in the original cost. Maintenance costs would be greatly reduced by the elimination of practically all breakage in handling and through accidents.

As a result of the experiments with neon lighting, the Electrical Division has decided to change to the neon type of sign wherever possible. This sign provides the same even distribution of lighter and brighter light as the low voltage, regular fluorescent type now in use. It also eliminates control equipment required on fluorescent signs which has not operated to the complete satisfaction of the Division. Neon signs use less current, maintenance costs are lower, and they can be turned into a flasher type of sign.[961]

Of the 586 directionary and cautionary signs in service at the close of 1941, 349 were of the incandescent type, 234 were fluorescent and three neon. Because of the defense program, it has been found difficult to obtain delivery of the necessary transformers for neon signs, so that

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[959] *New Jersey State Highway Department Annual Reports, 1940* and *1941,* reports of the Electrical Division.

[960] *Ibid.*

[961] *New Jersey State Highway Department Annual Report, 1941,* report of the Electrical Division, *p. 8.*

the program for installing this type of sign has been delayed. The recommendation made by the Engineer in Charge of the Division in his 1941 report was that all existing electrical signs of the incandescent type be converted to the fluorescent type.[962]

Highway Safety Program Results and Costs:

As a result of the highway safety lighting program initiated by the Highway Commissioner in 1937, the number of fatal accidents and fatalities on the State system has been materially reduced. The most notable reduction came in 1938.[963] Since then the number of fatal accidents and persons killed has increased, as shown by the following:[964]

Fatalities and Fatal Accidents, State Highway System, 1935-1941

Year	*Persons killed*			*Fatal accidents*		
	Day	*Night*	*Total*	*Day*	*Night*	*Total*
1935	150	278	428	128	250	378
1936	147	241	388	134	221	355
1937	162	360	522	137	317	454
(Highway safety lighting program established)						
1938	133	213	346	107	197	304
1939	138	191	329	122	175	297
1940	122	225	347	108	205	313
1941	169	230	399	142	202	344

The number of persons killed and fatal accidents during daylight hours is higher today than in 1937, when the highway safety program was initiated. Of course, the highway lighting part of this program was intended to reduce accidents after twilight, but the figures indicate that the other safety features incorporated in the State Highway Sys-

962 *Ibid.*

963 See, "Oh Say Can You See?", *pp. 16 ff.*, for a discussion of the reduction in fatalities and fatal accidents immediately after 1937.

964 *New Jersey State Highway Department Annual Report, 1941,* report of the Electrical Division, *p. 48.*

tem have not been entirely effective in cutting down the number of accidents or deaths. The reason may be the increased volume of traffic and the higher speeds at which vehicles travel. The most disappointing figures are those for fatalities and fatal accidents during the hours of darkness.

Apparently, the highway safety lighting program was highly effective for a short while. It has not eliminated the subjective element represented by the driver himself. Statistics kept by the Division show that almost all of the increase in deaths and fatal accidents since 1938 has been in the non-pedestrian class. This means that educating the man behind the wheel seems more necessary than ever before. Everything is being done to eliminate hazards on the road itself. In fact, New Jersey leads the nation in this aspect of its highway safety program.

The cost of the program has, as one might have expected, increased during the period of its existence:[965]

Highway Safety Lighting, Traffic Signals and Electric Signs Expenditures and Commitments, 1938-1941

Year	*Highway safety lighting*	*Traffic signals and electric signs*
1938	$399,076.97	$290,536.86
1939	602,583.35	192,197.35
1940	685,440.20	314,654.14
1941	625,676.73	343,794.83

By revising lighting installations and electricity rate schedules, installing fluorescent in place of incandescent signs, obtaining reduced rates on State-owned equipment, and operating traffic signals as normally out units, the Electrical Division reports that it has effected the following savings during the past five-year period:[966]

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[965] *New Jersey State Highway Department Annual Reports, 1938* to *1941*, reports of the Electrical Division. The figures for highway safety lighting include new installations, maintenance, current, and municipal and county aid. The costs of traffic signals and electric signs include new installations, current and maintenance.

[966] Report of the Engineer in Charge of the Electrical Division to the Highway Commissioner, dated April 21, 1941, typewritten memo.

Savings Effected by the Electrical Division, 1937-1941

Year	*Annual savings to State Highway Department*
1937	$20,745.11
1938	26,034.37
1939	28,303.09
1940	21,748.82
1941 (est.)	36,364.82
Total	$143,196.21

Accident Investigations and Traffic Surveys:

The work of investigating all accidents occurring on State highways is carried on by the second of the three Supervisors of Traffic Safety, and those under him. The work of these men has been described in Chapter II.[967] Some of the most important work performed by them has been in connection with the "before" and "after" lighting studies discussed above and the comprehensive and continuing study of day and night accidents on the State Highway System during the period from 1936 to 1941, inclusive. The accident investigators have carried on educational programs wherever possible, and assisted numerous police officials, marshals, and other police officers in establishing and maintaining clear and concise accident records and files. Their accident studies have disclosed a large number of accidents that are not being reported to the proper authorities.[968]

Traffic counting and traffic analysis is in charge of the third Supervisor of Traffic Safety, aided by Assistant Supervisors of Traffic Safety and Traffic Enumerators.[969] On October 30, 1939, the Highway Commissioner directed that traffic be counted at 15 key stations for a

[967] *See pp. 118* and *119, supra.*

[968] *New Jersey State Highway Department Annual Report, 1940,* report of the Electrical Division, *p. 16.*

[969] *See p. 119, supra,* for a description of their work.

two-year period. This work was completed on November 30, 1941.[970] Short-term traffic counts at locations designated by the Commissioner were included from month to month. These temporary stations numbered as high as 60 to 70 during the summer months. Those employed as Traffic Enumerators varied from 100 to 250, according to the season of the year. There is a branch office at Belmar used in connection with traffic counting and accident investigation work.

The necessity of continuing some of the traffic counts that have been more or less of a permanent fixture in the program of the Electrical Division, is open to question. So is the number of Traffic Enumerators employed by the Division, particularly during the summer months. Enumerators have been carried on the payrolls under the designation of "laborers". As in the case of the Maintenance Division this classification was used in order to avoid the full impact of the Civil Service law, rules and regulations. The Highway Engineer had to approve of the employment of Enumerators and many of these men found employment through personal or political recommendation. It requires only a casual examination for one to conclude that most of the work of traffic enumeration has been completed, except for brief re-checks of certain locations from time to time, and perhaps, a more permanent type of counting station at certain vital points on the State Highway System.

It is recommended that the traffic safety work of the Division be reduced immediately to the essential and practical minimum which the program actually requires. This will result in the elimination of an estimated 90 to 100 Traffic Enumerators and Investigators. Whenever circumstances require, it will be a simple matter to expand the per-

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[970] *New Jersey State Highway Department Annual Report, 1941*, report of the Electrical Division, *p. 11.* Actually there were 14 permanent key stations, as follows: George Washington Bridge (Route 1), Holland Tunnel (Route 25), Newark Junction (Routes 21, 25 and 29), Traffic Circle, Routes 25 and S-26; Phillipsburg area (Routes 24 and 28), Woodbridge By-pass (Routes 25 and 35), Woodbridge Cloverleaf (Routes 25 and 4), South Amboy (Route 4 and Smith Street, and Routes 35 and 4), Camden Circle (Routes 25, 38 and 45), Brooklawn Circle (Routes 44, 45 and 47), Trenton (Route 26 and Slack Avenue), Bordentown (Routes 25 and 39), Robbinsville (Routes 25 and 33), Barnegat Bay Bridge (Route 37). As a matter of fact, traffic counts were carried on at some of these locations for a long time before the Commissioner's order.

The 1927 annual report of the Department speaks of traffic counts being conducted "as heretofore," with new counting stations established. Reports in succeeding years indicate that traffic counting work was going on, as shown either by the report of the Highway Engineer or in the schedules of the financial report prepared by the Auditing and Accounting Bureau. See, for example, *New Jersey State Highway Department Annual Reports, 1927* and *1928* (reports of the Highway Engineer), and *1931* to *1933* (reports of the Auditing and Accounting Bureau).

sonnel needed for traffic counting at a particular location or locations, or for special accident investigation work.

The following will indicate the increase in the number of men engaged in traffic counting and accident investigation, and the cost of the work. This expansion of program continued after the point had been reached where one might reasonably expect it would taper off:[971]

Traffic Counting and Accident Investigation Personnel and Costs, 1937-1941

Year	*Monthly average of employees*	*Expenditure*
1937	49	$ 41,748.53
1938	93	158,062.12
1939	145	225,467.65
1940	180	276,072.65
1941	162	295,563.02

The Division has prepared a set of mimeographed instructions for the use of Traffic Enumerators. Each Enumerator sends in a daily report of the traffic counts he makes. These show the number of vehicles, turns at intersections, origin and destination of traffic, the number of cars, buses and trucks, and the number of New Jersey, Pennsylvania, New York and other State cars. On some counts the information gathered is of a simple nature,—the number of cars passing the point in question and whether they proceeded straight ahead or turned to the right or left. Other counts are more complex.

The information received from the field is summarized and analyzed at the Trenton office of the Division. A monthly traffic bulletin is prepared showing, for each station, the total volume of cars, average daily volume, peak day and peak hour volume, the monthly percentage of passenger cars and trucks, and the distribution per 10,000 vehicles of cars, trucks and busses, the first two categories being broken down to show New Jersey, New York, Pennsylvania and "miscellaneous" vehicles. The Supervisor of Traffic Safety in charge of traffic analysis

[971] *Source:* Auditing and Accounting Bureau, and reports of the Electrical Division, *New Jersey State Highway Department Annual Reports, 1937* to *1941.*

also prepares semi-annual and annual reports, and special reports and analyses from the information sent in by the field forces.

Electrical Construction and Maintenance:

When a highway is to be built, the Survey and Plans Bureau sends a set of the construction plans to the Engineer in Charge of the Electrical Division. These plans are checked and the Bureau advised as to where signals, signs or highway safety lighting are to be placed. The plans are marked to show where the conduits should be installed.

After the road contract is let, the Construction Division inspects the installation of the conduits. The Electrical Division forces then install the signs, signals and lighting. Wherever possible, the electrical work is coordinated with the road construction so that everything will be in place when the road is opened for traffic.

In the case of roads already built, it has been pointed out that the Supervisor of Traffic Safety in charge of highway lighting recommends installations of highway lighting, traffic signals and electric signs after having collected and analyzed all pertinent information in the Division files regarding accidents and traffic studies carried on in the vicinity of the proposed improvement. After the Supervisor has prepared the plans for the installation and gone over them with the Engineer in Charge of the Division, a recommendation is made to the Highway Engineer and the final approval of the Commissioner obtained. When the Commissioner has acted, the Engineer in Charge of the Division issues a work order, similar to those used in the Maintenance Division. Each work order must be checked by the Chief Auditor and Accountant as to the availability of funds. Copies of the order go to the Supervisor of Electrical Signs, Signals and Lighting, and to the Foreman in charge of the job. The plans accompany the order, of course.

The Electrical Engineer at the Fernwood office distributes and assigns the work to be done on traffic signals, electric signs or lighting among his labor forces. There are seven crews, each in charge of a Foreman. Four usually work on electric signs and highway lighting, and three on traffic signals and electric flashers. However, the work of these groups can be interchanged.

The Timekeeper and Requisition Clerk at Fernwood not only keeps time records on all labor crews, but makes up requisitions for any supplies or materials needed by Foremen from the Division's stores. These requisitions must be approved by the Electrical Engineer and are then filled by the Storekeeper, who takes the Foremen's receipts. Whenever stores run low, the Requisition Clerk makes out a proper order request form which is approved by the Electrical Engineer, head of the Division, Chief Auditor and Accountant, and Highway Engineer. It is then filled by the Supervisor of Purchase and Stores.[972]

As has already pointed out, the Electrical Division maintains its own storeroom and requisition system, the Supervisor of Purchase and Stores having no jurisdiction. The recommendation has been made that the Division storeroom, like all other stores, be placed under the Supervisor of Purchase and Stores.[973]

Where the installation of highway lighting has been approved by the Commissioner, and the construction completed by the utility company, the job is checked by one of the Division construction and maintenance men to see that the work is in accordance with the plans and specifications. A regular inspection report is sent in to the central office.

Installations of highway lighting, traffic signals, and electric signs made by the Division forces are carefully checked before being put into operation. After an installation is in service, it is maintained by the labor crews working out of Fernwood.

The Electrical Signal Inspectors periodically inspect all controller and flasher mechanisms on traffic signals in their respective areas. Each Inspector sends in his daily time report as well as an inspection report for every traffic signal inspected.[974]

The Electrical Lighting Inspectors do minor maintenance work on such highway lighting units as are maintained by the Division, and on all electric signs and signals. This maintenance work consists of cleaning reflectors, replacing burned out bulbs and broken glassware, and

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[972] See *p. 265, supra.*

[973] See *pp. 276* and *277, supra.*

[974] See *p. 120, supra.*

inspecting the lighting standards and traffic sign and signal standards for broken bolts, castings and wires, safety chains, etc. Major repairs are looked after by the Division's regular construction and maintenance crews. The Lighting Inspectors make daily time reports and send in an inspection report for every traffic signal and electric sign inspected. These reports contain recommendations of items needing attention.

The Electrical Engineer reviews all inspection reports sent in by the Electrical Signal and Lighting Inspectors and notes items that he considers require early attention. In some cases, he takes these items up with Engineer in Charge of the Division.

The Supervisor of Electrical Signs, Signals and Lighting, who is in charge of the crews doing construction and maintenance work, makes a daily report of the jobs he has checked, showing the Foreman in charge, number of employees at work, and other remarks pertinent to the construction or maintenance work involved. He also reports on any special work assigned to him, such as contacting outside parties involved in the installation of traffic signals, or utility companies in reference to locating service points, supplying service, etc. This report can be used as a check against the daily work report made by the Foreman of each construction and maintenance crew. The Foreman's work report gives details as to the mileage traveled, riding time, hours on the job, number of men working, weather, etc. Each laborer must sign the report, and if the Supervisor has checked the job on that day, he adds his signature.

The Division uses an emergency call record to report the nature of the trouble, the work done, the time the installation was back in service, etc.

Electrical installation and maintenance costs for the five-year period, are as follows:[975]

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[975] *Source:* Auditing and Accounting Bureau.

Electrical Installation and Maintenance Costs, 1937-1941

Year	*Expenditures and commitments*
1937	$430,972.65
1938	446,738.24
1939	551,038.40
1940	736,573.83
1941	685,629.78

Electrical Division Foremen must make reports of all property damage to installations. These are like the property damage reports made by the Maintenance Foremen. They must also report any injuries suffered by employees, using the regular form that has been described heretofore. The procedure followed in the case of property damage, or injury to an employee, is exactly like that described in the case of the Maintenance Division.

Bridge Operations:

When the Bridge Bureau of the Construction Division is about to build a bridge, the Electrical Division is called upon to advise the bridge engineers concerning electrical installations on the structure, including lighting, wiring, signals and aviation and navigation lights. The Electrical Division provides the Bridge Engineer with plans and specifications for this work. However, bridge machinery is designed by a firm of bridge engineers who are called in as consultants by the Bridge Bureau of the Construction Division. The Electrical Division supplies these consultants with details regarding the type of electrical service to be used.

After the bridge contract has been advertised and let, the Electrical Division furnishes the supervision and inspection on the installation of lighting, signals, electrical machinery, etc. This work is in charge of the Supervisor of Electrical Drawbridges. When the bridge construction has been completed, he supervises the running of the final operating tests on the installations, including the machinery. The Engineer in Charge of the Electrical Division then notifies the Bridge

Engineer of the results of the inspection and the final tests. If everything is in good order, the work is accepted. The Electrical Division then takes over the maintenance and operation of all the operating machinery, lighting and signal systems on the bridge, including the light and power systems, traffic signals and beacons.

The two Supervisors of Electrical Machinery, respectively in charge of the North and South Jersey areas, and the Electrical Bridge Mechanics under them, make periodic inspections of the operating machinery, lighting and signal systems on the bridges in their area. Necessary servicing and repairs are made on the spot, each crew of Mechanics being supplied with a fully equipped truck.

Bridges are inspected about once a month, the larger bridges receiving two inspections. The Supervisors of Electrical Machinery and their Mechanics have regular tours of inspections. Their maintenance work has been of such high order that emergency calls are very few. Each Supervisor of Electrical Machinery sends in a report immediately after an inspection has been made by his Mechanics, indicating the installations which are in good working order and those which need attention, and making recommendations as to necessary work. This report is signed by the Chief Operator on the bridge.

The Bridge Bureau is in charge of all Bridge Operators and Attendants.[976] These men are trained in their duties by the Supervisors of Electrical Machinery. The Electrical Division is responsible for the operation of 33 movable span bridges.[977] The Supervisor of Electrical Drawbridges and the Supervisors of Electrical Machinery call on those in charge of each bridge regularly to check the operation of the bridge. If any of the installations require the attention of the Mechanics, they are sent for at once.

Important bridges are in charge of a Chief Operator, aided by an Assistant Chief Operator, and Operators. The larger bridges also have

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[976] A transfer of 102 Bridge Operators and Attendants from the Maintenance to the Electrical Division was carried out on April 1, 1939, pursuant to the order of the Highway Commissioner. The purpose was to place the Operators and the care and maintenance of the operating machinery under one head. *New Jersey State Highway Department Annual Report, 1939*, report of the Electrical Division.

[977] See *p. 115, supra.*

two Attendants. During the summer months, men are temporarily employed on an hourly basis as Bridge Gate Tenders in order to speed up the opening and closing of bridge gates during heavy traffic periods. This has resulted in a minimum of lost time.

Test openings of drawbridges are made at frequent intervals. The Division directs the number of times the bridge is to be opened in the normal way each week. There is a monthly test opening made with auxiliary equipment, the Operators alternating in making the openings. The purpose of these test lifts is to familiarize each Operator and Bridge Attendant with the machinery on the bridge and to insure that it is in good working condition, so that all unnecessary delays to navigation and highway traffic may be avoided. Test openings are supposed to be made when traffic is light and visibility and the road surface good. The Supervisors of Electrical Machinery send in reports of test openings made under their supervision. They also read the electric meter when they visit a bridge, and send in a report of the reading.

Bridge Operators must keep a daily log book showing anything out of the ordinary that happens on, under or to the bridge. These are filed annually in the Division office. A report must be made at the end of each month showing all openings of the bridge, including the time the opening began, the duration of the swing and the type of boat passing through. Any accidents or serious damage to the bridge or its machinery must be reported at once to the central office by telephone or telegram.

The aim of the Division has been to reduce to a minimum any time delay to motor vehicle traffic because of bridge openings. In 1941 there were 1556 test openings and 39,334 boat openings of the 33 bridges in charge of the Division. These openings closed the road to traffic for a total of 3119.1 hours. Delays caused by mechanical failure were eliminated during 1941.[978]

The cost of operating drawbridges has increased during the past few years, largely because of the greater number of men required on the structures. Figures for the five-year period are:[979]

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[978] *New Jersey State Highway Department Annual Report, 1941,* report of the Electrical Division.

[979] *Source:* Auditing and Accounting Bureau.

Cost of Operation of Drawbridges, 1937-1941

Year	*Expenditures and commitments*
1937	$242,786.44
1938	283,224.78
1939	282,706.99
1940	287,523.96
1941	312,896.14

Electrical Division Costs:

The cost of the highway traffic safety program, electrical construction and maintenance, and bridge operations, has been set out in separate schedules above. Schedule 11 on page 561 shows the annual expenses and commitments of the Electrical Division since it was established. The larger increases have been in the items for labor and electric current.[980]

Research:

The accident investigation and traffic counting work of the Division represents a continuing research program carried on during the course of the past five years. Reference has already been made to the experimental use of sodium vapor lighting on certain stretches of the State Highway System.

The experiments in the use of fluorescent and neon signs, and plastics instead of glass paneling on these signs, have been conducted at the Fernwood office of the Division. Fernwood has also been the scene of experiments with mercury lighting. These did not prove very successful.

The General Electric laboratories have developed an overhead light of the tear-drop type, in cooperation with the Division. This light has found wide acceptance throughout the country and Canada. It has proved to be the best developed so far, from the point of view of cost, non-glare and illumination. The aim is to concentrate illumination on

[980] *Ibid.*

Schedule 11

NEW JERSEY STATE HIGHWAY DEPARTMENT

Electrical Division

Expenditures and Commitments, 1936-1941

	1936	*1937*	*1938*	*1939*	*1940*	*1941*
Salaries	$148,535.17	$147,799.37	$165,456.50	$ 173,078.78	$ 181,762.73	$ 202,517.16
Labor	25,939.65	91,760.72	235,729.27	312,147.27	404,943.51	399,552.08
Outside equipment	125.76	.....	1,840.90	.....	.....	.....
Department equipment	6,349.05	13,489.09	29,740.98	23,904.63	22,206.90	22,152.61
Materials	27,486.68	118,416.82	109,152.61	62,054.30	138,661.31	84,203.30
Light and power	13,193.15	13,576.72	14,957.60	14,977.70	15,401.42	19,976.15
Coal	3,247.51	3,416.48	2,958.40	3,481.12	3,807.59	2,275.31
Miscellaneous	37,867.29	59,453.88	88,417.29	76,249.08	72,447.72	56,840.30
Current	97,504.89	267,594.54	239,771.59	393,320.16	460,939.26	506,572.03
Total	$360,249.15	$715,507.62	$888,025.14	$1,059,213.04	$1,300,170.44	$1,294,088.94

an elliptical area on the road, without incidental glare to the driver or the wasting of light on the side of the road such as occurs when the illumination falls in a circular pattern. Tests are now being made by electrical research laboratories in New York to develop an even better type of overhead light. The Division pays for these tests.

It should be observed, in passing, that the electrical type of directionary and cautionary signs was developed and pioneered by the Highway Department.

One interesting recent experiment was that conducted by the Electrical Engineer in cooperation with the Designing Engineer in the Construction Division, to eliminate the headlight glare of automobiles approaching on the other side of a divided highway. Two lines of 1½" mesh cyclone fence were erected on the center island, separated by a 6-inch space. This was found to cut down the glare and serve as a barrier.

Reorganization:

It has been noted that most of the work done by the Electrical Division was once a part of the Maintenance Division. Except for accident investigations and traffic analysis, the electrical construction and maintenance work and the operation of bridges are duties which could be carried out by the Maintenance Division.

Under the proposed plan of reorganization of the Department, accident investigations, traffic counting and analysis, and all research work would be transferred to and made a part of the Research and Testing Bureau. All the rest of the work done by the Electrical Division would be placed under the Maintenance Division.

EQUIPMENT AND TRANSPORTATION DIVISION[981]

Operating Costs:

The Equipment and Transportation Division services the entire Department, providing such trucks, equipment and cars as are required by the various Divisions. The Auditing and Accounting Bureau has set up a system of uniform charges for each type of equipment, based on its cost records. These rental rates are supposed to balance out against the cost of operating the equipment at the end of the year. Rates are adjusted from time to time to accomplish this end.

Included in the operating costs are the salaries of operators, gasoline, oil and grease, tires and tubes, storage charges, garage labor, new and repair parts, tools and supplies, traveling expense, insurance, materials and supplies drawn from stores, garage overhead (rent, heat and light, phone, etc.), and depreciation. Depreciation is figured on a five-year basis. At the end of each year the Chief Auditor and Accountant treats the depreciation total as a miscellaneous revenue item. A good part of the $200,000 appropriated in recent years for the purchase of plant and equipment is met out of this item. When equipment is finally sold, there is either a gain or loss recorded against the depreciated value. This gain or loss is credited or charged to the operation of equipment account by the Auditing and Accounting Bureau.

Operating costs for plant and equipment since 1931 are shown in the following schedule.[982] The amount charged to the Maintenance Division is set out in a separate column:

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[981] See *pp. 123* to *126, supra,* for a description of the organization and duties of this Division.

[982] *New Jersey State Highway Department Annual Reports, 1931* to *1941,* reports of the Auditing and Accounting Bureau.

Schedule 12

NEW JERSEY STATE HIGHWAY DEPARTMENT

Equipment and Transportation Division
Operation of Plant and Equipment, 1931-1941

Year	*Automobiles*	*Trucks*	*Equipment*	*Garages*	*Total*	*Charged to Maintenance Division*
1931	$194,622.89	$242,351.28	$ 74,949.60	$175,694.87	$ 687,618.64	$ 452,277.49
1932	204,189.20	254,339.11	77,145.82	171,992.64	707,666.77	486,417.73
1933	181,384.31	210,293.94	82,914.25	175,359.79	649,952.29	454,959.04
1934	149,905.36	274,709.58	81,249.28	170,472.70	676,336.92	527,021.05
1935	147,759.18	278,143.87	88,688.22	170,177.78	684,769.05	540,956.93
1936	134,112.84	287,605.90	97,977.33	164,324.61	684,020.68	538,618.59
1937	134,366.69	260,502.87	82,090.00	188,731.25	665,690.81	517,075.10
1938	157,000.70	324,569.45	126,735.90	216,081.84	824,387.89	639,997.70
1939	176,194.75	363,564.30	143,775.86	216,371.20	889,906.11	707,843.08
1940	206,079.33	463,481.68	194,780.68	198,937.84	1,063,279.53	871,395.83
1941	206,465.63	555,367.65	254,563.58	187,837.22	1,204,234.08	1,009,636.18

The largest increases in operating costs have been registered for trucks and equipment. These make up almost the entire increase of over half a million dollars in the total cost. As was to be expected, the amounts charged to the Maintenance Division reflect all of this increase. The Division has always been by far the largest user of trucks and equipment. Its needs, therefore, play an important part in the program of the Equipment Division.

The rentals charged for various items of equipment compare favorably with the rates the Department would have to pay on the outside. There is one outstanding exception to this statement, however. The rentals for 1917 Mack trucks and similar old equipment are too high.[983] Divisions must pay for the very much higher operating and repair costs of these obsolete units, at the same time that they derive relatively poor service from them. They should be scrapped without further delay.

Equipment:

Before preparing the annual budget request of his Division, the Supervisor of Equipment and Transportation gets in touch with the other Divisions to determine what their requirements for the ensuing year will be. The several Division heads send in their requests and the Supervisor then makes up his list of needed equipment within the $200,000 limit that the Commissioner has fixed for this purpose.

Until 1937 there was relatively little new equipment purchased, despite the growing needs of the Maintenance and Electrical Divisions and, particularly, the expanded snow removal program. This was, of course, a short-sighted policy. Increased maintenance, repair and servicing costs for old trucks and equipment cancelled out the "savings" in capital expenditures. The Commissioner established the policy of spending $200,000 annually for new units. This was an improvement over the practice followed theretofore, but it still did not give proper recognition to actual needs.

The Department would have best been served if, during the past few years, a sum large enough to buy replacements for old equipment

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[983] The rate for these trucks is $26 a day compared to $16.50 for the more efficient new Mack trucks.

and to acquire needed additional items, had been set up. A single appropriation of about $600,000 would have put the Equipment Division in an excellent position to give first-class service to the Department, and especially to the Maintenance Division. As it is, necessary trucks and equipment have been acquired gradually, over a period of several years. Meanwhile, maintenance and operating costs for the old equipment continued at a high level and the Department had to get along as best it could with many inefficient, outmoded units. A good deal of this old equipment still continues in use.[984] The following represents purchases of plant and equipment during the period from 1931 to 1941:[985]

Purchases of Plant and Equipment, 1931-1941

Year	*Amount*
1931	$ 95,528.38
1932	72,835.48
1933	99,513.18
1934	100,000.00
1935	160,000.00
1936	95,000.00
1937	220,000.00
1938	512,000.00
1939	427,755.09
1940	301,924.62
1941	194,677.26

Highway equipment, especially that used for snow removal and heavy duty purposes, should be purchased in the light of actual needs rather than on the basis of a departmental policy which limits pur-

[984] See *pp. 452* and *453*, for a discussion of this old equipment as well as units needed by the Department. One item whose purchase has had to be deferred year after year, is a yard crane, to replace a 1917 model. This very much needed piece of equipment would replace the work of six men and speed up loading operations. Because of the limited budget, items needed by other Divisions were bought first. A dynamometer, bought in 1941, also had to await purchase for several years. The purchase of heavy trucks for snow removal work, to replace 1917 equipment, and motorized mowers, has likewise been deferred.

[985] *New Jersey State Highway Department Annual Reports, 1931* to *1941*, reports of the Auditing and Accounting Bureau. About $235,000 of the 1938 figure represents capital expenditures on the new Vineland and Newark garages. More than $150,000 went for this purpose in 1939.

chases to a stated sum annually. It is recommended that the equipment needed by the Department be purchased as soon as is possible under the existing priorities situation, and that the badly depreciated, obsolescent units be replaced with all speed. A good part of the program of acquiring modern equipment has been completed, but many units remain to be purchased. Their acquisition has become particularly important since the outbreak of hostilities. New Jersey's roads must be kept open. The Department should be properly equipped to meet any eventuality.

The Division maintains, repairs and services 2247 pieces of equipment. The number of units has increased with the years and, except for the passenger cars which are assigned to various officials and employees throughout the Department, largely reflect the growing requirements of the Maintenance Division.[986]

Cars, Trucks and Equipment, 1931-1941

Year	*Cars*	*Trucks*	*Equipment*	*Total*
1931	242	293	765	1300
1932	252	312	844	1408
1933	226	331	933	1490
1934	252	311	917	1480
1935	227	331	961	1519
1936	207	348	902	1457
1937	205	348	931	1484
1938	211	346	1039	1596
1939	244	342	1155	1741
1940	305	357	1303	1969
1941	434	376	1437	2247

In addition, there are 377 pieces of shop equipment, so that every type of inspection, servicing and repair can be carried out by the Division.

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[986] *Source:* Auditing and Accounting Bureau. Any item costing over $100 is considered "equipment."

The present equipment is made up of the following units:[987]

Equipment on Hand, December 31, 1941

Type	*Number*	*Total*
Cars		
Buick (1939 to 1942)	19	
Chevrolet (1937 to 1942)	400	
Ford (1938 and 1940)	15	434
Trucks		
Chevrolet (1½ ton)	146	
Ford (1½ ton)	79	
Mack (all sizes)	136	
White (7½ ton)	1	
F. W. D. (5-ton)	6	
Walters (5 to 8-ton)	8	376
Graders		
Austin	20	
Galion	36	
Rome	16	72
Tractors (Holt 10-ton)		13
Mudjacks (Koehring)		8
Mixers		
Concrete (miscellaneous sizes)	20	
Blystone	9	
Ransome bituminous	6	35
Air compressors (miscellaneous manufacture)		23
Miscellaneous equipment		6
Water wagons		5
Trailers		11
Mowers		
Tractor type	18	
Power lawn	50	
Osborne	1	
Truck drawn	75	144

[987] *New Jersey State Highway Department Annual Report, 1941,* report of the Equipment Division.

Type	*Number*	*Total*
Air tools (all types and makes)		80
Electric hammer (Syntron)		1
Pumps		
Power force	17	
Power diaphragm	16	
Power centrifugal	5	
Hand diaphragm	7	
Hand force	1	46
Tar kettles		
Wood burning	65	
Oil burning	68	133
Rollers		
Austin (10-ton)	7	
Galion (5-ton)	2	
Galion (10-ton)	4	13
Lime spreaders (all types and makes)		6
Sand (cinder) spreaders		
Butler (engine driven)	10	
Hvaas	2	
Good Roads	138	150
Spray outfits		
Sign painting	5	
Trees and shrubbery	3	
Concrete	4	12
Vibrators (Bailey)		7
Weigh batchers (Johnson)		28
Rotary Screens (motor driven)		6
Snow loaders (Barber Greene)		4
Sweepers		
Austin (power)	1	
Truck drawn	5	6
Power buckets (all types and makes)		7
Plows (all types and makes)		8
Traffic line markers (all types and makes)		17
Miscellaneous equipment (all types and makes)		44
Snow plows		553
Total		2,247

In view of its excellent experience with Chevrolet cars, the Division has decided to use this make as standard equipment. Performance has similarly dictated the choice made in the case of other types of equipment.

Equipment is purchased on competitive bids, based on trade-in values. In the past passenger cars have been replaced within two years whenever possible, since this gives the Department the lowest depreciation cost to absorb. Trade-in values allowed have been good, particularly when one considers the mileage on some of the cars.

Plant:

The work of the Equipment Division is centered in its Fernwood headquarters. The main building there houses the offices and storeroom, as well as the mechanics' work floor. The blacksmith, carpenter, machine, sheet metal, upholstery and paint shops are located in this building, as are the electrical, welding and inspection departments. This building is known as Building No. 1. Other buildings used by the Division include the following:

Building No. 2—snow plow parts and repair.
Building No. 7—passenger car garage.
Building No. 8—administration car garage.
Building No. 9—wash house.
Building No. 10—gasoline and oil station.
Building No. 11—garage and metal storage.
Building No. 12—tire, rope, etc., storage.
Building No. 13—gate house.
Buildings Nos. 14, 15, 22 and 23—fire plug and hose houses.
Building No. 25—grease house.

A dangerous condition exists in the main building during the winter months because of the presence of carbon monoxide fumes. A ventilating system should be installed at once to protect the men who work there.

There is a lack of adequate garage space for the many trucks kept at Fernwood. Valuable highway equipment is now of necessity being stored out in the open. The Division has immediate need of at least one large garage. The building now used for storage by the Alcoholic Beverage Commissioner and the Commissioner of Finance (Building No. 17) should be turned over to the Division and other quarters found for these agencies. Even with this garage, it may be necessary to construct another garage in the near future.

Fernwood serves as the main storage center as well as the headquarters for major mechanical repairs of all equipment. It is also the headquarters for Section No. 2 of the Division.[988] About 200 of the 250 men employed by the Division work out of the Fernwood station. Service, gasoline and oil is available 24 hours a day. Three rented garages, located at Somerville, Cliffwood and Woodbridge, help to service this area:

(a) Somerville—After a successful trial period of maintaining a mechanic at this place at specified hours each day, the practice was permanently adopted in 1941. This provides for the servicing and greasing of equipment with greater economy and facility than on the road, as was formerly the practice. Storage demands have grown to a point where they tax the available quarters.[989]

(b) Cliffwood—The need for space in which equipment could more efficiently be housed, serviced and cared for, led to the rental of this garage in 1939. Facilities for washing and greasing cars have been provided. A gasoline tank was installed in 1940 and oil distribution was added in 1941. This resulted in savings over and above the rental, more than $700 having been saved in gasoline and oil bills in 1941. In addition to regular storage for the area, a snow removal truck is housed at this point. Gasoline and oil are available during normal working hours and at any time during snow removal operations.[990]

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[988] See footnote 171, *p. 126, supra,* for the areas included by the five sections into which the State has been divided for Equipment Division purposes.

[989] *New Jersey State Highway Department Annual Reports, 1940* and *1941,* reports of the Equipment Division.

[990] *New Jersey State Highway Department Annual Reports, 1939* to *1941,* reports of the Equipment Division. The Maintenance Division rents a 225′ x 150′ fenced plot adjacent to the garage for its needs.

(c) Woodbridge—This building was rented in 1941 as a result of a survey showing the possibility of saving about $600 a year in rentals by centralizing the storage of several pieces of equipment in one place. Sufficient space exists to store all units regularly assigned to the area, as well as transient equipment. A 30′ x 59′ lot in the rear is available for outside storage.[991]

The new garage at the Newark junction of Routes 21, 25 and 29, forms a strategic location for equipment headquarters for Section 1. The garage was opened in July 1940, and replaced the old garage on Earl Street, Newark, which had outlived its usefulness. One of the advantages of the new location is that equipment does not encounter the heavy in-city traffic. Moreover, equipment is able to go into operation more quickly. This is particularly important during icy weather or snowfalls, when operations must be started promptly. The Pulaski Skyway is located nearby.

The first floor of the new structure is given over entirely to the work of the Division, the second floor being used by the Northern Construction District office and the Newark office of the Survey and Plans Bureau. The main floor area provides a storage space measuring 210′ x 100′, and is equipped with two hydraulic lifts, three wash stands and apparatus of the latest design for testing, servicing and minor repair work. A service station in the rear of the building distributes gasoline, oil, alcohol, etc. to Division equipment. The garage has a small storeroom.

The Newark garage has proved to be a very convenient location. The volume of repair work done there, as well as the amount of gasoline and oil distributed, has resulted in appreciable savings.[992] The garage is open for service, gasoline and oil, day and night. Twenty-one men in charge of a Garage Supervisor are employed at this station.

Two smaller garages supplement the work of the main Newark garage:

(a) Dover—Three men work out of this State-owned garage which services the northwestern section of the State. The head

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[991] *New Jersey State Highway Department Annual Report, 1941,* report of the Equipment Division.

[992] *New Jersey State Highway Department Annual Reports, 1940* and *1941,* reports of the Equipment Division.

of the Newark garage visits the Dover station about twice a week to check on its operations. Service, gasoline and oil are available during normal working hours and snow call, one man being in attendance at these times. A small supply of stores is kept at the garage. The increasing demands of the area indicate that a larger garage will soon be necessary.

(b) Singac—This garage was rented in 1940 to consolidate the equipment assigned to the area. Not only was a definite savings in rental effected by eliminating the separate storage spaces previously used, but sufficient space was provided to accommodate transient equipment temporarily operating in the vicinity. The adjoining lot provides additional outside storage, and there is a pit for greasing and repairs.[993]

The garage at Toms River continues to operate as the key station for Section No. 3. Five men in charge of an Inspector work out of this station. Service, gasoline and oil are available during regular working hours and snow removal operations. It is estimated that the savings from gasoline alone amounted to over $1,100 in 1941. There is a small storeroom at the garage.

Operations at this station, which is leased by the Department, have increased to a point where there is a definite need for additional space and facilities. The Department owns a well-located piece of land for a new garage, and the plans for a garage have been drawn and are in readiness. The head of the Division is of the opinion that construction should be started as soon as practicable.[994]

Two other garages supplement the work of the Toms River headquarters:

(a) Hammonton—This Department garage, built of sheet steel, has deteriorated to a point where repair is no longer possible. It can be used only for storing snow removal trucks of the 1917 type, since it provides little protection from the weather. In 1939 the Division rented a supplementary garage for the storage of units regularly assigned to the Maintenance Division.[995]

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[993] *Ibid.*

[994] *Ibid.*

[995] *New Jersey State Highway Department Annual Reports, 1939* to *1941,* reports of the Equipment Division.

(b) Vincentown—The roadside beautification work on Route 40 and the maintenance operations connected therewith, created the need for additional storage space in this vicinity. Accordingly, quarters were rented at Vincentown in 1941 on a per unit basis. A portable 1000-gallon gasoline tank has been employed in the area. This resulted in a saving of almost $500 during the first year.[996]

The new Vineland garage, completed and opened in 1939, serves as headquarters for Section No. 4. The structure fills a long-standing need in the southern part of the State. An Inspector, assisted by ten men, is in charge of the garage. Service, gasoline and oil are available on a 24-hour basis.

Somewhat smaller than the Newark headquarters, the Vineland garage is well-equipped to render excellent service to the entire section. Besides a stockroom, offices and working space, there is sufficient storage space to accommodate the permanently assigned as well as the transient equipment of the Division in this section. The large fenced-in area in the rear of the building is used by the Maintenance Division for storing materials.[997] The Division rents space in two garages located at Woodbury and Bridgeport, which are supervised by the Vineland personnel.

The garage rented by the Division at Merchantville has for years been the headquarters for Section No. 5 in and around the Camden area. Six men in charge of an Inspector make up the staff. Service, gasoline and oil are available 24 hours a day. As in the case of the other section garages, there is a small storeroom on the premises.

The growing need for storage due to the concentration of departmental activity in this section made necessary the leasing in 1940 of about 7000 square feet of additional space adjacent to the existing garage. This provided sufficient storage for the regular equipment and snow removal units. It also gave the Maintenance Division needed space. Aside from the increase in rentals paid, no additional overhead

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[996] *New Jersey State Highway Department Annual Report, 1941,* report of the Equipment Division.

[997] *New Jersey State Highway Department Annual Reports, 1939* to *1941,* report of the Equipment Division.

expense was encountered. The lease for both the old and new premises has just been renewed for three years, beginning February 1, 1942.[998]

The Merchantville arrangement is, at best, temporary. Eventually this important location will have to have a fully equipped, State-owned garage like those at Vineland and Newark.

The Equipment Division rents a number of garages throughout the State for the storage of snow removal equipment and cars or trucks that must be located near a certain area or employee. The leases are negotiated by the Rental Clerk of the Equipment Division who first inspects the premises to check on their suitability. Regular lease forms approved by the Legal Division are used, and rentals are on a monthly or yearly basis. The Commissioner executes these leases on behalf of the State.

A record is kept by the Division Auditor of all equipment stored on other than State premises, indicating the period covered, license number of unit, rate per month, amount paid and date passed for payment.

The Division Auditor also keeps a record of gas and electric current used in each Division garage. Each garage must keep a record of toll calls. These are sent in monthly to Fernwood to be checked against the telephone company's bill by the Auditor. He also maintains a record of bills for each phone used by the Division.

The Division rents about 120 storage spaces regularly, and about 25 more for snow equipment purposes, in addition to the garages mentioned above. A study should be made of the facilities now operated by the Division and the areas served. The needs of each section of the State should be carefully evaluated. The aim of this survey will be to effect possible economies and improved service by relocating or enlarging existing facilities.

Car Assignments:

There are about 330 passenger cars assigned by the Division for the use of various officials and employees and other Divisions of the Department. About 22 of these cars are available as "taxis" for any-

[998] *Ibid.*

one in the Department needing transportation. The assignment of all these cars, as well as the chauffeurs who drive them, is the responsibility of the Assistant Superintendent of Plant and Equipment. Seventeen chauffeurs are permanently assigned to drive various Department officials.[999]

Every employee to whom a car is assigned is held personally responsible for the car and its equipment. At the time the assignment is made, the person receiving the car must sign a form on which is listed all the equipment and tools that go with the car. When the car is returned this list is checked to make certain that all items have been accounted for, and the form is signed by the person checking the list. An assigned car cannot be transferred to any other employee without the written authority of the Supervisor of Equipment and Transportation. At the time of the transfer a check is made of the equipment on the car and a release given to the employee who has turned it in.

Each person having a permanently assigned car must make a regular weekly report to the Fernwood office showing the speedometer reading at the beginning and end of the week, the mileage covered since the last report, where the car is stored nightly, needed repairs, and the operator of the car. There is space on the back for noting the date, place and amount of all gasoline, oil or alcohol purchases. The gasoline and oil delivery slips must be attached to this report by the driver; copies of the slips come in with the vendor's bills monthly. These weekly reports are reviewed by the clerk in the Fernwood office who keeps a record of all cars assigned and their mileages.

All assigned cars are serviced and washed under the direction of the Assistant Superintendent of Plant and Equipment. Whenever a car is in need of repairs it is sent to the repair shop. Major repairs are made at Fernwood; minor repairs can be performed at one of the Division garages. The same repair records are kept in the case of passenger cars as for other equipment about to be mentioned.

The policy of the Department has been to provide officials and employees with cars whenever this would expedite the work to be done. Assignments are made on the request of the head of the Division.

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[999] Two are respectively assigned to the Governor and the Unemployment Compensation Commissioner.

Apparently there has been no real attempt to keep the number of these assigned cars to a minimum, in view of their constant increase. There has also been an increase in the number of chauffeurs permanently assigned.

When the Commissioner took office in 1935, there was an indication of a possible reduction in the use of Department automobiles.[1000] At the close of 1936, the number of Department cars had declined to 207, and the cost of operation to $134,112.84. By the end of 1941, however, the Department had 434 cars and, as we have seen, some 330 were assigned to various officials and employees. The cost of operating this equipment had increased to $206,465.63.

It is possible that some of those who enjoy the privilege of an assigned car could use some other means of transportation in connection with their work in the field, at a lower cost. In the case of others, it might be more economical to pay them the regular mileage rate provided under State regulations for the use of their own cars, a minimum daily or monthly mileage allowance being set for each employee as a control. Finally, a larger pool of cars might be provided at Fernwood and other Division centers for the use of officials and employees requiring transportation, thus reducing the number of automobiles needed.

A reduction in the number of assigned cars becomes particularly important in view of the need of conserving equipment, rubber and motor fuel during the present war effort. An immediate study should be made of the central passenger car service operated by the Division with the view to reducing the number of automobiles and chauffeurs.[1000a]

[1000] The Commissioner stated that he would drive his own car and eliminate four chauffeurs formerly assigned to drive members of the Highway Commission. *Minutes of Meetings of the State Highway Commissioner,* minutes of May 10, 1935. In the Spring of 1936 he adopted a number of regulations regarding the use of Department equipment. Daily reports were required of each operator, and a weekly report of assignments of cars to other departments had to be made. There was to be a special report daily of any car used after hours or outside of the State. Other departments or officials requesting the use of Highway Department cars were to make their requests in writing. See Minutes of March 31, April 28 and May 21, 1936.

On June 30, 1936, the Equipment Division was placed in charge of the Highway Engineer.

[1000a] Such a study was instituted and significant reductions made before the final publication of this report.

Equipment Servicing and Repair:

As soon as a piece of equipment is purchased and delivered, it is assigned a Department number by the Principal Clerk Stenographer in the Fernwood office. He makes up a card record on which is noted a brief description of the unit, its Department, serial and motor numbers, the date it was purchased, the purchase price, and other pertinent information. He secures license plates for the equipment and notifies the insurance company that wrote the master policy, of the new purchase.

The new unit is thoroughly checked in the main shop at Fernwood to see that it is in proper working order and meets the specifications. It is then put into service.

Equipment is serviced, maintained and repaired in the various Division garages. Each of the main garages, as noted above, distributes gasoline and oil. This policy of supplemental fuel distribution resulted in savings of over $5,000 on gasoline and almost $1,300 on oil in 1941, besides the saving in time and the convenience of the arrangement.

Each garage providing this service keeps a daily record of gasoline, oil, grease and alcohol issued to each piece of equipment or job. The report also shows the amount on hand at the beginning of the day, the amount received during the day, and the total on hand at 5 P. M. These reports are sent in to Fernwood for record purposes.

A monthly record is kept at Fernwood for each piece of equipment showing, for each day, the operator of the unit, the place where it was stored, the gasoline and oil consumed, the speedometer record, and inspections.

The oil company with which the Department does business renders its bill at the end of each month. This bill is accompanied by sheets listing the date of each delivery of gasoline, oil or other supplies, the delivery ticket number, license number of the equipment, the amount of gasoline and motor oil supplied and its price, miscellaneous supplies and their price, and the total amount of the delivery ticket. One hundred to 125 of these sheets are sent in monthly with the company's bill, each sheet listing 52 deliveries. The work of check-

ing these bills against the duplicate delivery slips turned in by the operators requires a great deal of the time of the two men assisting the Division Auditor in the Fernwood office. Any errors found in the records sent in by the company are noted on a regular form which is forwarded to the company office for the purpose of correcting its bill.

Each of the section garages also carries a stock of tires, tubes, tire chains, minor replacement parts and other supplies. These stores are replenished from the main stockroom at Fernwood from time to time by means of stock orders requesting the stock clerk at Fernwood to ship the needed items. Although the main storeroom and its personnel are in charge of the Supervisor of Purchase and Stores, the small stores at the various section garages are run by the Equipment Division. All materials and supplies required by the Division are obtained by making out the usual order request, signed by the Supervisor of Equipment and Transportation.

Every piece of equipment at Fernwood is given a card which is checked at the gatehouse for date, destination and time whenever the unit leaves the grounds. The time is checked again on the return trip. A daily motor car register form is used in the various garages to record trips made by all cars. Each car is identified by its Department and license numbers. The person taking the car must sign the register, as must the one releasing the car. The time and destination are noted. When the car is returned to the garage, the driver and the person receiving the car sign the register, and the time of the return is entered. In this manner the Department keeps an accurate check of the going and coming of each piece of equipment from the main garages.

A special report must be made where equipment is used after 7 P. M., or taken out of the State. This report shows the destination, period, route taken and reason for the trip, and must be signed by the person directing the use of the car, or the operator.

Equipment Inspectors and Mechanics work out of the several section headquarters in their pick-up trucks and inspect the equipment operating in their respective areas. They send a weekly report of their inspections to Fernwood, showing the Department number of each piece of equipment, the place where it is stored, its condition,

the operator's name, and the name of the foreman on the job at the time. These reports are reviewed by the Chief Mechanic. If the equipment is in bad shape it is brought to Fernwood for an overhauling, and a substitute unit sent out whenever possible.

Minor repairs may be made on the road by the Equipment Inspector or at the section garage. These garages also do greasing, washing and other servicing jobs. The person in charge of each of these garages phones in to Fernwood the first thing each morning, thus keeping in regular touch with the Chief Mechanic. From time to time, the section heads are called to Trenton for conference. The Supervisor of Equipment and Transportation as well as the Chief Mechanic make periodic trips to the garages in order to check on their operations.

The Chief Mechanic schedules all repair jobs at Fernwood, being aided in this work by the Assistant Chief Mechanic. In case of a special or emergency job, regularly scheduled repairs are temporarily discontinued and the special job given first attention.

Each piece of equipment coming into Fernwood for repair work is given a job number by the Chief Mechanic or his assistant, and a job order and progress sheet is made out. This card sets out the instructions for each part requiring attention and the Mechanic and helper assigned to the work. Each Mechanic in charge of a job must test out the repair, indicate the time spent on each operation, and note anything requiring attention that is not on the card. He signs the card upon completion of the work.

When a piece of equipment has reached the stage where it is no longer economical to repair it, the Chief Mechanic makes a regular written request for authority to dismantle or scrap the unit. This request contains a description of the equipment, its Department, serial and engine numbers, and the reason why it should be dismantled or scrapped. The request is made out in duplicate, and the Supervisor of Equipment and Transportation recommends its approval by the Highway Engineer. The original of the form is returned to the Fernwood office and the duplicate forwarded to the Chief Auditor and Accountant for his records.

Scrap metal and rubber is sold to dealers throughout the year on competitive bids. The Cost Clerk who makes up the requests for per-

mission to dismantle or scrap equipment is also responsible for the weighing of the scrap. Before the materials are actually sold, a report is prepared describing the scrap that is about to be disposed of, the names of the bidders and their bids, and the appraised value of the material. The Supervisor of Equipment and Transportation recommends the sale to the highest bidder and the Highway Engineer must give his approval.

Every truck and piece of equipment is fitted out with a first aid kit. A report is made each time that first aid is given, showing the name and address of the injured person, his Foreman, the time and nature of the injury, when treatment was given, and the first aid equipment used. This report is forwarded at once to the Workmen's Compensation and Claims Clerk in Trenton. Equipment Inspectors examine the condition of the first aid kit whenever they inspect a piece of equipment, and report the items found in the kit and those furnished at the time of inspection. These reports are sent in to Fernwood.

Division employees make the same kind of report in the case of an accident resulting in injuries to an employee or damage to Department property as was described in the section dealing with the Maintenance Division. These reports are sent to the Workmen's Compention and Claims Clerk. The procedure followed after such an accident is exactly the same as described elsewhere in this study.[1001]

Cost Accounts:

The Department instituted a cost accounting system for equipment in 1918. This system has been constantly refined and improved. It has served as a model for many highway departments throughout the country. Some idea of its completeness can be obtained by considering the nature of the records kept.

Every operator must file a daily report showing the Department number of the equipment in his charge; the time spent by the employee in operating the equipment, road work and idle time; the distribution of this time on the various jobs or operations performed that day; purchases of gasoline, oil and supplies, showing the place of purchase,

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[1001] See *pp. 476* and *477, supra.*

quantity, cost and whether obtained from outside sources or at departmental garages; the speedometer reading at the beginning and end of the day, and the total miles run; a report of any equipment trouble, and the state of the weather. Attached to these daily reports are the duplicate delivery slips for gasoline and oil obtained by the operator at gasoline stations. These slips are used to check the bills sent in by the oil company at the end of the month.

Mechanics must also file a daily time report, showing the total hours worked and the distribution of this time on each piece of equipment. The report form is made up with a number of stubs on which the mechanic may note the Department number of the unit, job number, hours worked, cost of the labor, and the nature of the work done.

The material used on any repair job is indicated on a requisition slip made out at the time the material is drawn from stores. These requisition slips describe the material and its cost, and is signed by the person receiving the items as well as by the one issuing them. A similar type of slip is used to credit any items returned to stores.

The daily operators' and mechanics' reports and the material requisition slips are audited at the office of the Division Auditor and are accumulated monthly in an envelope for each piece of equipment. These envelopes are totaled for operating expense, repairs, operator's wages, depreciation and overhead. The gasoline used and mileage of the unit is also totaled. From these figures it is possible to obtain the monthly cost of the piece of equipment in question, the average cost per mile, and the average mileage obtained per gallon of gasoline.

The cost accounting staff in the Bureau of Auditing and Accounting also prepares an annual cost record for each piece of equipment. This is similar to the monthly record, but in addition it also analyzes the cost per mile of operation broken down into gasoline, oil and grease, tires and tubes, parts, repair labor and depreciation. The annual cost record also shows the mileage obtained per gallon of gasoline and quart of oil. Depreciation, as already indicated, is charged off at the rate of 20% each year.[1002]

[1002] Cost records are kept on a per mile basis for cars, trucks and heavy snow equipment. Records of miscellaneous equipment, such as air compressors, graders, mixers, mowers, rollers, sprayers, tar kettles, etc., are kept on a per hour basis.

Complete tire and tube records are also kept by the Auditing and Accounting Bureau. A card is set up for each tire when it is purchased. (A single card is used for all tubes of a certain size.) When a tire is issued, it is charged to the piece of equipment on which it is placed, and the card covering it is taken out of the records, thus indicating that the stock has been reduced. Similarly, when a tube is issued, the tube card record is reduced by one after the tube has been charged to the piece of equipment on which it is used.

Tires and tubes are drawn from stores on regular requisition forms. A copy of each requisition slip is sent to the Accounting and Auditing Bureau which then makes the appropriate changes in its tire and tube records.

Each garage stocking tires makes two reports of tires in stock at the end of each month. One shows the serial numbers of each size and make of tire, whether new or repaired. The other shows the number of each size of new or repaired tires on hand. The garages must also report the number of new and repaired tubes of each size on hand at the end of the month. These reports serve as an inventory check against the tube and tire card records kept in the Auditing and Accounting Bureau.

When a tire is issued, a tire record card is prepared and the date of issue, as well as the Department and serial numbers of the piece of equipment on which the tire is used, noted thereon. The person issuing the tire also notes the speedometer reading of the car. The speedometer reading is noted on the card whenever the tire is temporarily removed and reapplied, and when it is finally turned in at Fernwood to be sold for scrap.

The Fernwood office also keeps a tire mileage record for each tire, showing its serial number, make, size, date received, the dates when it was placed on the unit and removed and the speedometer reading on each occasion, the cause of removal and the total mileage obtained. The Department is thus able to obtain a performance record for each tire.

Work Executed for other Divisions and Agencies:

In addition to the regular program of servicing, maintaining and repairing its own equipment, the Division executes various assignments for other Divisions of the Department and agencies of the State government. There were 883 assignments of a major character carried out in 1941. Of these, 265 represented outside work orders, covering 302 items completed for agencies outside of the Division proper. The agencies accommodated included the Survey and Plans Bureau, Purchase and Stores Bureau, Maintenance Division, Laboratory Division, Electrical Division, Auditing and Accounting Bureau, Department of Conservation and Development, Delaware River Joint Toll Bridge Commission, Civil Service Commission, Department of Institutions and Agencies, and the Federal National Youth Administration. The orders covered a wide variety of operations. In addition, equipment and personnel were supplied for various State institutions, armories, State teachers colleges and various special highway projects.[1003] In each case, the cost of the work done, or the equipment and personnel provided, was charged to the using agency.

Whenever the Division constructs a piece of equipment, prior authorization for the work must be obtained from the Highway Engineer. Approval is recommended by the Supervisor of Equipment and Transportation, who certifies the specifications for the job, the reasons for the construction by the Division, and the estimated cost. The original of this authorization is sent to the Auditing and Accounting Bureau, the duplicate going to the Equipment Division.

On occasion, the Division rents a piece of equipment to an outside party. In each case, the Supervisor of the Division must recommend the rental for approval by the Highway Engineer, on a form giving the name of the person renting the equipment, the description of the unit and the rental price.

[1003] *New Jersey State Highway Department Annual Report, 1941,* report of the Equipment Division.

Snow Removal:

The important role played by the Equipment Division in the annual snow removal program of the Department has been touched upon in the discussion of the organization of the Maintenance Division.[1004]

All 1½-ton trucks with hydraulic hoists are equipped with calcium chloride and sand and cinder spreaders for use in controlling slippery and icy conditions upon the highways. Spreaders purchased before 1940 were driven by power received from their own wheel traction as they were towed behind the moving truck. This equipment had its limitations at turns, circles and other points where slow speed had to be maintained, and it was necessary to go over the road several times in order to get the desired results. In order to remedy this situation, the ten spreaders purchased during 1941 were powered by air-cooled motors, with the result that better performance was obtained.[1005]

During 1940 and 1941, the use of blinker lights on top of all units assigned to snow removal operations or to emergency jobs after dark became standard practice in the Division.[1005]

In the fall of the year, the Maintenance Division sends out a questionnaire to contractors doing snow removal work in order to determine what equipment they have available. A copy of each executed questionnaire is sent to the Chief Mechanic at Fernwood. The Equipment Division determines whether the contractors' trucks are suitable for the work. If the trucks are acceptable, the Maintenance Division enters into snow removal agreements with the contractors. The Chief Mechanic then issues shipping orders covering the shipment of snow plows to these contractors for attachment to their trucks. In the case of new contractors, the Division sends its men to help in attaching snow plows to the equipment.

Every contractor receiving equipment from the Division must sign a form listing each item provided. The contractor is held responsible for the return of these items in the spring.

[1004] See *p. 104, supra.*

[1005] *New Jersey State Highway Department Annual Report, 1941,* report of the Equipment Division.

As soon as the shipping begins, the Division sends weekly reports to the Maintenance Division indicating what has been shipped and to whom. Daily reports are made when the volume of shipments becomes very heavy just before the snow season.

In some cases contractors use the Department's own equipment. In this event, they indicate on their questionnaire where they intend to store the State equipment and what the rental will be. The Rental Clerk of the Division then goes out to inspect the quarters and negotiates a rental agreement for the season.

In the meantime, the Chief Mechanic prepares a list of Division Operators and Mechanics who are to handle and look after the heavier, special snow removal equipment of the Department, and sends this list to the Maintenance Division for inclusion in the snow removal organization chart which the Assistant Superintendent of Maintenance draws up. These Mechanics work directly out of Fernwood and take care of only the Department's own equipment, whether used by the Department or by the contractor. There is one Mechanic for every three trucks, the number usually employed on a snow section. Four trucks are sometimes used on a larger section. In case of damage to the plow or underframe, the Mechanic replaces the broken part. Equipment is inspected after every snow removal operation.

Before the start of the snow season, the Division stores its rotary tractors, FWD trucks and Walters "Snowfighter" trucks at strategic points around the State. The four snow loaders owned by the Department are used at the George Washington Bridge (1), Pulaski Skyway (2), and Edison Bridge (1), to remove snow from the structures by dropping it below, after the plows have pushed it to one side. This heavy snow equipment is driven by the Division's own men, who are experienced in snow removal work. Six Mack trucks filled with calcium chloride treated cinders are kept at the Newark garage throughout the winter, ready to go out on the Skyway.

There are certain areas in the State where the Maintenance Division likes to do the snow removal work itself. In such cases, the Department uses its own equipment and drivers.

During the entire period of the snow season, the Maintenance Division keeps careful check on the weather. If a snowfall is expected,

a snow shift is on duty at the Maintenance Office and a similar group at Fernwood. As soon as the snow begins to fall, a telephone call is put through to Fernwood and cars immediately leave for various parts of the State carrying Operators and Mechanics. Every Division garage operates in the similar fashion, each being a center for snow removal work.

The fine coordination between the Maintenance and Equipment Divisions has made possible the efficient snow removal operations of the Department in recent years.

LABORATORY DIVISION

The role of the Laboratory Division in the work of the Department has been treated rather fully in the discussion of its duties at the close of Chapter II, and in the various references to its work in relation to the operations of the Construction, Maintenance and State Aid Projects Divisions.[1007]

The function of the Department laboratory in its earliest days was to test the quality of materials used in road building and maintenance. It abandoned this limited program when the head of the Division declared it to be the duty of the laboratory to investigate the results obtained with various materials and methods of construction, and to recommend changes whenever it was considered that an improvement in the quality of the work could be secured thereby.[1008] New Jersey was one of the first States to pursue this broader type of research program. The Laboratory Division not only tests materials at their source, but also standardizes much of the equipment employed in highway work, es-

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[1007] See *pp. 129* to *136, supra,* for the organization and duties of the Laboratory Division. See also *pp. 412* to *414, 455* to *457, 494* and *495,* and *497* and *498,* for instances where the Laboratory Division is involved in the work of the Construction, Maintenance and State Aid Projects Divisions, respectively.

[1008] See *New Jersey State Highway Department Annual Report, 1929,* report of the Laboratory Division, for a statement of this policy. The policy had been in actual practice for several years before it was mentioned in the annual reports of the Division.

In 1932, the Chief of the Testing Laboratory declared that "The proper use of a material is equally as important as its quality. The interpretation of the results secured by the use of different materials and different methods of construction is also very essential, as well as the deciphering of the causes of unsatisfactory results." *New Jersey State Highway Department Annual Report, 1932,* report of the Laboratory Division.

tablishes formulas for bituminous and concrete mixes, makes sample tests of the materials in the course of construction and maintenance operations, and checks on the quality of the final product.

The Chief of the Testing Laboratory, who heads the Laboratory Division, was responsible for preparing the Department's specifications for all types of road material until a few years ago. The 1941 edition of these standard specifications was edited by the Designing Engineer attached to the Construction Division. The Chief of the Testing Laboratory, as has already been pointed out, was not consulted, although it is understood that one or two of his assistants were called in on a few matters. The standard specifications, of course, constitute the principal control of the Department over the quality of the materials supplied to a job and the methods used in carrying out the work. The Laboratory Division should play a leading part in their preparation, in cooperation with the Construction, Maintenance and other Divisions affected. Accordingly, the recommendation made heretofore is repeated: the head of the Laboratory Division should in the future be jointly responsible with the heads of other Divisions that may be concerned, in preparing new editions of the Department specifications or in modifying any existing specification.

The Division has tried to control the quality of road materials at their source. Inspection before shipment not only eliminates delay but insures a more uniform and satisfactory grade of material. The bituminous section of the Division assigns Chemists to the plants and refineries producing bituminous materials in the New York and Philadelphia metropolitan districts, and nine Asphalt Plant Inspectors check bituminous mix at the point of production. One of the Testing Engineers in the engineering section of the Division is responsible for field tests of concrete pipe, vitrified clay pipe and cast iron pipe. He also inspects reinforcing steel fabricated in New Jersey or the Philadelphia area. Material Inspectors make inspections and field tests of fine and course aggregate, while two men are assigned to work at the cement plants. Materials not checked at the source, are inspected and tested at the Fernwood laboratory before being used on the job. Commercial testing laboratories check on reinforcing steel not fabricated in New Jersey or the Philadelphia area, as well as on castings, creosote-treated piles, guard-rail posts and structural steel.

The personnel available for this work is generally sufficient. However, the staff is taxed when construction and maintenance work on State highways and State Aid roads is heavy. The Division could make good use of a few more Chemists and Material Inspectors for routine inspection and testing work at the height of the season.

The Department laboratory was a pioneer in insisting upon the proper proportioning of materials used in road work, especially in connection with the preparation of concrete mixtures. Cement and fine and coarse aggregates were formerly proportioned by volume. The Division developed the method of proportioning these materials by weight. Experiments were begun before 1926.[1009] Within a short time, construction contracts required that concrete be prepared by using a three-bin batcher of the weighing type. These batchers are standarized for every job before paving begins and are rechecked as the work proceeds. Two sizes of coarse aggregate are used instead of one. Proportioning is based on the void content of the coarse aggregate, thus insuring that the right quantity of sand or fine aggregate will be employed. All surplus water must be eliminated from the aggregate before batching. Inspectors are stationed at the batching plants to check the composition and quantity of the aggregates and their moisture content. The result is a denser, stronger, more uniform concrete, in which segregation is automatically eliminated.[1010]

Before 1930 it was common practice to use more than one cement in the construction of a section of road. Varying compressive strengths resulted. The Division was successful in having a specification adopted allowing only one cement to be used in a road section.[1011]

In order to obtain better concrete roads, the Division for many years carried on a campaign to get various cements standardized. The purpose was to eliminate the marked differences in concrete. The head of the laboratory insisted that the specifications ought to contain a

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[1009] *New Jersey State Highway Department Annual Report, 1926,* report of the Construction Engineer.

[1010] *New Jersey State Highway Department Annual Reports, 1928* to *1934,* reports of the Laboratory Division. The 1930 Department standard specifications required a three-bin batcher of the weighing type, two kinds of coarse aggregate, and a method of proportioning based on their void content.

[1011] This specification was adopted in 1930. See, *New Jersey State Highway Department Annual Reports, 1929* and *1930,* reports of the Laboratory Division.

clause requiring cement to produce concrete which, at a given age and composition, would have a certain minimum compressive strength, and that a penalty be exacted if this standard were not met. He was finally successful in obtaining such a specification in 1934.[1012]

The Division has continued to emphasize the importance of the quality of cement used in preparing concrete. The annual reports repeatedly stress the fact that cement must have a fairly definite chemical composition and possess definite physical characteristics. By cooperating with manufacturers, the Division has obtained cement that produces concrete which is serviceable and durable when prepared under normal conditions.[1013]

Studies by the Division in determining the quality of sand and the amount of water to be used in concrete mixtures, as well as the mixing time, have brought about improved standards in these respects and a better quality of concrete.[1014] It also conducted an important series of experiments in the use of the vibratory method of consolidating concrete, and developed the necessary equipment therefor. This method was included in pavement specifications as early as 1933.[1015] The Division has tested various methods of curing concrete roads, and obtained increasingly more satisfactory results. It also developed equipment to measure the surface irregularities of concrete pavements in order to obtain the necessary data for setting up a specification as to the maximum number of bumps and depressions per mile of road that would be permitted.

[1012] See, *New Jersey State Highway Department Annual Reports, 1930, 1932* to *1935,* reports of the Laboratory Division.

[1013] *New Jersey State Highway Department Annual Reports, 1939* to *1941,* reports of the Laboratory Division.

[1014] *See New Jersey State Highway Department Annual Reports, 1929* to *1931,* reports of the Laboratory Division, for accounts of studies of concrete sands; *Ibid., 1929* and *1935,* as to mixing time (it was determined that the longer the mixing time, the less water required and the denser the concrete); and *Ibid., 1928, 1935, 1939* and *1941,* for the Division head's insistence on the use of a correct quantity of mixing water, which he claims has more to do with the durability of concrete than any other factor.

[1015] The experiments began about 1929 and were continued over a period of five years. It was found that this method of consolidation resulted in a denser concrete, particularly at transverse joints, and increased its compressive strength. Concrete consolidated by vibration could be given a surface finish much more quickly than if consolidated by some other method. The experiments showed that where the vibratory method was used, it was possible to increase the amount of coarse aggregate and decrease the amount of cement required, thus reducing the cost by securing a greater volume of concrete per square yard of pavement. *New Jersey State Highway Department Annual Reports, 1932* to *1935,* reports of the Laboratory Division.

Through patient experimentation, the Division gradually set up a high set of standards for the materials and methods used in constructing concrete pavements. The result has been a continuous improvement in the quality of New Jersey highways. Concrete has not only been made more uniform and workable, but denser and stronger. The compressive strength of 28-day six-inch concrete cores has been increased from about 3500 to more than 6000 pounds per square inch. In some cases, an average strength of over 8000 pounds has been obtained.[1016] Peeling and scaling are practically eliminated under the present specifications. Surface finish and contour have been improved. Because of the work of the Laboratory Division, New Jersey's concrete roads are the finest in the country. Not only are they more durable, but make for greater riding comfort, lower cost of vehicle operation, and a saving in construction costs.

In addition to being responsible for standardizing the equipment used in constructing concrete pavements, the Division calibrates the containers used for transporting bituminous materials. This practice was established by the Division in 1929 in order to avoid deficiencies in deliveries.[1017] After receiving reports from the Inspectors at the site of the project, indicating the gauge of the truck at the start and finish of the work and the temperature of the material, the laboratory informs the using Division of the gallonage of the material at 60° F. Payment is made on the basis of the Laboratory Division's calculations.

Because of the thoroughness of its inspection and testing methods, the Laboratory Division is able to maintain a strict control over the quality of materials used and the methods employed in road construction and maintenance. The excellence of its work is recognized throughout the country. A comprehensive system of recording the results of its inspections and tests, and of reporting them to the interested Divisions, contractors, and cooperating agencies (such as the Public Roads Administration in Federal Aid work, or counties and municipalities in connection with State Aid projects), insures the maintenance of the standards set by the Division.

[1016] *New Jersey State Highway Department Annual Reports, 1927, 1929,* and *1938* to *1941,* reports of the Laboratory Division.

[1017] *New Jersey State Highway Department Annual Reports, 1929* and *1930,* reports of the Laboratory Division.

The laboratory equipment available to the Division is adequate for the needs of its present limited program. On occasion the Division develops some special piece of equipment needed in connection with its investigations. In 1940 it acquired a new 400,000-pound hydraulic testing machine which replaced one of 300,000-pound capacity.[1018]

Consideration should be given to enlarging the building now used by the Laboratory Division at Fernwood. The need for such expansion has been recognized in the Department for the past few years. More space will undoubtedly be required if the recommendation concerning the establishment of a Research and Testing Bureau and an expanded research program is adopted. This program will, of course, require additional laboratory equipment and a somewhat larger staff.

The present Division personnel working in the Fernwood laboratory are well trained. However, the training given field men is not as thorough or continuous. New men should receive a complete course of training before being assigned to specific work in the field. They should also be brought back to headquarters for "refresher" courses from time to time, in view of the constantly changing practices in highway work. Aside from a multigraphed sheet of instructions,[1019] there is no complete manual of procedure for the use of the Division employees, or the Construction, Maintenance and State Aid Projects Division Inspectors who coordinate with them.

[1018] *New Jersey State Highway Department Annual Report, 1940,* report of the Laboratory Division.

[1019] "Instructions Regarding Sampling of Construction Materials and Use of Equipment," published by the New Jersey State Highway Department, multigraphed (Trenton, 1940).

The Division has operated on a relatively modest budget, as indicated by the following figures:[1020]

Expenditures and Commitments, 1931-1941

Year	*Amount*
1931	$244,509.99
1932	244,820.04
1933	154,547.45
1934	136,539.23
1935	140,361.82
1936	150,659.85
1937	158,885.78
1938	167,230.70
1939	185,946.98
1940	200,899.97
1941	191,230.88

These figures merely reflect the Department's own limited conception of testing and research work. Although highway methods are in constant flux, and the use of old as well as new materials challenges the ingenuity of engineers, the work of the Laboratory Division in recent years has been largely confined to routine testing and a few research problems. While it concentrated on the admittedly important problem of obtaining durable concrete pavements, the research and testing organizations of other highway departments went on to consider this and a multitude of equally important matters. The Division, once preeminent in the nation, has lost its position to those who came on the scene at a later date but who have shown a more enterprising and progressive attitude toward highway research.

Coordination of Research and Testing:

There is a lack of central, coordinated research in the Department at the present time. A comprehensive research program has not been

[1020] *Source:* Auditing and Accounting Bureau.

developed, and this despite the fact that certain Department officials have recognized the need for such a program for some time.[1021]

Special experiments and studies are carried on in a few places in the Department. For example, the Engineer of Special Assignments in the Construction Division is in charge of research work on various structural problems related to the efficiency and durability of highway pavements. He operates apart from the rest of the staff. His headquarters are located in a corner of one of the buildings at Fernwood where he has neither the proper space nor facilities for his work. Similarly, the Traffic Engineer in that Division carries on independent studies in traffic and traffic behavior. The Designing Engineer under the Construction Engineer is given special problems from time to time. After completing the 1941 revision of the Department's specifications, he has been assigned to testing the strength of bridges on the State Highway System. The Electrical Division has been conducting experiments with various types of lighting and lighting fixtures. Its studies of accidents and traffic flow have also been mentioned. All these investigations are fragments of what ought to be an integrated, broad research program.

The Department has been satisfied to let each Division carry on such studies as the official in charge deemed necessary. In combination, the Divisions have barely scratched the surface of the host of research problems that should have received attention. Among these is the study of subsoils and soil stabilization. This matter has but recently received attention, and then in a limited way only. Elsewhere, highway departments are devoting an enormous amount of time and study to this subject. The Public Roads Administration considers it one of the outstanding research problems of our time.

[1021] The Superintendent of Maintenance made the following statement in the 1941 report of his Division: "Practically all the Divisions of the Department are so engrossed with their regular duties that they have inadequate time to make a thorough and comprehensive study of matters requiring investigation. I could personally outline a number of projects which are, in my opinion, of sufficient importance, both from the construction and an economic standpoint, to warrant an expenditure of a considerable sum on exhaustive research." *New Jersey State Highway Department Annual Report, 1941,* report of the Maintenance Division, *p. 6.*

The 1941 report of the Construction Engineer indicates that studies and experiments were carried on during the year in connection with the following subjects: stresses in the early life of concrete pavements, sub-soils, steel reinforcement efficiency, reflecting curbs and lane separators, joint structure, highway sign visability, pavement cracks, and the State-wide Planning Survey. *Ibid.*

New Jersey has built practically all of its highway system with little regard to the important part which subgrade soil plays in the durability of roads. The need of developing tests that can be applied to different soils, for the purpose of identifying their characteristics and probable behavior under various conditions, has been overlooked.

Under the present circumstances there is a certain amount of overlapping in the research work of the Department, particularly in traffic counting. At the same time there are great gaps in what would be considered a desirable, rounded program. All research work should, therefore, be coordinated and centralized in the proposed Research and Testing Bureau. This Bureau will take over the functions now performed by the Laboratory Division. It will also be in charge of the traffic analysis and accident investigation program carried on by the Electrical Division. The work of the Engineer of Special Assignments, Traffic Engineer, and any other person doing research anywhere in the Department, would be transferred to the new Bureau. Except for the research work done by the proposed Highway Planning Bureau, and the financial studies of the Finance Bureau, all testing and research work affecting New Jersey highways would be the responsibility of the Research and Testing Bureau.

The main object of highway research today is to raise the standard of the service provided by the highway system by improving its physical facilities and increasing the efficiency of its operating methods. This objective in its different phases may require either fundamental or developmental research. In either case, the research is carried on for one of the following reasons:

1. To reduce costs in methods of design, construction, maintenance, or materials.

2. To improve the quality of the finished product by improvement in methods or materials.

3. To develop new types of highway and highway appurtenances.

4. To develop the use or application of new materials or products.[1022]

[1022] *Eighteenth Biennial Report of the State Highway Commissioner of Michigan.* (Lansing, 1940), *pp. 99* and *100.*

There is a broad field of investigation open to the Research and Testing Bureau in studying the physical problems involving the characteristics of road materials and their behavior in the road, separately and in combination, as well as the problems associated with the forces of traffic and climate that affect the road structure and the design of the structure to resist their destructive action. An equally important area for research is the study of the highway as a transportation facility, and the problems of finance and economics that bear upon the cost of the roads to the public and the return to users and the general public in the form of reduced vehicle-operating cost.[1023] The latter phase of the research program touches upon the work of the Highway Planning Bureau which this study recommends be established under the chief administration officer.

The head of the proposed Research and Testing Bureau will, of course, cooperate with those in charge of the other Bureaus in order to insure that the studies and investigations conducted by it will be of maximum use to all divisions of the Department. The Bureau will also coordinate its work with that of the research and testing organizations of other States and the Federal Government whenever the problems under investigation are of common interest.

It is recognized that this expanded research program will involve increased costs. However, there can be no question that in the end the work of the Research and Testing Bureau will bear rich dividends by providing New Jersey with a more efficient highway system.

[1023] *The Public Roads Administration and Its Work*, published by the Public Roads Administration, Federal Works Agency, mimeo. (September 1939, revision), *p. 41.*

CHAPTER VI

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

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The aim of this study has been to present a comprehensive picture of the administration and organization of one of the nation's most important highway departments. Many conclusions have been reached and recommendations projected. This final chapter presents in summary fashion the more important of these conclusions and recommendations. For the most part the language of the text has been reproduced.

General Principles

There are four general principles which must be considered in any discussion of the organization and administration of the State Highway Department:

1. Since the highway service is a part of the executive branch of the government, it should be subject to the effective control, management and supervision of the Governor.
2. The Legislature should concern itself only with the establishment of basic laws which will permit of the exercise of proper administrative discretion on the part of those to whom responsibility for operating the State Highway System has been delegated.
3. The State Highway Department should be considered as a regular agency and integral part of the State government, and should be subject to the same set of overhead controls of budgeting, finances, purchasing and personnel as are provided for the other agencies of the government.
4. There should be developed a long-term highway program based on a careful planning of needs and on funds available, and which would be adhered to with only such modifications as are necessary to meet changing conditions.

These principles are not being followed at the moment. They should be adopted as a guide to highway administration in the future.

Criticisms of the Department

The existing system of highway administration in New Jersey is to be criticized in several important respects. A few general criticisms may be mentioned briefly at this point; the conclusions and recommendations that follow reflect a more complete consideration of the subject.

The State Highway Department enjoys an almost completely independent status which leaves it free from real executive control, contrary to sound administrative principles and in contrast to the status of our other State agencies and of highway departments elsewhere. The Department's fiscal year and method of budgeting do not accord with those of other State agencies. This, and the existence of the separate Highway Fund, tends to set the Department apart from the rest of the State government, confuses the general financial position of the State, and complicates the system of State accounting. Moreover, the fiscal operations of the Department are not subject to the same direct control as is exercised by the Commissioner of Finance over all other State agencies.

The Department has failed to develop a long-range plan of highway construction and has exhibited a lack of vision in failing to weld together policies into a program capable of daring execution. As a matter of fact, there is general lack of a concept of administrative management, with a tendency toward departmentalization of functions and bureaucratic rigidity.

The Department has no real system of modern personnel management. A pressing need exists for a complete reclassification of the entire personnel of the Department. The constant increase in Department personnel, especially in the labor group, is out of proportion to the Department's program as it has developed during recent years. The legal staff which, with the exception of the General Solicitor, is on a part-time basis, is overmanned. There seems to be little justification for the unique tenure protection afforded the General Solicitor by statute. The Department is not making the most effective or proper use of the services of certain of its personnel, an outstanding and glaring example being that of the Special Engineer in the Real Estate Division.

There is a clear lack of proper reporting of the work of the Department. There is likewise a need for fostering a real public understanding of its problems and activities through a sound and sustained program of public relations.

The appraisal methods now used in right-of-way acquisition work, and particularly those followed in outside appraisals, are unsatisfactory and in need of a thorough revision. The present statutory provisions relating to condemnation are entirely unsatisfactory.

There is a lack of central coordinated research. A comprehensive research program has not been developed.

The existing system of State Aid to counties and municipalities does not bear any precise relation to the needs of these local units of government, nor does it result in the most effective use of the funds.

A very real question exists as to the necessity and advisability of the Department's occupying valuable office space in the State House Annex. The policy of the Department in limiting equipment purchases to $200,000 annually does not give proper recognition to present needs. On the other hand, too generous a policy has been pursued in assigning automobiles and chauffeurs to Department officials and employees.

Finally, the existing law relating to central State purchasing, and the interpretations thereof, do not make for a truly centralized system of purchasing in so far as the Highway Department is concerned. The law should be strengthened to accomplish this end.

Objectives of a State Highway Department

A highway department exists for the accomplishment of certain ends. The functions which are entrusted to the care and guidance of an official organization serve as a point of departure in considering the administrative efficiency of that agency.

The conclusions and recommendations of this study center on the more expeditious and efficient attainment in New Jersey of the objectives set forth below:

1. To construct, reconstruct, maintain, repair, light and equip the existing highway system and future additions thereto.

2. To conduct continuing planning surveys covering all phases of the State highway system from an administrative, engineering and financial standpoint.

3. To carry on constant research into and the testing of materials used in construction and maintenance for the purpose of providing durable, safe, efficient, and attractive roads and other structures at the lowest possible cost.
4. To provide the safest system of roads and bridges consistent with the speed and volume of modern transportation.
5. To landscape and otherwise beautify the highway system.
6. To keep the highways open and free at all times, especially from ice and snow, from encroachments, and from any other conditions which may endanger life or property.
7. To cooperate with the Federal government in public works programs involving highways and highway structures.
8. To administer any grants-in-aid for highway purposes, whether received from the Federal government or granted by the State to the counties and municipalities.
9. To maintain a central control and management of all plant and equipment owned or leased by the Department.
10. To keep the public informed of highway programs and activities through appropriate and clearly understandable media.

It is obvious that the New Jersey State Highway Department is not meeting these objectives in every instance, nor has it exhausted the possibilities of effectuating some of them in other cases. In fact, the conclusion is inescapable that only a bare beginning has been made in such matters as highway planning and a sound public relations and reporting system.

The conclusions and recommendations that follow are designed to present remedies for some of the more outstanding defects in the existing organization and administration of the Highway Department. Not every conclusion or recommendation that could have been made as the result of a survey such as this is included. For that matter, it would be neither possible nor practical to make the report so all-inclusive.

No claim to perfection is made for the recommendations; they are considered to be the best possible under the present circumstances. Reasonable men may differ, and quite properly, about some of the less fundamental suggestions that have been included. There seems to be

little room for a difference of opinion, however, on the basic recommendations made, for they go to the very heart of the criticisms that are almost universally directed toward the Department.

Powers of the State Highway Commissioner

The 1935 Act creating the office of State Highway Commissioner continued the Highway Department "as a branch of the executive department of the State government" and placed the Commissioner at its head. The act expressly gave him all the powers and duties of the State Highway Department and the State Highway Commission existing by virtue of any law or laws.

The Commissioner enjoys the broadest powers. He has authority to reorganize the Department and to establish therein such Divisions as he may deem necessary and expedient. He has authority to formulate and adopt rules and regulations, and prescribe duties for the efficient conduct of the work of the Department, its officers and employees. He appoints and fixes the salaries of the State Highway Engineer and the Assistant State Highway Engineer and may remove either or both for cause after hearing. In addition, he appoints the General Solicitor of the Department, with the approval of the Attorney-General.

He may appoint such heads of Divisions, and clerical, technical and other assistants, as he may deem necessary, fix their compensation and prescribe their duties, subject to the Civil Service laws and available authorized appropriations. Further, he may terminate the employment of any employee holding a position or employment in the unclassified service and, if he deems it advisable, abolish any such position or employment.

The 1927 act setting up a State Highway System gives the Commissioner the following wide powers:

a. To determine and adopt rules, regulations and specifications, and enter into contracts covering all matters and things incident to the acquisition, improvement, betterment, construction, reconstruction, maintenance and repair of State highways.

b. To execute and perform as an independent contractor or through contracts made in the name of the State, all work incident to the maintenance and repair of State highways.

c. To establish and maintain, as an independent contractor, a patrol repair system for the proper and efficient maintenance and repair of State highways.

d. To employ and discharge, subject to the provisions of the Civil Service law, all foremen and laborers, prescribe their qualifications, and furnish all equipment, tools and material necessary for such a patrol repair system.

e. To widen, straighten and regrade State highways.

f. To vacate any State highway or part thereof; and

g. To do whatever may be necessary or desirable to effectuate the purposes of *Title 27* of the *Revised Statutes of 1937*, "Highways".

Over thirty broad powers are included in this latter category extending to such important matters as highway routes, acquisition of lands, claims, permits, location of highways, State Aid, etc.[1]

The powers and duties of the Commissioner serve to indicate how far-reaching are the ramifications of the State Highway Department. Its program and activities extend into every section of the State. The influence of the development of the State Highway System on the social, political and economic life of New Jersey is quite obvious. The pervading influence of the almost $10,000,000 State Aid program to counties and municipalities reveals the Department's prestige and the Commissioner's power.

No estimate can possibly be projected that will indicate the large number of persons and organizations ultimately affected by the operations of the Department. Aside from those actually employed by the Department, and the Federal, State, county and local officials with whom they constantly deal, there are the contractors and their forces; the motorists; those who produce the materials and supplies needed for highway work; the petroleum and automotive industries; and citizens interested in highway development, in parkways and roadside beautification.

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[1] See *pp. 35* to *41*.

Organization of the State Highway Department

Despite the almost unlimited power granted to the Commissioner to reorganize the internal affairs of the State Highway Department, he has been content to limit himself to relatively minor changes in the administrative organization he found on coming into office in 1935. The creation of a separate Electrical Division to take over some of the functions previously performed by the Maintenance Division is the most important item of reorganization effected. Most of the framework of administrative structure fashioned in the 1920's still remains.

One of the most important conclusions arising from this survey is that a complete reorganization of the Department should be carried out in the interest of greater administrative and functional efficiency. Both the external and internal structure of the Department should be revised to take into account its major purposes and the very definite distinction that exists between the engineering and business management functions exercised by the highway staff.

Responsible New Jersey officials have been more concerned with highway construction and maintenance than with fashioning a modern administrative structure. There is no evidence of a comprehensive study ever having been made by the Department of its own organization, nor has there been any apparent readiness on its part to accept the more constructive and progressive of the recommendations made by others in the past.[2]

The problem of State highway administration is admittedly one of the most difficult in the entire field of public administration. Administrative efficiency is not to be guaranteed by the selection of one particular kind of organization. It still remains true that efficiency depends upon the men at the top who have the power and responsibility. Other things being equal, however, one type of organization may create a condition more favorable to the efficient functioning of a department than another.

The prime and ideal objective is, of course, a Highway Department whose affairs will be administered in the public interest, and whose

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[2] See *pp. 142* to *145*, and *p. 152*.

organizational structure will offer the greatest probability of the continuance of that type of administration, and resistance to efforts from any direction to subject it to personal or partisan control.[3]

A. *External Structure.*[4]

The most desirable plan for reorganizing the State Highway Department would be to make it a major division in a larger Department of Public Works headed by a Commissioner appointed by the Governor and holding office at his pleasure. The Director of Highways in charge of the division would be selected by open, competitive examination. This official should, if possible, be an engineer of proven administrative experience and ability, although a good administrator who knows how to cooperate with a technical staff often makes a satisfactory executive. The Director of Highways would have essentially the powers of the present Highway Commissioner and would be subject to the supervision and control of the Public Works Commissioner. He would have the advice and cooperation of a small non-partisan, non-geographic Highway Advisory Board composed of outstanding citizens of varied interests, who would be reimbursed for necessary expenses but otherwise receive no compensation. They would be appointed by the Governor with the advice and consent of the Senate on a staggered term basis.

It may be that such a Department of Public Works will have to await the complete recasting of the State administrative structure into a dozen or more Departments, each made up of existing agencies having a similar functional relationship, in the manner so often proposed in recent years. Rather than wait for the entire reorganization to be accomplished at one time, consideration might be given to the possibility of setting up the proposed Department of Public Works, with the Division of Highways as its major bureau, at the present time. Should this proposal be rejected as impracticable, then the

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[3] See *p. 145.*

[4] See *pp. 137* and *138* for the importance of a proper highway organization; *pp. 138* to *142* for a discussion of highway organization in the United States; and *pp. 146* to *150* on the question of a type of organization truly subject to the effective control, management and supervision of the Governor.

following recommendation for reorganizing the Highway Department is made, pending the time when the entire State administrative machinery will be revamped.

The power of administering the affairs of the Highway Department should be committed to a Director, appointed by the Governor and holding office at his pleasure. Preferably, this official would be an engineer who has had broad administrative experience and exhibited proven ability in that direction. He would have essentially the powers enjoyed by the present Highway Commissioner. He would consult and advise with a small, non-salaried Highway Advisory Board that would assist him in establishing the highway policies and programs to be followed, and in deciding questions of general public concern. The members would be leading citizens of varied interests, appointed by the Governor with the advice and consent of the Senate for overlapping terms. They would be selected without any partisan, geographical or personal considerations, and receive reimbursement for necessary expenses.

B. *Internal Organization.*[5]

The Highway Department should be organized in a manner which recognizes the essentially two-fold character of the highway function, namely, its engineering and its business-management phases. There should be a principal engineering officer and a principal administration officer, appointed in accordance with Civil Service rules and regulations, with jurisdiction over the respective bureaus of the two basic

[5] See *pp. 25* to *28* for the history of the Real Estate Division under the Highway Commissions from 1917 to 1933, as an example of what an indecisive departmental administrative policy can do; *p. 153* for certain fundamental principles that should control in the internal reorganization of a governmental agency; *pp. 154* to *156* for the two-fold character of the highway function and the failure of the Highway Department to adhere to this division of responsibility; *pp. 158* to *160* for some general observations on the proposed internal reorganization of the Department; *pp. 160* to *161*, and *p. 483*, for a further consideration of the need of integrating the field forces and offices; *p. 230* for a criticism of the present distribution of administrative duties; *p. 231* for a criticism of the arrangement whereby the Chief Clerk, instead of the Chief Auditor, is the approval officer of the Department, and *p. 247* for the need of a responsible Personnel Officer.

See, further, *pp. 282* to *284* for a detailed discussion of the proposed Public Relations Bureau; *p. 285* for the close relation between the work of the Legal and Real Estate Divisions; *p. 371* for the functions of the proposed Highway Planning Bureau; *pp. 442* and *443* for a summary of the reorganization of the Construction Division; and *pp. 595* to *596* for the real need of a coordination and centralization of research work in the proposed Research and Testing Bureau.

subdivisions and subject to the general control of the Director of Highways. These bureaus should be reduced to the smallest possible number so that the "span of control" of each officer can be kept to an efficient minimum.

In general, the principal administration officer would be in charge of the following functions: auditing and accounting, fiscal, budget, prequalification of contractors, personnel, procurement, plant and equipment, legal, records and files, highway planning, right-of-way acquisition, reporting, statistical, office services and all other overhead control and staff functions. The principal engineering officer would be responsible for the functions concerning plans, surveys, designs, construction, maintenance, landscaping and beautification, bridges, electrical, traffic safety, research and testing, standards and specifications, State and Federal aid, and all other activities of an essentially engineering nature.

These functions should be distributed among the fewest number of bureaus possible, under appropriately designated and qualified bureau heads appointed in accordance with Civil Service rules and regulations.

In accordance with the above, it is suggested that the present divisions of the State Highway Department be reorganized as follows:

A. Under the principal administration officer:

1. Land and Legal Bureau, which would take over the present duties of the Real Estate Division (negotiations), and the Legal Division (condemnation work, claims, compensation proceedings, and title searching and examination), the work of the Special Engineer now reporting directly to the Highway Engineer, and the disposal of excess real estate.

2. Finance Bureau, which would take over the present work of the Auditing and Accounting Bureau (general accounts and audit, cost accounting, prequalification of bidders, and insurance); the preparation of the budget, financial reports, all payrolls and statistical information (financial); and the handling of all matters of a fiscal nature.

3. Office Management Bureau, which would be in charge of purchases and stores, the records and central files, all printing and repro-

duction work, the details connected with the letting of contracts, the Department storeroom, administration of all personnel matters, handling of departmental mail, and the supervision of office boys.

4. Public Relations Bureau, which would have the duty of keeping the public informed of all Department activities, problems and programs through the medium of the press, radio, motion pictures, displays, lectures, publications, etc.; report road conditions; prepare and distribute road maps; carry on highway safety educational work; prepare the annual report in attractive and clearly understandable format, as well as such other reports as may be required, and edit all departmental publications.

5. Highway Planning Bureau, which would carry on the work of the State-Wide Highway Planning Survey in expanded form as a continuing program of the Department.

6. Plant and Equipment Bureau, which would take over the duties of the present Equipment and Transportation Division and be responsible for the central control and management of all departmental plant and equipment.

B. Under the principal engineering officer:

1. Construction Bureau, which would include the present Survey and Plans Bureau (with the exceptions noted in paragraph 4 below); the two road Construction Districts and the Bridge Bureau of the present Construction Division; and the non-Federal-Aid work done by the Engineer of Grade Crossing, as well as the duties of the Designing Engineer in that Division.

2. Maintenance Bureau, which would include the work of the present Maintenance Division (including landscape and roadside beautification work), and be expanded to embrace all the work now done by the Electrical Division except for the traffic analyses and accident investigations carried on by the Supervisors of Traffic Safety of that Division.

3. Federal and State Aid Projects Bureau, which would include the work of the present State Aid Projects Division; the duties performed by the Federal Aid Bureau, and the work of the Grade Crossing Engineer in connection with the Federal Aid grade crossing elimina-

tion program, both now in the Construction Division; the duties of the W.P.A.-State Highway Bureau connected with this Division as well as the work of the Technical Engineer now reporting to the State Highway Engineer.

4. Research and Testing Bureau, which would take over the work now done by the Laboratory Division; the traffic analysis and accident investigation work performed by the Electrical Division; the duties of the Engineer of Special Assignments and the traffic studies made by the Traffic Engineer in the Survey and Plans Bureau of the Construction Division; as well as any testing and research work (other than research work done by the Highway Planning Bureau or fiscal research by the Finance Bureau) affecting New Jersey highways.

Although no extensive study of divisional field office interrelationships was possible within the time limits of this survey, it is proposed that the possibilities of coordinating and integrating field office operations be studied after the Department has been reorganized internally. There is a strong indication that such an integration is possible and would result in increased efficiency and considerable savings.

Plant and Equipment

Highway equipment, especially that used for snow removal and heavy duty purposes, should be purchased in the light of actual needs rather than on the basis of a departmental policy which limits equipment purchases to $200,000 annually. Considerable equipment, some of it badly depreciated, some of it obsolescent and dating back to World War I days, should be replaced as soon as practicable. A good part of the program of acquiring modern equipment has been completed, but many units remain to be purchased. These should be acquired as soon as is possible under the existing priorities situation.[6]

An immediate study should be made of the central passenger car service operated by the Equipment Division, with a view to reducing the number of assigned cars and chauffeurs. The number of as-

[6] See *pp. 565* and *566* (also *pp. 475* and *476*) for a criticism of the Department's equipment policy; *pp. 452* and *453* for details of needed equipment, and *pp. 566* and *567* recommending the purchase thereof.

signed cars and the cost of operating them has increased steadily in recent years. A reduction becomes particularly important because of the need of conserving equipment, rubber and motor fuel during the present war effort. This survey might well include a study of expense accounts allowed employees for travel, and the unusual number of employees throughout the Department who are reimbursed for the use of their private cars in connection with highway work.[7]

There should be a review of the schedule of hired trucks to ascertain whether certain owners are not receiving more than their proper share of the Department's business. An examination of the schedules for 1939 and 1940 indicated the possibility that a few owners were favored.[8]

The Commissioner of Finance should make a study to determine whether it is advisable to continue the Highway Department in its present State House Annex quarters or establish it in some new location such as the Fernwood Service Station. There would seem to be little justification for the Department's occupancy of so much valuable office space in the Annex if other more economical and efficient arrangements could be made. This study should give consideration to the badly overcrowded condition which exists in the Department at the present time. Not only is there a lack of adequate working space for departmental forces, but an equally serious condition exists regarding the files and records.[9]

The garage at the Fernwood Service Station now jointly utilized for storage by the Alcoholic Beverage Control Department and the State Finance Department should be turned over for the use of the Highway Department. Valuable highway equipment is now of necessity being stored out in the open. This garage is needed, and possibly one other may have to be constructed in the near future.

The garage facilities at Somerville are taxed. A larger garage will be needed shortly in the Dover area. Additional facilities are

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[7] See *p. 577* for a criticism of the number of assigned cars and chauffeurs, and *p. 478* for private car reimbursements.

[8] See *p. 454.*

[9] See *pp. 31* to *33.*

required at Toms River, and the Merchantville garage is, at best, a temporary arrangement calling for the eventual construction of a fully equipped, State-owned garage.[10]

A survey should be made of the garage and storage facilities owned or leased by the Department throughout the State, and of the areas served. The needs of each section of the State should be carefully evaluated. The aim of this study would be to effect possible economies and improved service by relocating or enlarging existing facilities.[11]

Consideration should be given to enlarging the building now used by the Laboratory Division at Fernwood. The need for such expansion has been recognized in the Department for some time, and will undoubtedly be even more necessary if the recommendation concerning the establishment of a Research and Testing Bureau is adopted.[12]

Immediate steps should be taken to eliminate the dangerous condition existing in the main repair shop at Fernwood during the winter months because of the presence of carbon monoxide fumes.

Personnel

The Highway Department has not given its full cooperation to the Civil Service authorities in carrying out the provisions of the Civil Service laws, rules and regulations. In fact, the Department has evaded and violated the law in letter as well as in spirit. It has failed to set up an effective and responsible personnel administration. It has done almost nothing to establish modern personnel practices. Payroll procedure is not as efficient as it could be.

Politics has played a large part in the employment, retention and promotion of laborers, and has not been entirely absent in the case of a few salaried employees. Proper and effective use has not been made of the services of certain employees, while some have been kept on the payroll when the need for them has been questionable, to say the least.

No effort has been made to effect a reclassification of the entire departmental personnel, although the need for this step has been

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[10] See *pp. 571* to *575*.

[11] See *p. 575*.

[12] See *p. 592*.

apparent for some time. Along with reclassification would go such adjustments of salary as are necessary.

As a result of all this, department morale has undoubtedly suffered, particularly among the younger employees and those in the lower salaried brackets. This is beginning to show in the case of the men who are leaving the Department to work in war industries. More may be expected to leave, since there is little to hold them except such tenure and seniority rights as they may have acquired.

It should be made clear, however, that the personnel of the Department, as a whole, enjoys a fine reputation throughout the nation. The skill and ability of the Division heads and their staffs are outstanding. A great number of them have made State Highway work a career. The average of their years in service is very high, that of the Division heads, for example, being 27 years. The interest which they show in their work and their devotion to the tasks at hand were readily apparent in the course of the many conferences preceding this report. Nonetheless, most of them are keenly aware of the deficiencies of the existing personnel policies of the Department.[13]

There will be a radical contraction in the work of some of the Divisions because of the war. Many programs will have to be revised. An opportunity presents itself for a comprehensive and thorough study of all phases of the Department's personnel administration.

The first step to be taken in correcting and improving the personnel management of the Highway Department is the appointment of a full-time personnel officer to serve in the proposed Office Management Bureau. He will coordinate the personnel work of the Department, administer a modern personnel program, and serve as a liaison officer between the Civil Service Commission and the highway organization. He should be given the power and responsibility requisite to the prompt and efficient discharge of the duties of his office.

The personnel officer will work in close cooperation with the Civil Service Commission, the Highway Commissioner, and the proposed principal administration and principal engineering officers of the Department. He will be in full and responsible charge of all matters

[13] See *pp. 235* and *236*.

relating to the departmental personnel, subject, of course, to the approval of the Highway Commissioner. He will hear all charges for the Commissioner and present to him the record of the hearings for his final decision. He will be responsible for carrying out the recommendations that follow and which are intended to improve and modernize the present personnel system of the Department:[14]

(a) Assisting the Civil Service Commission in carrying out a complete reclassification of highway personnel. The personnel classification now in force does not accurately reflect the duties performed and the responsibilities carried by many employees. Many of the titles are entirely inappropriate to the positions. A situation has developed where a large number of employees find themselves "frozen" to their titles and salaries. Despite their interest in their work and loyalty to the Department, their morale has suffered. The situation has been aggravated by the existence of a number of jobs where the salary is out of proportion to the time and duties required of the employee. In some cases there is no need for the positions.

Funds should at once be made available and the Civil Service Commission directed to carry out a complete and detailed reclassification of the entire highway personnel. The Department should give its full support to such a program in order to make possible its early realization. One of the first tasks of the departmental personnel officer should be to provide the Civil Service Commission with an exact statement of the responsibilities and duties of each employee, together with all necessary data relating to the employee and his position. He would assist the Commissioner in defining and setting up the specifications for each position, and in adjusting such changes as must be made to the working forces of the Highway Department. He would also help in developing equitable compensation schedules and in correcting any existing inequalities in salaries. Once a reclassification of highway positions and an equitable adjustment of salaries have been effected, it will be the duty of the personnel officer to assist in maintaining a complete and current classification schedule.

(b) Assisting the Commissioner and the principal administration and engineering officers in restudying the organization of the departmental personnel at regular intervals.

[14] See *pp. 248* to *256*.

(c) Establishing and maintaining a comprehensive rating system for all departmental personnel, to serve as a basis for promotion and salary increases or decreases. The rating system now used is entirely inadequate and unscientific.

(d) Establishing and carrying forward a comprehensive system of in-service training, now entirely non-existent in the Department.

(e) Carrying out an effective system of labor personnel management. The existing system of labor personnel management is shot through with irregularities. Persons employed as unskilled or semi-skilled laborers belong in the labor class and the labor class is a part of the classified Civil Service. Accordingly, the provisions of the Civil Service laws, rules and regulations should be followed to the letter by the Highway Department. Politics and personal privileges have no place in the system. The reestablishment and maintenance of labor registers and labor registration procedure in the State service by the Civil Service Commission is a matter of real importance in effecting an improvement in the practices now followed by the Highway Department in employing labor personnel. This recommendation should be carried out as soon as possible by the proposed personnel officer who would take over all details relating to the labor personnel.

(f) Establishing and carrying out a comprehensive health and welfare program for highway employees.

All departmental employees, except the Commissioner, not in the classified service should be placed in that category as soon as possible through open, competitive examinations.

Although it was impossible to make a detailed study of departmental personnel, it would appear that a number of persons employed by the Highway Department, particularly laborers, is excessive for the present highway program. The time has come for a careful reexamination of the personnel needs of the Department in order to effect an intelligent reduction. It is felt that such a reduction is possible without jeopardizing the basic organization and the efficiency of the Department, or the quality of its performance. What is required is a reevaluation of the programs of the several Divisions, as well as of each job. Part-time employees and those who hold positions for which there is no real

need should be eliminated. There should be a coordination of functions wherever practicable. The practice of the Department, limited to a few instances, of not properly or effectively utilizing the services of well-qualified employees should be discontinued immediately.[15]

A considerable part of the increase in maintenance costs is attributable to the fact that laborers were hired when there was no real need for them. Hourly-basis laborers were employed in large numbers at primary and general elections as political patronage. Maintenance costs, therefore, could be reduced by the elimination of political and personal considerations in the employment of maintenance laborers. Every effort should be made to improve the efficiency of the labor forces. A reorganization of the field forces of the whole Department, a carefully-managed rating system for laborers, the encouragement of better performance by basing promotions on merit rather than on influence, will do much to improve the quality and maintenance work and keep costs at a minimum.[16]

The special act giving tenure to the General Solicitor—a situation unique in the Department—should be repealed at once. If protection is to be afforded the General Solicitor, it should be by placing his position in the classified Civil Service. In view of the greatly decreased work of the Legal Division during the past few years there is no justification for the number of counsel carried on the Department payroll. It is recommended that their number be reduced to two, or at the most three, in addition to the General Solicitor and the Workmen's Compensation and Claims Clerk, these men to serve on a full-time basis and to receive salaries commensurate with the duties and responsibilities of their positions. The exact number of counsel would be determined in the light of an analysis of the work of the Division. The Workmen's Compensation and Claims Clerk should be integrated more closely with the regular legal staff and he should be given the assistance of two trained investigators.[17]

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[15] See *pp. 237* to *242* for statistics and a chart showing the increase in department personnel, as well as for those whose services have not been utilized to the fullest extent.

[16] See *pp. 478* to *481* for an analysis of the increase in the maintenance labor payroll, and *p. 483.*

[17] See *pp. 286* and *287,* and schedule 3 on *p. 289* for the marked decrease in the work of the legal staff, and *pp. 294* to *297* for the duties of the Workmen's Compensation and Claims Clerk.

The work of the Supervisor of Titles (in charge of title searching) and the Title Officer (in charge of title reading and settlement) is so closely interrelated that common sense dictates that one man should supervise all title work and settlements. An assistant would be in charge of the searchers in the field. The present Supervisor of Titles gives only part-time to his position, which is classified as a full-time job. The Department is entitled to the full-time services of a title search expert. It is recommended that the position of Supervisor of Titles be abolished under the proposed plan of reorganization, and that the present duties of the position be transferred to the person who will assist the officer in charge of all title work and settlements.[18]

The practice of weekly staff conferences which prevailed in the early 1920's should be resumed. The Commissioner, the proposed chief administration and engineering officers, and the head of each bureau would be in attendance. These conferences should be supplemented by meetings held once a month attended by bureau heads and their chief assistants. All employees would be encouraged to report matters of special interest through their supervisors, or directly to the conference, especially any suggestions relating to improving methods and planning.[19]

There is no departmental manual of the type usually found in large organizations. Such a manual would include a brief history of the Department, an outline of its organization, a list of chief administrative and engineering personnel, a summary of its fiscal operations and, most important, an exposition of the methods to be used and the procedures to be followed in properly carrying out the various administrative and engineering duties. This manual would be of invaluable help to all employees and those interested in the work of the Department. It is recommended that a general manual be prepared as soon as possible after the Department has been reorganized and the personnel reclassification completed.[20]

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[18] See *pp. 290* and *291.*

[19] See *pp. 260* and *261* for the value of such conferences.

[20] See *p. 261.*

Finance

A. *A Single State Fiscal Year.*[21]

There have been two fiscal years in State affairs since 1921—the calendar year of the Highway Department and the July 1-June 30 fiscal year of the rest of the State government. Highway officials have strongly opposed any suggestion or legislation that would have made the fiscal year of the Department conform to the general fiscal year. This change has been advocated repeatedly over a period of years by high State officials, by various commissions and agencies that have studied the problems of the organization of the State government, and by the present Governor.

The arguments of the Department in favor of its calendar year arrangement have been effectively answered by those advocating the regular fiscal year for all State departments and agencies. The Highway Appropriation Act has not, as a rule, been passed by the Legislature until almost the end of the Spring or the beginning of Summer. Advancing the budget year six months would give the Department ample time to prepare for the following Spring work. As for State Aid to counties and municipalities, if the Highway Fund appropriations were made half a year ahead. They would know exactly what to include in their budgets for the ensuing calendar year. Other highway departments have found no difficulty under the July 1-June 30 arrangement in planning and carrying out their programs, nor has the Public Roads Administration of the Federal Works Agency.

The opposition of the Highway Department to the adoption of a uniform fiscal year cannot be put down merely to natural inertia and resistance to change. Where logic has not been available to it, the Department has not hesitated to muster the support of county and municipal officials, farmer groups and its own small but effective legislative lobby. After all else has been evaluated, one enduring purpose remains for its opposition to a single fiscal year arrangement. The Department has simply dedicated itself to the proposition of maintaining its indefensibly independent position in State government—a position that carries great power in State affairs.

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[21] See *pp. 163* to *167.*

It is the recommendation of this report that the Highway Department fiscal year be made uniform with that of the rest of the State government.

B. *A Single State Fund.*[22]

The total funds available in the State Highway Fund have exceeded $50,000,000 yearly in the decade from 1931 to 1940, except for 1933 and 1936 when the total fell just short of that amount. The fund rivals the general State fund in size. This means that two great funds exist side by side in the State, one dedicated to highways and a certain few related purposes, the other to meeting the needs of all the remaining State agencies. Appropriations from the Highway Fund never lapse; all unexpended or uncommitted balances revert back to the fund under the express provisions of the Budget Act. In short, the fund is permanently dedicated.

The abolition of the State Highway Fund, as well as all permanently dedicated funds, and the payment of all revenues into the general State treasury, has been urged again and again in the strongest possible terms. The recommendation has been opposed with the utmost vigor and ingenuity. The past decade, however, has made it quite clear that modern government has become too complex, its functions too numerous and varied, to allow of the continuance of dedicated funds. The only proper and sound basis for fiscal operations today is the single general State fund. The elimination of the State Highway Fund—in fact, the elimination of all dedicated revenues and segregated funds—will lay the foundation for an improved administration of State fiscal affairs.

It is recommended that the State Highway Fund be abolished and all revenues previously dedicated to the fund be paid directly into the general treasury of the State. All receipts of the State Highway Department should likewise go into the general State fund. Finally, all unexpended and uncommitted balances of the Department should lapse into the general treasury at the close of the fiscal year.

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[22] See *pp. 167* to *180* for the five principal sources of revenue making up the State Highway Fund (the excess of the one-mill road tax, motor vehicle fees and fines, the motor vehicle fuels tax, bond revenues, and Federal grants-in-aid); and *pp. 184* to *190* for a criticism of the dedicated Highway Fund and the so-called "diversion" argument.

C. *A Single State Budget.*[23]

From the recommendations for a single fiscal year and one general State fund there inevitably flows the recommendation that the expenditures of the Highway Department be included in the regular State budget, and in the annual general Appropriation Act. Under the present arrangement, the Department presents a separate budget, and appropriations for its work are the subject of a separate act. If the Legislature is to realize its announced purpose of providing a comprehensive budget of all State funds, it should carry to a reasoned conclusion the budget system started over a decade ago and improved in 1933. One budget and one appropriation bill covering all revenues and all expenditures for the same fiscal year will give New Jersey a basis for operations that will meet the requirements of fiscal administration in the modern State.

The Joint Appropriations Committee of the Legislature has given no more than three hours, and sometimes a great deal less, each year to hearings on State Highway Fund appropriations. It is felt that more thoroughgoing hearings are in order, if only to establish the validity of the highway program. It is, therefore, suggested that future committees devote more time and detailed attention to the budget of the Highway Department.

The Budget Act requires that the State Highway Commissioner report quarterly to the Governor, and at such other times as he may direct, on the progress of the Department's approved highway program and on any project that has been carried over from the preceding year. The report is also supposed to contain a statement of the condition of the Department's revenues and finances. The Auditing and Accounting Bureau of the Department prepares a rather complete fiscal report quarterly, but the only report fully meeting the statutory requirement is the annual one setting forth the work of the various Divisions. It is recommended that the Budget Act provision be enforced and that the Department make the required progress and fiscal report promptly and regularly.

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[23] See *pp. 190* to *194* for a discussion of the recommendation of a single budget and appropriation act; *pp. 197* and *198* for the Joint Appropriation Committee's consideration of the highway budget; and *p. 202.*

D. *Work Programs.*[24]

The Highway Department, acting on the advice of the present General Solicitor, claimed from the outset to be exempt from the obligation to submit detailed work programs to the Commissioner of Finance, as required by the 1933 act creating this latter office. One of the conditions of the Governor's Executive Order No. 1 enjoining further expenditures from appropriations to the Highway Department was that detailed work programs be filed with the Commissioner of Finance.

The opinion held in many quarters is that the Department has violated the express intent and purpose of the statute by resorting to a rather fine, legalistic interpretation of the act. If it is determined that the law must be amended to make it unmistakably clear that the Highway Department must submit work programs, the amendment should be introduced and passed as quickly as possible. Control over expenditures was the moving idea behind the Commissioner of Finance Act. So large a State agency as the Highway Department should not be free from that control.

E. *Accounts and Financial Records.*[25]

The accounts and financial records maintained by the Department are unusually complete and very efficiently managed. From them it is possible to obtain any desired information regarding the financial status of the Department, unit costs, expenditures on a particular project or program, inventories, and a host of other matters, as should be expected of a modern and comprehensive accounting system. The accounting forms and methods in use serve as models for other State highway departments. They are an efficient and effective check on every phase of highway finances.

The question arises, however, whether the general accounting control over highway expenditures should continue in the Highway Department. The present arrangement is inconsistent with a central accounting office for the entire State government and is another of

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[24] See *pp. 206* and *207* for a criticism of the Department's refusal to file work programs and quarterly allotment requests.

[25] See *pp. 51, 209* and *210.*

the several factors that have made the Department a self-contained, independent agency. Under the existing State fiscal system, the general accounting work of the Department properly belongs in the Division of Accounting under the jurisdiction of the Comptroller. The cost accounting work now carried on by the Auditing and Accounting Bureau would remain a Department responsibility.

F. *Post-Audit.*[26]

There has never been a complete post-audit of the Highway Department, either in the period preceding the creation of the State Auditor's office or since. As long as the law creating the office of the State Auditor remains on the statute books, the Legislature should give the State Auditor sufficient man-power and financial means to do the job it has assigned to him. Post-audits are sound business practice, in State government as in private enterprise. It is recommended that a full and complete post-audit of the books and accounts of the Highway Department be made by the State Auditor at least once every two years.

G. *Intra-Departmental Transfers.*[27]

From time to time, as need arises, the Department requests permission from the State House Commission to make intra-departmental transfers of appropriations. Such requests are referred to the State Finance Commissioner who must approve or disapprove of the same within forty-eight hours, stating his reasons. The Department has also adopted the policy of getting the Commission's approval for any new project not included in the construction program and alternate program submitted to and approved by the Governor annually. It would seem that the fiscal officer to whom such requests for transfers of appropriations and approval of new projects ought to be addressed is the Commissioner of Finance. He is charged with controlling expenditures, and has an intimate knowledge of the affairs of the Department. It is recommended that the authority to approve of intra-departmental transfers and new construction projects be given to the Commissioner of Finance.

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[26] See *pp. 212* and *213.*

[27] See *pp. 214* and *215.*

H. *Relations to Other State Fiscal Officers and Agencies.*[28]

The administration of the fiscal affairs of the Highway Department necessarily brings it into contact with five other important fiscal officers and agencies of the State—the Commissioner of Finance, State Comptroller, State Treasurer, State Auditor and the State House Commission—in addition to the State Budget Commissioner. It has been necessary to discuss the entire subject of highway fiscal administration in the light of the present fiscal organization of the State. This organization has obvious weaknesses which have repeatedly been pointed out by others.

There are three main defects in the present State fiscal organization: (1) lack of centralized responsibility; (2) duplication and overlapping of functions; and (3) confusing financial reports. A workable plan that has been proposed for reorganizing the State's fiscal departments envisions both executive and legislative control over State spending and finances. The Governor would appoint a Commissioner of Fiscal Control, with the advice and consent of the Senate, to hold office at the pleasure of the Governor. The Commissioner would be charged with the preparation of the State budget, exercise of budgetary and financial control over State operations, maintenance of the central purchasing system, and revenue administration. He would supervise and coordinate the activities of the following four Divisions whose functions are set out in the body of this report (at *pp. 217* and *218*): (1) Budget Division; (2) Division of Accounting; (3) Division of Purchases; and (4) Tax and Revenue Division. The Commissioner of Fiscal Control would also be charged with the property management and insurance functions of the State House Commission, as well as the approval of intra-departmental transfers of appropriations.

The present offices of the Budget Commissioner, Purchase Commissioner and Tax Commissioner would thus come under the direct supervision of the Commissioner of Fiscal Control. The Division of Accounting under his supervision would take over the pre-audit account-

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[28] See *pp. 202* to *214* for details of the relation of the Highway Department to the Commissioner of Finance, State Comptroller, State Treasurer, State Auditor and State House Commission; *pp. 215* and *216* for the defects of the present State fiscal organization, and *p. 217* for the details of the proposed plan of reorganization.

ing functions of the Comptroller, and the payroll functions of the Comptroller and Civil Service Commission; and the Director of Accounts would take charge of the administration of the work program and quarterly allotment system now the responsibility of the Commissioner of Finance. The Director of Purchases would take over the property reclamation and disposal activities now handled by the Commissioner of Finance.

The Legislature would, in addition to studying, amending and finally adopting the Governor's budget as prepared by the Budget Director under the supervision of the Commissioner of Fiscal Control, also exercise an over-all control of State spending and finances through the two constitutional officers which it appoints. The Comptroller would take over the duties now vested in the State Auditor, post-audit all State accounts, and render an annual audit report to the Legislature on the administration of the State's finances. He would retain all other duties now assigned to him and not transferred to the Divisions under the Commissioner of Fiscal Control. The State Treasurer's duties would remain as they are now, and he would continue as custodian of all State funds.

This plan assumes and absolutely requires as a condition precedent to achieving the best possible results, the establishing of a single fiscal year for all departments, a single general State fund, and one State budget.

Such a plan meets all the fundamental requirements of a simplified, modern and effective State fiscal system. Its benefits would permeate the whole State Government and would be reflected in the fiscal administration of every department. The Highway Department would take its place with other agencies as an integral part of the State administration. It would have the same fiscal year as the rest of the State Government, receive its funds from the single State fund which would be the repository for all State-purpose tax revenues and receipts, and have its needs budgeted along with those of the other State agencies.

The Department would be subject to the same overhead fiscal controls as the rest of the Government. The chief executive would have the effective and direct control over its planning and expenditures that

should logically be his. And the Legislature, on its part, would have an adequate check on State spending and finances. The entire State fiscal picture, complex and beclouded as it has been until now, would be simplified and made clear.

I. *Highway Cost Allocation.*[29]

An examination into the problem of the allocation of highway costs indicates the need of reconsidering several important questions: Shall New Jersey continue to pay as much of the cost of secondary roads as she does under her present liberal State Aid policy? Should State funds be expended on roads of a purely local nature, as is now the practice? Is the present unscientific, inequitable and dated system of motor vehicle registration fees to be allowed to stand? Ought there not to be a revision of the generous gasoline tax refund policy of the State?

It is recommended that the Legislature, in cooperation with the highway officials and tax authorities of the State, undertake a comprehensive study of these matters in order to recast the present highway fiscal policy and particularly to establish a system of highway cost allocation which will be equitable, simple and adaptable to all types of vehicles.

J. *Bonds.*[30]

In 1941, Governor Edison recommended that the existing $12,421,686.75 balance of highway bonds be cancelled and proposed that beginning with that year $1,242,000 be set aside annually from current revenues. In that way the same amount of cash could be raised in ten years for highway construction as if the bonds were issued, with an estimated saving of over one million dollars in interest. The Legislature reduced by one-half the amount recommended by the Governor and appropriated $621,050 in 1941 for the purpose

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[29] See *pp. 220* and *221* for the principles that should control in the financing of highway work; *pp. 222* to *225* for a criticism of the motor vehicle registration fee system now used in New Jersey and a discussion of the proper basis for distributing the cost of general-use roads; and *pp. 225* and *226* for a discussion of the gasoline tax.

[30] See *pp. 173* to *175.*

of funding these bonds. The Governor recommended a continuation of this funding operation in his budget message of 1942 and renewed his suggestion that the balance of the 1930 highway bonds be cancelled. This recommendation should be adopted.

It is further recommended that for the time being no further bond issues be authorized for highway purposes. The pressing need for building up the New Jersey State Highway System was probably a sufficient reason for the assumption of a heavy State indebtedness. But pressing need can hardly be used to justify further borrowing for highway purposes, especially in crisis times such as attend the State and the nation in our all-out war effort. The main routes of the State Highway System have been built, and the most urgent demand has been met. Although there are needed improvements to the existing system and some 637 miles of legislated routes to be taken over (assuming that they should be taken over), this should not lead to the conclusion that more highway bonds must be issued. Other States have successfully carried on modern highway programs of a superior type out of current revenues. Bonds mean debt service, and debt service means that there will be less money available for future road construction. The fact is that the emergency stage in road building is past. Future extensions of the system can, at least for the next few years, be financed from current revenues. Highway bond issues should be limited to projects of a very special type which it would be unwise —in fact, uneconomical—to postpone, and to real emergencies.

K. *Accounts Receivable.*[31]

There were $492,675.53 in accounts receivable on the books of the Department as of December 31, 1941. Accounts receivable are not included among the assets of the Highway Department, by ruling of the Attorney-General. Practically every account has been referred to him for collection. In view of the age of many of these claims, they ought to be settled promptly. In the future, every effort should be made to collect or otherwise dispose of claims within one year after they have been billed by the Department.

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[31] See *pp. 231* and *232.*

L. *Insurance.*[32]

The insurance carried by the Department on its plant, equipment and highway structures is placed by the Commissioner. Requests for specific coverage originate in the various Divisions of the Department, and are accompanied by such information as is deemed pertinent. It is apparent that this procedure results in a lack of a systematic, scientific handling of the insurance problem as a whole, centering in one bureau or officer.

A review of the insurance now carried by the Department shows that it enjoys a low premium rate on the larger policies because of keen competition among insurers for the business. A question that apparently has not been fully considered is whether the Department ought not to be a self-insurer on some of its plant and equipment. When careful study has given the answer to this query, there should be a determination of the exact present value (depreciated) of the property to be insured and how much coverage is advisable in each case. Such a reexamination may well result in a revision of the insurance presently carried, with attendant savings. Finally, the type of policy to be written in each case should be determined—its term, co-insurance clause, conditions, etc. The cooperation of Department officials, insurance companies and the staff of the Commissioner of Finance can easily be obtained in carrying out a comprehensive study of the insurance coverage of the Department.

As chief fiscal officer of the Department the Chief Auditor and Accountant is the logical person to handle all insurance matters, with the Commissioner giving his final approval or disapproval. It is recommended that hereafter insurance be made the responsibility of the Chief Auditor and Accountant, and that he make a thorough check of the policies carried by the Department with a view to obtaining maximum effective coverage at the lowest possible price where it is determined that the Department shall not be a self-insurer.

It is to be noted that in the recommended plan for reorganizing the Department, the insurance function is placed under the Finance Bureau. The arrangement ultimately recommended, when the fiscal administra-

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[32] See *pp. 232* and *233.*

tion of the State has been revised, is that the chief State fiscal officer (the Commissioner of Fiscal Control in the plan proposed in Chapter IV) handle the insurance for all State agencies, including the Highway Department.

Administration Division

A. *Approval Officer and Custodian of the Labor Payroll Fund.*[33]

As chief fiscal officer of the Department, the Chief Auditor and Accountant must approve all bills, estimates, payrolls, etc. Under the present system, the Chief Clerk is designated Approval Officer for the Department and his signature is required by the Comptroller before he will honor a bill or payroll for payment. This means waste motion and needless extra work for the Chief Clerk. It is recommended, accordingly, that the head of the proposed Finance Bureau, which will take over the duties of the Auditing and Accounting Bureau, be appointed Approval Officer for the Highway Department.

The Chief Auditor and Accountant is now responsible for the preparation of the labor payroll. In the proposed plan of reorganization, payrolls will be the responsibility of the Finance Bureau. The head of the Bureau will, as Approval Officer of the Department, approve all salary payrolls, and act as Custodian of the Labor Payroll Fund for hourly basis payrolls. This will save time and eliminate the extra work involved in having the Chief Clerk approve payrolls and handle checks. It will centralize the entire payroll procedure in the Finance Bureau where it properly belongs.

B. *Prequalification of Bidders.*[34]

Excellent results have been obtained by the Department under its system of prequalifying bidders. Before 1932 the Department was burdened with claims filed by creditors against contractors. This turned the Department into a collection agency. Regulations covering the classification of prospective bidders were formally adopted by the Highway Commissioner, in accordance with the statute, and became effective on

[33] See *pp. 231* and *256.*

[34] See *pp. 234* and *235.*

April 1, 1936. The present prequalification procedure system is systematic, accurate and fair. It has been faithfully adhered to, with the result that the Department is no longer troubled by defaulting contractors and a swarm of lien claimants.

C. *Payroll Procedure.*[35]

The present payroll procedure followed by the Highway Department and in the rest of the State government is antiquated and inefficient. After a three-year study of the problem, the Civil Service Commission has recommended the prompt initiation of a centralized system of payroll preparation. Suitable mechanical equipment is available for the purpose and would make the preparation of payrolls by the Civil Service Commission a relatively simple thing. Payrolls, pay checks and check registers would be prepared automatically by the use of punch cards. The system lends itself to providing a variety of necessary data on which to base an intelligent personnel program. It is recommended that the Highway Department, which is the second largest employer among all State agencies, give its full cooperation to the early establishment of the proposed centralized payroll system so that it may be realized for the entire State government in quick order, to the advantage of all.

D. *Purchasing Procedure.*

The present State Purchasing Department was created and established in 1931 with a State Purchase Commissioner in charge. It was given exclusive authority to purchase all materials, supplies and equipment used or needed by any State agency. The new act continued the exception found in the 1916 statute which stated that the broad power given the Purchasing Department was not to extend to "* * * the construction or repair of any road or bridge, nor to the performance of any like work."

Three exceptions to this system of centralized purchasing exist.[36] The first relates to the use of so-called confirming orders whereby pur-

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[35] See *pp. 257* and *258* for a criticism of the present system of preparing payrolls, and *pp. 258* to *260* for a description of the proposed centralized system and its advantages.

[36] See *pp. 263* to *265* for a discussion of these exceptions.

chases are made by the Highway Department without the prior approval of the State Purchase Commissioner. These orders represent a definite departure from the regular system of centralized purchasing. The possibility of abusing this practice by arbitrarily classifying purchases as emergencies in order to suit the convenience of the Highway Department always exists. However, the use of confirming orders seems to have been fairly well controlled in recent years.

Similar to this is the emergency purchase order, the second of the exceptions to the established central purchasing system. Highway employees in the field are permitted to buy any necessary item costing less than $20, but such purchases are supposed to be limited strictly to emergencies. Actual practice is somewhat looser than this. Like the confirming order system, unless these emergency purchases are carefully restricted to true emergencies they can be used to circumvent the State Purchasing Act.

The third exception to the central purchasing system is the practice of the Department in buying directly maintenance materials that are to be put "in place" by the vendors. In 1932 the Attorney-General ruled that the provision of the State Purchasing Department Act excepting the construction or repair of any road or bridge, or "the performance of any like work" from the operation of the statute, permits the Highway Department to buy any material that requires the services of the vendor in putting it in place on the road.

Where items needed by the Highway Department are to be bought through the State Purchasing Department, the Purchasing Department tabulates the bids received, except in the case of maintenance materials, where they are sent to the Supervisor of Purchase and Stores in the Highway Department for tabulation. These latter bids are then analyzed by the Superintendent of Maintenance, who recommends the lowest responsible bid to the Highway Engineer. After the Engineer and the Highway Commissioner have approved the recommendations, the bids are returned to the Purchasing Department which then executes a contract with the successful bidder. The practice of the Purchasing Department in referring bids to the Highway Department for tabulation and analysis has obvious merit. It is the extension of this practice that is open to criticism. Centralized

purchasing demands that the Purchase Commissioner decide who is the lowest responsible bidder under the specifications for a particular item. There is nothing wrong in his obtaining the advice of the Highway Department as to the quality of the materials offered and the responsibility of the vendor, but for the Purchase Commissioner to allow the Highway Department to analyze the bids which are then returned to him by the Highway Commissioner with detailed instructions as to who shall get the business and in what proportionate amounts, is nothing less than a delegation of his authority.

Very often identical bids are received for maintenance materials like cement, calcium chloride, steel and wire products and stone. The Highway Commissioner has rather carefully refused to recommend the award of contracts for the first two items, leaving that responsibility to the Purchase Commissioner, but he has not hesitated to make recommendation as to the other materials.

The opportunity for favoritism and a selective treatment of vendors is clearly present. The practice of allowing the Highway Department to make definuite recommendations of the award of bids should be discontinued. The Purchase Commissioner alone should be responsible for the decision; he may, if he cares to, consult the Highway Department concerning the integrity of the materials and the responsibility of the bidders before making his own decision.[37]

The Maintenance Division uses a large amount of gravel in connection with its work. This material is purchased by the State Purchasing Department under an agreement with the owner of the gravel pit. Under the procedure now followed, the Purchase Commissioner allows the Maintenance Division to make all the arrangements for the purchase of gravel, the agreement finally being submitted to and signed by the Highway Commissioner. Bids are not requested; the attempt is to get the best material available in a particular area. There is, therefore, no uniformity in procedure. Gravel may be purchased at prices ranging from ten cents a cubic yard when dug and loaded by the Maintenance Division's own forces, to as high as seventy-five cents loaded on the trucks by the owner of the pit. Soil for fill in maintenance work is purchased by the State Purchasing

[37] See *pp. 266* to *268.*

Department under a similar type of agreement, as is top soil. It is recognized that gravel, soil for fill, and top soil are materials which do not readily lend themselves to competitive bidding because of the limited sources available in a particular area where maintenance operations are being conducted. An important consideration is the proximity of the pit to the job. However, open competition should be encouraged wherever possible.[38]

An investigation of the general specifications, bid form and contract used by the Purchasing Department in connection with purchases for the Highway Department reveals that the quantities set forth in the bid form are not intended "to be either a minimum or a maximum amount that may be required * * *. The contract to be entered into shall be treated as a price agreement as provided in section 52:25-25 of the Revised Statutes. The Purchase Commissioner shall, therefore, have the right to order any amounts that may be needed by the State for delivery at any given point and the bidder agrees to furnish the material at the point required at the bid price regardless of the quantity that may be shown in the bid form." There are some advantages to the "open end" type of contract. The better practice, however, is to limit the amount of excess materials that can be purchased. The danger of the "open end" contract is that the successful bidder may have prior knowledge of the possibility of large excess orders and quote accordingly, or that excess orders will be resorted to instead of advertising for bids from other sources. It is recommended that all contracts for the purchase of materials and supplies, contain a provision limiting the amount of excess orders that may be made thereunder to 20% or 25% of the quantity estimated in the bid form. The advisability of setting a similar lower limit for the minimum amount of material that may be ordered, should be considered. It is felt that a limiting provision of the type recommended will encourage closer bidding and make for more careful calculation by Department officials of material requirements.[39]

Purchases involving more than $1,000 must be duly advertised. The State House Commission has the power, however, to grant a waiver of

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[38] See *pp. 447* and *448*.

[39] See *pp. 268* and *269*.

this important requirement "in case of a public exigency * * *." Its determination of the existence of an emergency may not be questioned. An outstanding example of the manner in which this power of waiver can be used was the waiver granted by the Commission to the Highway Department in March 1938, allowing it to purchase materials for W. P. A. projects without advertising. The reason given in requesting the waiver was the emergent need for putting the W. P. A. program into motion. The waiver continued in full force and effect until it was discovered in the course of this study and rescinded at the request of the Governor in August 1941. During the more than three-year life of this "emergency" waiver over $10,700,000 was appropriated to the Highway Department for W. P. A. purposes. No estimate can be ventured as to the money that might have been saved had W. P. A. materials been bought in the regular way after May 1938.

There is need for a stricter control of the power to waive the advertising provision of the law. This power ought to be lodged in the Commissioner of Finance and eventually, after the State Government has been reorganized, in the proposed Commissioner of Fiscal Control or other head of the central State fiscal agency.

A proposal has been made that it would be desirable for the Highway Department to make its own purchases of highway materials independently of the regular State purchasing system because of the character of the work performed by the Department. The suggestion is not new. If followed, it would result in a dangerous departure from the adopted policy of centralized State purchasing. It will not be long before other Departments will be arguing for a similar exemption from the operation of the centralized purchasing system. An examination of this proposal demonstrates that there is no real need for letting the Highway Department make its own purchases of road materials. All the advantages claimed for that arrangement can be obtained by assigning all highway purchases to a qualified purchase supervisor under the direction of the State Purchase Commissioner. Instead of allowing any further deviations from the established State purchasing system, it is the recommendation of this report that *all* purchases made for the Highway Department, except for those of a strictly emergency nature, should be made by and be subject to the absolute control of the State Purchase Commissioner. This includes purchase of materials to be "put in place." A fully quali-

fied and competent purchase supervisor should be appointed to the Purchasing Department, who would specialize in the procurement of highway items. [40]

E. *Stores.*[41]

The Supervisor of Purchase and Stores is in charge of the departmental stores located at Fernwood. There are over 18,000 items in stock valued at more than $250,000. The Supervisor of Purchase and Stores maintains a perpetual inventory of the materials and supplies stocked in the Fernwood storerooms. The Bureau of Auditing and Accounting makes a complete physical inventory annually and other inventories from time to time. The Supervisor is also responsible for the stock room in the State House Annex basement where stationery and other supplies are kept for the entire Department. Each Division is charged with the supplies drawn for its use.

The departmental stores are well managed by the Supervisor of Purchase and Stores. The system used provides a constant and accurate check of purchases for and withdrawals from the storeroom, and also results in a proper distribution of charges to the using Division for materials and supplies taken from the storeroom. The Electrical Division maintains its own storeroom at Fernwood, and the Equipment Division its stores at the Newark garage and other garages. It is recommended that the Supervisor of Purchase and Stores manage and control all departmental stores including those of the Electrical and Equipment Divisions. This will centralize stores and inventory control, and result in an even more efficient system than now exists.

F. *Mail Room and Office Boys.*[42]

The Supervisor of Purchase and Stores is in charge of the Highway Department mail room located in the basement of the State House Annex. The Supervisor handes the purchase of stamps and keeps the master stock in his possession. No accurate check is kept on the stamps used. Only a small part of the time of the six office boys is devoted

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[40] See *pp. 271* and *272.*

[41] See *pp. 273* to *276,* and *p. 555.*

[42] See *p. 277.*

to the mail room, their main duty being to act as intra-office messengers. There is a central postoffice in the State Capitol building which serves the various State agencies located in the State House and Annex. The mail room maintained by the Highway Department should be abolished and the departmental mail handled through the State House postoffice. It is also recommended that a check be made to determine whether the number of office boys now employed is warranted.

G. *Mimeograph and Printing Room.*

The Supervisor of Purchases and Stores is also in charge of the mimeograph and printing room of the Department. There is a serious lack of space in this room, and more adequate quarters should be provided in view of the amount and quality of the work performed.

H. *Central Files.*[43]

Many of the files and records of the Highway Department are stored in an entirely unsatisfactory manner. Two outstanding examples are the records of the Auditing and Accounting Bureau, which have overflowed into the corridors outside the Bureau offices on the second floor of the State House Annex, and extremely valuable files relating to real estate acquisitions that are kept in the Annex basement. The situation respecting the latter is especially serious, because they are in danger of loss, damage or destruction. When these files were transferred to their present location, the job was done in such a manner that it sometimes takes days before a file can be found. Steps should be taken at once to secure adequate and safe quarters for the Department's files and records.

Although most Department records eventually find their way to the central files, it should be required that all plans, records and correspondence be sent promptly to the central file room, except for such plans and records as are absolutely essential to the current work of a particular Bureau or Division.

There has been some discussion in the past of establishing a comprehensive central file system. Nothing was done about the matter—probably because of the lack of space. If proper facilities were pro-

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[43] See *pp. 278* and *279*.

vided, it would be possible to bring together in one place all the files of the Department, other than such active files as happen to be in use in the several Divisions. These files could be arranged by Divisions and Bureaus. They would be properly edited, indexed and, where deemed advisable, bound. In the case of any Divisions or Bureau handling plans, its plan files could be placed next to its general files. Properly managed, this centralized system of departmental files and records would result in a very efficient and useful arrangement. A certain amount of duplication of plans and records could probably be eliminated.

There is need for a practical consolidation of many of the plans and records now found in the central file room and in the various offices of the Highway Department. This will result in a saving of space as well as in bringing together under one cover such items as properly and logically belong with each other. Attention is particularly called to the possibility of consolidating the real estate files, so as to include for every section of each route, the files of the Real Estate Division, Supervisor of Titles, Title Officer, and Legal Division. This project was once started, but was discontinued upon the order of the Highway Engineer.

I. *Publicity and Public Relations.*[44]

There is a clear lack of proper public reporting of the work of the Highway Department. This deficiency is of long standing and is in contrast to the public relations programs carried on by progressive highway organizations in other States. Serious consideration never seems to have been given to the need of fostering a real public understanding of the Department's problems and activities through a sound and sustained program of public relations.

The present public relations program of the Department is limited to newspaper releases, road condition reports, the distribution of road maps, and the rather circumscribed activities of the Engineer of Special Design.

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[44] See *pp. 280* to *283* for a criticism of the present publicity and public relations program of the Department, suggestions for its improvement, and the value of such a program in highway work; and *pp. 283* and *284* for further aspects of the work of the proposed Public Relations Bureau.

The State highway organization issued a printed annual report from 1894 to 1922. In 1923 the present type of annual report made its first appearance. It can make no claim to completeness, clarity or interesting content. It does not include every Division or Bureau report; one or more reports are missing in each volume. The Highway Commission never made a report, nor has there been any by the Highway Commissioner since 1935. In some years not even the Highway Engineer made a report; when he did, it was often sketchy.

There is no evidence whatsoever of any attempt to edit the reports submitted for inclusion in the annual volume. They lack proportion, each Division and Bureau head writing as much or as little as he pleases. No effort has been made to achieve a proper internal arrangement of the annual report. Clarity and interest are entirely lacking.

The explanation for this lies in the fact that the report has never been intended for public consumption. It is addressed to the head of the Department. Only ten copies are prepared. An examination of the printed reports of over forty States reveals few instances of the highway reporting as bad as New Jersey's. The bound volume prepared by the State Highway Department is a prime exhibit of bulky, undigested and uninteresting reading matter.

The plan of reorganization proposed for the Department contemplates the setting up of a Public Relations Bureau under the chief administration officer. Its first duty should be the development and preparation of a printed annual report covering the work, finances and problems of the Department in a clear, understandable and interesting manner. All Division and Bureau heads, as well as the chief ranking Department officials, would be obliged to contribute to the annual printed report. The head of the Public Relations Bureau would be responsible for the proper editing, publication and distribution of the report.

The Bureau would also prepare and publish reports dealing with special features of the highway program which should be of interest not only to those in the highway field but also to the public at large. It is recommended that the Public Relations Bureau undertake to issue such special publications from time to time.

The Department should strive constantly, through newspaper releases, motion pictures, exhibits, lectures, radio talks, and other appropriate means to give the public a clear picture of its work and the problems involved in building up and maintaining a State highway system. At present the public has no real conception of the work of the Highway Department; the Legislature is scarcely better informed. Good reporting will bring its own rewards. It will make for better understanding and dissipate any suspicion now existing in the mind of the public regarding the Department.

Legal and Real Estate Divisions

A. *Land and Legal Bureau.*

There is a very close relation between the work of the Legal Division and that of the Real Estate Division. Most of the time of the personnel of the former Division is taken up with title searching and reading, real estate settlements, condemnation cases and specific performance suits. The desirability of combining the work and personnel of these two Divisions has been recognized in the past and attempts made to effect a consolidation. These failed because the officials involved could not agree upon the method of consolidation or because the friction existing among them made impossible a fair trial of any such arrangement.

Where two functions are so closely interrelated, personal considerations should not be allowed to stand in the way of a reorganization proposed in the interests of economy and efficiency. It has therefore been recommended that a Land and Legal Bureau be established under the principal administration officer of the Department, which would take over the duties of the Real Estate Division and Legal Division, as well as the work of the Special Engineer now reporting to the Highway Engineer and the disposal of excess real estate.[45]

B. *Real Estate Acquisitions.*

The Real Estate Division is headed by the Senior Right-of-Way Agent. It must be pointed out, however, that unlike other Division

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[45] See *pp. 285* and *286.*

heads he does not have the degree of independence and executive discretion that should go with a responsible position. The Senior Right-of-Way Agent is, in effect, the assistant to the Highway Engineer in right-of-way work, and the latter makes many of the decisions which should normally be made by a Division chief.

A permanent file is kept of all important papers relating to each piece of property acquired. These files are not adequately protected so that the possibility of altering or removing records is always present. In fact, the Governor's Highway Department Examiner demonstrated that advantage had been taken of this situation.

A survey of all right-of-way transactions involving over $2,000 consummated during the administration of the Highway Commissioner revealed that owners represented by members of the Legislature, former legislators, or attorneys identified with politics, and contractors or persons having other business relations with the State Highway Department, obtained a price substantially in excess of the Department's appraisal. Owners who were not represented, or who were represented by attorneys or agents without known political connections, obtained a price reasonably in line with the average and departmental appraisals. As a result of public hearing held on the subject, the Governor's Highway Examiner was led to conclude that a system exists in the Department "which not only permits, but encourages and openly invites the improper exercise of outside influence on the negotiation of prices, facilitates abuse and disloyalty, and seems almost to have been devised for the very purpose of making such improper influencing possible and relatively safe from casual detection."

Under the practice followed by the Department in recent years, two outside appraisers are used where the amount involved is over $500. A list of "approved" appraisers is maintained. Many of them were declared to be incompetent in the course of the hearings. Moreover, the very appointment of many of them, some admittedly competent, was the result of political influence. The Commissioner allowed the choice of realtors for inclusion in the approved list of outside appraisers to be exercised by the legislators and political leaders in the counties where the appraisers would operate. In many cases the Department negotiated with the very men who were responsible for the appointment of these realtors, for the purchase of property appraised by them.

Under the system which has been in effect since the Highway Commissioner took office in 1935, a "check" appraisal is obtained whenever there is a wide variance between the Department's own appraisal and the outside appraisals, or when the owner of the property or his representative demands a price in excess of existing appraisals. This system has resulted in a variety of abuses. When it was decided to pay a politically-represented owner a price in excess of existing appraisals, the practice was to obtain a "check" appraisal from an outside appraiser amenable to suggestion from the proper source. These "check" appraisals were relied upon to justify the payment of a price already agreed upon. A "check" appraisal was often obtained after the actual preparation and execution of the agreement of sale. Appraisals such as these are entirely lacking in objectivity and are a device for "covering up" agreements already arrived at.

This system of "check" appraisals not only invites fraud but, because of the high price that the State is obliged to pay, results in the setting up of a new and unjustified standard of value for subsequent acquisitions in the neighborhood. These "check" appraisals also embarrass the Department in condemnation proceedings involving land in the neighborhood of the parcels acquired under the appraisals.

Not only were appraisals politically influenced from their very inception but, as the public hearings showed, they were often falsified after having been made. This falsification took several forms: (a) the outright alteration of an appraisal by erasing and changing figures; (b) adding an item to an appraisal without the appraiser's knowledge; (c) increasing the amount designated by the appraiser, without his knowledge or consent; and (d) inserting in the file an appraisal purporting to have been made by an appraiser when in fact no appraisal was made by that individual.

In some cases two different appraisals of the same property were made by the same outside appraiser, on the same date. This allowed the Department to select either one, depending upon whether or not a politician represented the owner.

This system has had a devastating effect on the morale of the Real Estate Division personnel. As the official actually responsible for the operations of the Real Estate Division, the Highway Engineer must

take full responsibility for the practices outlined above. He had personal knowledge of many of the cases dealt with in the public hearings, and actually participated in some of them by bringing about settlements at the top price established by a "check" appraisal which he had recommended. He also played an important part in having certain appraisers placed on the approved list of the Department.

Although there was no evidence that the Highway Commissioner had direct personal knowledge of the irregularities which have been mentioned, he was responsible for maintaining a system which permitted, encouraged and openly invited "the improper exercise of outside influence on the negotiation of prices," and which facilitated abuse and disloyalty. He sanctioned and approved the system, and knew, or should have known, that real estate negotiations were susceptible of influence by legislators and other politicians. If he did not know that appraisals had been falsified, it is because he left these arrangements to the Highway Engineer. In short, he surrendered his discretion and authority to that official.

There can be only one conclusion in the light of this record. The entire appraisal procedure followed by the Highway Department is in need of radical revision. The present list of outside appraisers should be discarded, and the existing system of outside appraisers abolished entirely.[46]

In a large majority of cases, all of the purposes of an appraisal are fully accomplished by appraisals made by the Department's own Right-of-Way Agents. These departmental appraisals would in all cases serve as the solid foundation for a realistic study of the fair price that should be paid an owner.

Department appraisers should be permitted at all times to consult departmental construction engineers and other Department specialists in cases calling for specialized knowledge. In any case in which the negotiator and the head of the proposed Land and Legal Bureau believe that it may be advisable to settle at a price in excess of the Department appraisal, the latter should be given the discre-

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[46] See *pp. 310* to *319* for a detailed discussion and criticism of the appraisal system of the Department.

tion of consulting an outside expert. This man should be an outstanding, fully qualified and reliable realtor or property analyst of the vicinity in which the property to be acquired is located. He would be appointed by the Commissioner at the time he approved plans for the section of the route in question and authorized negotiations. The appointment would be upon the recommendation of the head of the Land and Legal Bureau, and would be made only after the Commissioner had thoroughly checked the qualifications and reliability of the proposed consultant. Compensation would be on a *per diem* basis.

On properties where the estimated cost will exceed $1,000, the consultant would be requested to prepare a definite appraisal when, in the judgment of the head of the Land and Legal Bureau, such an appraisal is necessary or advisable. The appraisal would be made only on order of the Bureau chief, at a rate of compensation fixed by the Commissioner.

The Highway Commissioner would, on recommendation of the Land and Legal Bureau chief, designate a qualified and trustworthy appraiser familiar with values in the locality, from whom an additional appraisal would be secured. This would be done only in those cases where the determination of values is quite involved and controversial. Any additional outside appraisals beyond these two would be secured only in exceptional cases, and upon special authority from the Highway Commissioner in each case.

Departmental Right-of-Way Agents and Negotiators would in all cases make complete studies of all properties as assigned or directed by the head of the Land and Legal Bureau. Their appraisals would be made absolutely independently and irrespective of whether or not other appraisals were secured.

All appraisals should be made on standard forms drawn up to reflect the experience of the Department in its years of real estate acquisition work, as well as the best experience in the field. They should contain a complete and clear statement of all factors relied upon in determining the value of the land to be taken and the damage to the remainder, and should, wherever it is deemed necessary, indicate those factors not considered as having any proper bearing on the appraisal but which might possibly be put forward by the owner as a

reason for obtaining a higher price. All forms should be signed by the appraiser himself, and bear the actual date when the appraisal was made.

In the event of condemnation proceedings, the chief of the Land and Legal Bureau would designate the Right-of-Way Agent, Negotiator or other member of his staff to testify in the case and assist counsel. He would likewise designate one or both of the appraisers who had previously appraised the property. Such special witnesses and appraisers as might be required at the condemnation hearing or trial, would be secured by him, but only upon special authority and approval of the Highway Commissioner in each case. The Commissioner would fix the fee to be allowed such witnesses.

Insofar as possible, appraisals of industrial property and property having a special character (*e. g.*, quarries, nurseries, etc.), should be made by Departmental engineers or specialists in other State departments and agencies. Where this cannot be done, such appraisals should be secured from qualified experts by an appraisal order signed by the Land and Legal Bureau chief and approved by the Highway Commissioner in each case.

This plan of appraisal procedure, like everything else connected with the work of real estate acquisitions, depends on the integrity, ability and efficiency of the head of the Land and Legal Bureau, and on the cooperation he receives from the Commissioner. Since the appraisals made by the Department's own men lie at the very heart of the recommendations that have been made, the head of the Bureau should, in every case where the price to be paid the owner exceeds these appraisals by a relatively substantial margin, state in writing to the Commissioner all the facts relied upon to justify the payment. This statement, signed by the Bureau chief and supported by a complete report of the Right-of-Way Agent or person who negotiated the agreement, shall accompany the agreement when it is sent to the Highway Commissioner for his approval and signature. The Commissioner would then have before him all the appraisals and other information pertaining to the case.

All files relating to real estate acquisitions should be kept under strict central control and supervision to eliminate the possibility of

loss, destruction or alteration. The existing disorder and unsafe location of the title files, and the apparent ease with which papers in the appraisal files can be altered, added or removed, points to the need of immediate remedial action. Steps should be taken at once to insure the safety and integrity of the real estate files.[47]

C. *Condemnation Proceedings.*

The volume of condemnation proceedings and other legal work arising out of the acquisition of real estate for highway purposes has decreased steadily since 1931. With the marked decrease in the work of the Legal Division, and an available staff of six counsel, there seems little reason why the number of condemnations pending should have been allowed to increase during the past five years. A certain carry-over of cases into the next year is inevitable, but diligence on the part of the legal staff should have kept the back-log of condemnation proceedings at an even level, or actually reduced it. It would also appear that ten years is a sufficient time in which to have disposed of a single case authorized for condemnation in 1932. This case has tied up $400,000 earmarked for its acquisition.

Disposition should also be made as promptly as possible of the open cases that have never been acted on. Their number is out of proportion to what it should be.[48]

Excessive condemnation awards have been one of the main reasons for the high cost of right-of-way acquisitions in the past. Despite criticism of the condemnation system by Department officials, and the public notoriety of the awards made in certain outstanding cases, the Legislature has never taken action to correct the situation. The root of the evil lies in the fact that under the 1927 act establishing a State Highway System, the Department is obliged to proceed in condemnation under the Condemnation Act of 1900. This statute, which may have been suitable at the turn of the century, is outmoded, unscientific and entirely inadequate for present-day needs. Its defects are so patent that the failure of the Legislature to enact a suitable law in its stead is incomprehensible. Just how much this legislative

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[47] These recommendations appear on *pp. 319* to *322.*

[48] See *p. 310.*

inertia has cost the State is a matter of conjecture, but those who have studied the problem estimate that the amount is many hundreds of thousands of dollars, and some have even ventured to place the figure at a few millions.[49]

Rather than attempt to correct the 1900 Condemnation Act by amendment—a procedure which would in the end involve a complete recasting of that law—it is preferable that an entirely new Condemnation Act be sponsored by the Highway Department in the next session of the Legislature and every effort made to effect its passage.[50]

It is therefore recommended that the new condemnation act provide for a single State Condemnation Commission of three members having full *quasi*-judicial powers, which will handle all condemnation of property by State agencies. The members will be appointed on a non-partisan and non-geographical basis by the Governor for terms of six years, so arranged that no more than one vacancy will occur every two years, Compensation shall be on an adequate and annual basis. The Governor shall have the power to remove any member for cause, after hearing, either on his own motion or on petition of any State agency. It is suggested that the personnel of the Commission consist of a licensed engineer, a counsellor-at-law, and a person with a wide experience in land economics. The State Condemnation Commission will have its records and office at Trenton.

The Commission shall make awards for all property taken or damaged by the State in exercising its power of eminent domain. It shall hold public hearings in the county where the property is located, and have the power to administer oaths to witnesses, and to compel the attendance of witnesses and the production of papers, documents and records by subpoena. It shall make and preserve a record of the evidence presented and of its award. The agreement of two members shall be required for a decision. The Commission shall have the right to view the property and request either party to present additional evidence. To conserve the time spent in hearings, the State and the owner shall be required to present briefs prior to the date of hearing,

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[49] See *pp. 323* and *324* for a summary of this statute, and *pp. 325* to *329* for a discussion of its many deficiencies.

[50] See *pp. 329* to *332* for other proposals that have been made for correcting the condemnation law.

setting forth their respective claims and supporting data. All parcels in the same locality and on the same route shall be dealt with in one hearing. Appeals from the awards of the Commission shall be to the Supreme Court, and that court shall review all questions of law and fact.

All voluntary settlements, together with the evidence upon which the State's offers are based, shall be submitted to the Commission before becoming effective.

The various provisions that should be included in the new condemnation act are summarized on pages 333 to 336. The most important feature of this legislation relates to the factors that shall be considered in awarding "fair and just compensation" for the lands and interests acquired (*pp. 334* and *335*).

D. *Right-of-Way Engineering and Mapping.*

A study of the suggestion that right-of-way engineering and mapping work, now carried on by the Survey and Plans Bureau of the Construction Division, be transferred back to the Real Estate Division whose responsibility it once was, leads to the conclusion that some of these functions should be integrated with the proposed Land and Legal Bureau.

Since right-of-way surveys are so very closely related to the preparation of construction plans, they should remain in the Survey and Plans Bureau, which will be a unit of the Construction Bureau under the proposed reorganization. The preparation of original real estate maps for negotiation and condemnation purposes should also be a responsibility of the Survey and Plans Bureau. Field and engineering investigations relating to right-of-way acquisition and to complaints involving right-of-way matters should also be continued in that Bureau, cooperating with the Land and Legal Bureau.

The work of the Land and Legal Bureau will, for the most part, be concerned with property and property rights, and all things relating thereto. The Bureau can and should, therefore, carry out certain duties leading up to the making of the surveys and plans in the Construction Bureau. It should be responsible for all preliminary investigations and reports of ownerships and values, making such informa-

tion available to the Construction Bureau for the preparation of plans and the determination of the most economical location of the route. These investigations will serve as a basis for the Land and Legal Bureau's own preliminary appraisals and estimates, final appraisals and condemnation testimony. The Bureau will also coordinate its operations with the Construction Bureau in the location of property lines and the investigation of existing road widths and road records. The head of the Land and Legal Bureau will collaborate with the survey and plan engineers in determining the most economical alternate locations of highways, and with the construction engineers during construction work insofar as adjacent properties may be affected or damaged.

The Land and Legal Bureau will further cooperate with the Construction Bureau in completing and checking the general property keymaps, general entire tract maps and individual property maps. It will secure such maps and data as may be required preliminary to and in the making of appraisals and the conduct of negotiations, and in condemnation proceedings. It will prepare the descriptions, agreements and other documents used in or incident to its negotiations for the acquisition of property.

Old road records and maps are now handled by the Survey and Plans Bureau. Essentially this work involves a search of the records in the county court houses throughout the State. The title searchers of the Title Bureau work in these record offices and are in a position to help in completing the old road records and maps project. Since the Title Bureau will become part of the Land and Legal Bureau under the proposed reorganization, this Bureau should take over the project and bring it to a prompt conclusion.

The project relating to the consolidation of the files of the Real Estate Division, Title Bureau and the rest of the Legal Division relating to each route and section, once begun by the Special Engineer and discontinued on orders of the Highway Engineer, should be reestablished in the Land and Legal Bureau. Such a consolidation would be of real value to the Department. When completed it would show the status of all right-of-way and real estate acquired, owned or sold by the Highway Department.

E. *Disposal of Excess Real Estate:*

The Land and Legal Bureau would be responsible for the disposal of all excess parcels of land no longer required by the Department, as well as the sale and removal of buildings on property acquired for highway purposes.

Competitive bids for the removal of buildings and improvements would be secured and the award made to the lowest responsible bidder. The Bureau would appraise all excess parcels of land as well as buildings that are to be sold. After advertising and the receipt of bids, the head of the Bureau would recommend that the award be made by the Commissioner to the lowest responsible bidder.

F. *Right-of-Way Widths.*[51]

The Department was either overly cautious or short-sighted in its right-of-way acquisition policy when building some of the main routes in the 1920's. Members of the engineering staff had warned of the need of anticipating future requirements and buying wider rights-of-way. The importance of acquiring sufficient widths was not realized promptly enough. The result has been that during the past decade the Department has repeatedly had to go back to buy up extra width at greatly increased prices. The work of widening the highways and, in many cases, converting them into dual highways has proved costly. However, this work and the planning of proposed highways on an adequate right-of-way width, is now being conducted on a scientific basis through the use of traffic studies and traffic counts.

The right-of-way width to be acquired on any primary road should be established on a sound engineering and highway planning basis. Some authorities have suggested the advisability of buying up right-of-way where future widening is considered necessary, although it is not planned to proceed with the improvement at once. This policy has its obvious limitations. It may be pursued where the real estate market is favorable and higher prices in the future are indicated. However, extreme caution must be exercised. The State

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[51] See *pp. 339* and *340* for a criticism of the Department's failure to acquire sufficiently wide rights-of-way over a decade ago, and *p. 341* for the mileages of roads of certain widths on the State system.

must not tie up its funds for too long a time or the carrying charges on the investment will exceed the anticipated savings. There is, moreover, the bothersome question of maintenance.

G. *Roadside Control.*[52]

The problem of roadside control was recognized in the Highway Department at an early date. Although many suggestions were made looking toward at least a partial solution, very little was done about the matter. The problem has now taken on challenging proportions.

There are methods which might be used in New Jersey to effect roadside control through: (1) the cooperation of municipalities under the zoning power given them by statute; (2) cooperation by municipalities and counties in controlling subdivisions adjoining main routes under the provisions of the Municipal Planning and County Planning Acts, and (3) the laying out of park strips along main highways. The Department should make every effort to obtain the cooperation of these governmental agencies in a program of roadside control. A campaign of education is indicated. Properly conducted, much of the utility and safety, as well as the beauty of the main routes on both the State and county highway systems, can be preserved.

In recent years, other States, seeking some effective method of roadside control, have developed the idea of parkways and limited access highways. These are obviously the most desirable method of dealing with the problem of roadside control. The possibility of constructing such highways should be given careful consideration in the Department's planning of future routes. Parkways are recommended in the case of rural areas and relatively sparsely settled territory. Although limited access highways in populated districts are expensive, their advantages will in many cases justify the cost.

The whole question of parkways and limited access highways resolves itself into a problem in highway economics and good highway planning. It is recommended that appropriate legislation be enacted

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[52] See *pp. 342* to *343* for a discussion of the need of roadside control; *pp. 343* to *344* for previous proposals made in this connection; *pp. 345* to *346* for a fuller treatment of the ways in which municipalities and counties can cooperate in roadside control; and *pp. 347* and *348* and Appendix D on the question of parkways and limited access highways.

providing for the acquisition and development of limited access highways and parkways. A draft of such an act has already been prepared and is included in Appendix D of this report.

Construction Division

A. *Designation of Highway Routes.*[53]

The Legislature has long followed the practice of designating the routes that are to be built on the State Highway System. It has not consulted the Highway Department except in a limited number of instances. Whether a particular route was necessary or advisable from the point of view of sound highway economics and planning, seemed to be of little concern to the lawmakers. Engineering and financial studies were not called for or sought. It would appear, therefore, that local pressure alone accounted for a good number of the legislated routes. The result is that there are routes on the legislated State Highway System that never will be built; some are unnecessary and others are unsound from an engineering point of view. Still others would be so expensive that their construction is unwarranted. The Highway Department has been obliged to recommend to the Legislature that certain routes be amended in order to bring them into accord with actual needs and sound engineering principles. In a very few cases, the Department has suggested that a route be legislated because it was vitally needed.

An outstanding example of what happens when the Legislature assumes to designate what routes shall be built is the 1927 revised State Highway System. This system was the product of compromise, trading and all the other familiar political devices. The Highway Engineer had proposed a plan based on long and careful engineering, fiscal and planning studies. The Highway Commission materially revised his program. The Legislature then proceeded to manhandle the entire plan. It added and dropped mileages to suit local interests, without seeking the advice of the Highway Engineer or Highway Commission. The system finally adopted by the Legislature placed a

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[53] See *pp. 350* to *355* for a detailed account of the evolution of the 1927 system and the plans respectively proposed by the Highway Engineer, Highway Commission and Legislature, and *p. 356* for a criticism of legislative designation of routes.

tremendous financial burden on the State. Its total cost was over $300,000,000, or about $114,000,000 more than the program recommended by the Commission.

The 1927 system failed to incorporate 34.3 miles of the old 1917 system. This mileage, therefore, is not officially a part of the State system, although the Department maintains these roads every year. It is recommended that the Legislature definitely declare its policy with respect to these routes, now ghost members of the system.

The cost of the 1927 system was increased to a considerable extent because of the very broad power given the State Highway Commission to lay out "routes in continuance of, connecting with, or in addition to the routes" specified. The Commission proceeded to lay out and construct a connecting link between Routes 1 and 25. This link, never mentioned in the 1927 system, included the world-famous Pulaski Skyway at a level of 135 feet above the rivers and territory which it spanned. The project cost approximately $20,000,000. The general public had no notice of this addition to the 1927 system, and none was given the Legislature.

The Legislature has continued to designate the location of State routes during the past decade. The Highway Department has not been consulted as to whether such routes are needed or whether they are the best and most economical routes. As long as the Legislature insists upon deciding where State Highways shall be built, real highway planning becomes an impossibilty. Under this system, the total highway needs of the State cannot be considered as a rounded whole. The opportunity of "log-rolling" is always present, and the need for a particular highway is determined, not so much on the basis of engineering and planning features, as on sectional interests.

The highway authority rather than the Legislature should determine the location of highway routes. Such determination should be based upon a comprehensive and detailed study of all data and factors relating to the subject, and should be made only after a full and public hearing held by the Highway Commissioner. The control of the Legislature lies in its power to appropriate funds for construction purposes and not in attempting to decide highly technical questions like the location of routes.

B. *Highway Planning.*[54]

Leaders in the field of highway administration insist on the need for the maintenance of a reasonable continuity of policy and method in highway work. An organization must, of course, have a program, expressed in a set of policies which should be adhered to with only such changes as are necessary to meet new and unusual circumstances. Particularly should this be true of a governmental agency dealing with highways, where millions of dollars are spent annually in carrying out permanent improvements that ought to bear a precise relationship to social needs and demands.

Highway planning has become a very important feature of State highway work throughout the nation during the last several years. The Federal Government is largely responsible for this desirable development through the Public Roads Administration which has been most active in establishing highway planning surveys in every State. In New Jersey, the work of the State-Wide Highway Planning Survey is rapidly approaching completion.

At the present time the Highway Department has no comprehensive, long-range plan. It never has had one. Its programs are on a year-to-year basis, and are formulated annually as the time approaches for submitting the schedule of estimated revenues and road program to the Governor. The Highway Commissioner and Highway Engineer admit that there is no plan looking beyond the next twelve months. Although the man-power and technical ability to carry out a continuing highway planning survey has been present in the Department, the will to do so has not.

The State Planning Board is charged with the duty of preparing and perfecting a master plan for the physical development of the State, including highways and bridges. Although the Highway Commissioner is a member of that Board he has attended only a few meetings since 1935, and there is no evidence of an active cooperation on the part of

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[54] See *pp. 363* to *365* for a detailed description of the State-Wide Highway Planning Survey's work and the products that will be obtained from its operations; *pp. 366* to *370* for the Department's negative attitude toward highway planning in the past and its lack of any plan; *p. 360* for a schedule of needed improvements to the legislated system; and *pp. 373* to *376* for the manner in which the annual highway program is set up and a criticism of the method, and construction figures during the period of the Highway Commissioner's term in office.

the Highway Department in the work of this important body. In general, the Department has in the past shown indifference toward a broad planning of highway needs on a long-range basis. There can be no question that the responsible personnel of the Department could work far more effectively if a comprehensive highway plan were laid down.

It is recommended, therefore, that a Highway Planning Bureau be set up under the chief administration officer in the proposed reorganization of the Department. It will carry on the work of the State-wide Highway Planning Survey in expanded form as a continuing program of the Department. In this way the vast amount of information already gathered will be kept currently complete, and new and special problems will be studied from time to time.

The principal function of the Bureau, however, will be to analyze and interpret its collected information in order to provide Department authorities with sound factual bases in making decisions regarding policies and operations. The Bureau will, of course, cooperate very closely with the engineers of the Department. Its objective will be to achieve the progressive improvement of the State Highway System to a point where it will always be adequate to the current demands of traffic and the needs of the population.

There should be an immediate and complete review made of the legislated State Highway System for the purpose of sound revision and modernization. The Department itself has a certain amount of information pertinent to such a review. The very large volume of significant data developed by the State-Wide Highway Planning Survey will be of the greatest help in re-evaluating the system. It has been noted that a number of routes will never, and should never, be built. Others are in need of improvement. The most recent analysis made by the Department of needed improvements on the legislated State Highway System shows that 1,263 miles are in need of improvement at an estimated cost of $347,930,000. This equals the amount spent by New Jersey on State highway construction from the time the Department was created in 1917 to the end of 1941.

The main problem facing the Highway Department today is the development of a long-term program of State Highway construction. It is recommended that a highway planning program be undertaken

and pursued with all possible vigor. The program will be based upon a careful study of the existing highway systems of the State, highway needs, and funds available. It will consider such matters as the present and probable future earning capacity of each road, potential economies in the cost of vehicle operation, safety factors, traffic movement, and the economic, recreational, social, aesthetic and educational advantages to be derived. The order, type and extent of the improvements should depend upon a balancing of these factors.

Improvements would be planned to provide the type, kind and dimension of facilities necessary for safe and convenient use by different volumes and kinds of traffic. They should be programmed in such a way as to make up for existing deficiencies and to meet the needs of estimated future traffic.

Since the rate and extent of improvement depends on the amount of funds available for the purpose, thorough investigation is required of the basis of highway support, the source and disposition of revenues, and the estimated income. This involves consideration of the different types of highway taxes, the application of revenues to various classification of roadways, and the resulting balance between payments and benefits for different kinds of highway taxpayers.

It is clear that there will be little highway construction during the present war period. Highway work will be confined to maintaining the existing system. New construction will be limited to that which is needed in connection with the war program or recognized as urgently necessary. It is recommended that if the reduction in highway construction at this time produces substantial uncommitted surpluses of funds, such funds should be built up into a reserve to meet the requirements of carefully planned post-war highway construction. One important manner in which this may be done is to make right-of-way purchases along important routes in anticipation of later construction.

With the sharp decline in highway construction during the prosecution of the war effort, the Department finds itself in a position, for the first time since it was created in 1917, with sufficient time to re-evaluate the entire highway program. Time and men are now available to study the problem from every possible angle and to complete a first-class program of highway planning. The main plan

should be prepared and perfected now. Once laid down, it will be a relatively simple matter to keep it up to date so that there will always be a long-term comprehensive plan for the highway authorities to carry out.

It is anticipated that the Highway Planning Bureau will cooperate to the fullest extent with the State Planning Board and with county, municipal and regional planning boards for the purpose of achieving a maximum orderly and coordinated physical development of the State and its subdivisions.

The manner in which the annual highway program is put together points up the importance of a long-range highway plan. Some of the projects selected by the Commissioner for inclusion in the program undoubtedly represent those considered most urgent by the Construction Engineer and his staff. Most of them, however, are the result of local pressures. There is more than a suspicion that considerations other than the immediate need for certain improvements brought about the selection of many of the projects included in the annual highway programs of recent years. The concentration of highway construction in the home counties of the Highway Engineer and Highway Commissioner when there was a large volume of needed improvement in other counties shows that until the Department begins to operate under a considered plan the annual road programs will continue to reflect decisions arrived at on other than sound planning principles.

Without such a plan there can be no real direction to the highway program. The Department needs a plan for its own guidance. The Governor and the Legislature ought to have the benefit of one. Under the present system they have no standard by which to judge whether the annual highway program should be approved or rejected in whole or in part. As it is, they must depend largely upon the recommendations of the Highway Commissioner.

C. *Location of Routes.*[55]

The policy and practice of the Department in the location of roads has generally been of the highest order. New Jersey has been

[55] See *pp. 383* to *384* for some outstanding examples of road location.

a pioneer among the States in this aspect of highway work. The criticism that roads have been located with little regard to expense is not warranted. With few, if any, exceptions decisions regarding the routes to be followed have reflected a careful study of the advantages to be gained and the eventual savings to highway users.

Department engineers are to be commended on the foresight they have shown in establishing the lines of the main routes. Especially is this true of the location of highways in the built-up sections of the State. A great deal remains to be done to facilitate the flow of traffic in the metropolitan counties. The Department seems to have lost the momentum it had ten years ago. If cost is the deterring factor, it may be pointed out that each passing year increases the amount which eventually will have to be spent for this work.

D. *Design.*[56]

Imagination, resourcefulness and outstanding engineering ability have gone into the design of the State roads. This, as much as anything else, has raised New Jersey's highway system to a preeminent position among the highway systems of the world. Constant study and experimentation have achieved this result. Design features used in New Jersey have been imitated and adapted wherever roads are built.

The Department has kept its construction standards high. The primary demand has been that the roads be durable and strong. New Jersey has used reinforced concrete almost exclusively in the building of her State Highway System. Nine and 10-inch concrete pavement, of uniform thickness on the entire cross-section, with single and often double reinforcement, is the standard. This practice has been criticized as unnecessarily expensive, the point being made that other States have laid 6 to 8-inch concrete on many of their roads. The advisability of adopting this standard should be considered in planning future roads that are not expected to carry the heavy flow of traffic found on through highways.

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[56] See *pp. 387, 388* and *389,* respectively, for the figures on clear sight distance, curvature and grades; *pp. 389* to *392* for a discussion of the present program of road-widening and dualization; *pp. 393* to *395* for an account of the traffic circle policy of the Department; *pp. 397* to *401* for a discussion of the grade crossing program, and *p. 406* for statistics on the condition and clear width of State highway bridges.

Proper drainage is a feature of all roads on the State system. The care shown by the highway engineers in making adequate provision in this regard has added years to the life of the improvements.

On the other hand, little attention was paid to the important problem of subgrade until recent years. Although recognized authorities regard the highways of New Jersey as the equal of any in the country and among the very finest anywhere, they consider that the general program has suffered because of existing subgrades.

Considerations of safety have dictated the Department's insistence upon clear sight distances, minimum horizontal curvature and minimum grades. The figures for these features of design go far in supporting the claim made for the State system as being one of the safest in existence. Road-widening has featured the Department's program during recent years. The dual highway has become a favored design on highways carrying a heavy volume of traffic. The State highway engineers have developed the revolutionary method of dualizing existing highways through slab-moving operations. For the time being this method has resulted in considerable savings. Whether there will be an ultimate saving depends upon what effect the manipulation of the pavements will have upon their durability. The Department has likewise pioneered the development of the reflecting curb which has made for much safer driving.

The engineers of the Department have done outstanding work in reducing or eliminating the delay and danger attending the movement of traffic at highway intersections at grade, by the use of traffic circles, "cloverleafs" and highway separations. Some of the traffic circles are now unsuited for the volume and speed of the traffic using them. The Department has perhaps gone too far in the use of this design; traffic circles have been built in locations where it is felt they were not warranted. A more conservative policy is indicated.

Emphasis in recent years has been on grade separations of intersecting highways. Grade separations can be justified where the return in economies, convenience and safety exceeds the cost of the improvement. This is true mostly in densly populated areas where traffic is heavy and the benefits and burdens widely distributed.

The policy of keeping the main highways free from railroad crossings has been pursued with vigor. In consequence, the New Jersey system is exceptionally free from these dangerous intersections. A good part of the grade crossing program has been financed by the Federal Government since 1935 through grants-in-aid. Most of this money has gone into projects off the State system in recent years.

In designing bridges the policy of the Department has been to give due consideration to the beauty of the structure as well as its safety, utility and permanence. This has been accomplished without any noticeable increase in cost. The success of this effort has been recognized nationally and internationally. Many awards testify to New Jersey's preeminence in the field of bridge design and construction. The bridges on the State system are in excellent condition. An unusually large proportion of the total number of bridges are over 27 feet in clear width.

E. *Contracts.*[57]

Specifications used by the Department are such that the structural integrity of the completed project is assured if the specifications are followed. The general specifications have been revised from time to time. It may be said generally that these specifications represent the best practice in the field of highway engineering. New Jersey specifications have long ranked among the finest in the country. The most recent revision was that made in 1941. The head of the Laboratory Division and his chief assistants, who would ordinarily and logically be the persons consulted, were not given the opportunity of thoroughly reviewing the specifications before they became effective. It is recommended that in the future any proposed change in specifications be taken up in conference with established highway contractors in order to obtain their views and criticisms. The specifications should also be reviewed by the head of the proposed Research and Testing Bureau, who will consult with the engineers of the Construction, Maintenance and other Bureaus affected. New specifications should, of course, be approved by the Highway Commissioner before becoming effective, as at present.

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[57] *Pp. 407* to *418* deal with the entire subject of specifications, and the letting and administration of contracts for construction work.

The specifications used in connection with construction contracts are drawn so that fair and reasonable competition is encouraged. The care with which specifications are prepared undoubtedly has resulted in the Department receiving lower bids than would otherwise be the case.

The suggestion has been made that somewhat keener bidding would be encouraged if the construction contract fixed a maximum percentage of increase or decrease that might be made by the Department in the estimated or bid quantities without adjusting the unit prices. Generally, public works contracts use from ten to twenty per cent. as the maximum variation.

Neither the construction contract nor the Department specifications contain any provision for the arbitration of contractors' claims. Such provisions are contained in the contracts of other jurisdictions. They have been found good for all concerned and give the contractor a feeling of security. It is recommended that the Legislature authorize the Department to include an arbitration clause in highway contracts.

Although the engineers of the Construction Division are unusually accurate in most details connected with construction contracts, it would appear that their cost estimates in many cases exceed the contract price as well as the final adjusted contract price. The cause for this is not clear.

The general opinion is that bids on construction contracts have almost always been very favorable, especially during the recent depression years when competition among contractors was unusually keen. Because of the prequalification requirements, the Department has had practically no trouble with contractors getting into difficulties because their bids were too low to allow of a profit.

The Department has had to resort to the enforcement of the contractor's bond in relatively few cases because of the care with which the engineering forces administer and inspect the contract. Materials and workmanship are rigidly inspected, with the result that the roads and bridges built under the supervision of the Construction Division are of an unusually high type, both from the point of view of durability and appearance. The highways of New Jersey show every indication of lasting well beyond the normal life of such improvements.

If reconstruction becomes necessary at an earlier date, it will be because the road or bridge is no longer adequate in the face of traffic conditions encountered or the development of the area.

F. *Construction Costs.*[58]

Engineering and inspection costs on construction work during the past decade have averaged almost fifteen per cent. The average cost under the Highway Commissioner has been almost two per cent. more than it was under the Highway Commission during the years 1932 to 1934 inclusive. Some of the increased overhead may be explained by the greater amount of work required in connection with the design and construction of the modern type of road. The lack of any long-range construction plan may also be a partial explanation. Without such a plan, the Construction Division forces find that a project which was ready for execution is not on the annual approval program. Surveys, plans and estimates are sent back to the files. Some of the work has to be done over several times before the project is actually carried out. This needlessly wasteful situation could be eliminated through a highway planning program.

Engineering and inspection costs have mounted steadily, and in no direct proportion to the amount of construction work in progress or the dollar value of the work actually performed. This indicates that little attempt was made to reduce costs to a minimum whenever possible. It is recommended that a study be undertaken at once into the factors that have made for the fifteen per cent. average overhead cost and the manner in which this figure may be reduced materially.

A comparison of construction costs for New Jersey roads with those of other States is impractical and unfair unless a detailed analysis is made of, and proper adjustment allowed for necessary differences in design or construction features, costs of labor and materials, climatic conditions and a multitude of other factors. The latest figures prepared by the Department show that the general average cost (exclusive of bridges and rights-of-way) of a representative single highway is $61,000 per mile, and for a representative dual highway, $126,700.

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[58] See *p. 420* for statistics on engineering and inspection costs, and *p. 421* for those on construction work in progress; *pp. 422* and *423* for a criticism of the amount of the overhead cost; and *pp. 423* to *425* for a discussion of representative road construction costs.

This does not include highways in the metropolitan area, express highways, or those presenting unusual conditions.

The average cost per mile of road in New Jersey is much higher than in most States. This is because of the higher cost of right-of-way acquisitions, due to the relatively high degree or urbanization in this State, and the modern standards of design followed in the construction of the main system. No comparison has been made of the cost per square yard of paving or cubic yard of concrete. In all probability, this cost would be about the same as elsewhere. The increased cost per mile is almost entirely due to the features mentioned. Aside from prices paid for right-of-way acquisitions and excessive overhead construction costs, it is felt that New Jersey is receiving full value for the money spent on its highway system.

G. *W.P.A. Program.*[59]

The W.P.A. road program was inaugurated early in 1938 as one means of relieving the unemployment problem. Three large programs have been available since that time. Total grants for all types of projects on the W.P.A. program amounted to $49,661,399 as of the close of 1941. Projects completed or operating amounted to $47,679,180 of this sum. The participation by the State as sponsor on these projects has been 28.5%, the figure in 1940 being 20.4%, the lowest for any year of operation. The whole W.P.A. program is rapidly decreasing, the employment figures clearly showing the marked downward trend. The basis for the program has changed, the emphasis now being on defense projects, where the Federal Government utilizes a great deal of labor-saving machinery.

Just how economical W.P.A. projects have proved to be cannot be estimated, especially where the so-called "Primary" projects handled by the Construction Division are concerned. Considerable savings to the State are claimed for this work. The greater advantage was probably gained out of the "Betterment" projects supervised by the Maintenance Division, and the "County" and "Municipal" projects off the main system.

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[59] See *pp. 426* to *430* for the details of the W. P. A. road program; *pp. 469* to *472* for W. P. A. projects handled by the Maintenance Division, and *pp. 523* and *524* for the extent of the program for counties and municipalities.

H. *Federal Aid.*[60]

New Jersey has received a total of over $53,000,000 in Federal grants-in-aid in the period from 1917 to 1941, inclusive, of which more than $40,000,000 was granted since 1931. The Federal Aid program has been of great value to the State. Over 870 miles of highways, 82 stream bridges of over 20-foot span, 27 highway grade separations, the elimination of 59 railroad grade crossings which necessitated the construction of new structures and approaches, and the reconstruction of 26 existing railroad grade separation structures which were inadequate for present-day traffic, were constructed with Federal funds. Among other things, the Federal Aid program made possible the valuable State-Wide Highway Planning Survey, gave impetus to a program of roadside improvement and landscape development, and has encouraged the building up of a sound secondary road system. Municipalities have not taken full advantage of the secondary road program; the requirement that they match the Federal funds has apparently been a barrier to complete cooperation. Every effort should be made to encourage them to use up the available balance of Federal Aid funds. There are roads on which this money could be used to real advantage.

The Department has enjoyed the confidence and full cooperation of the Federal officials in carrying out the regular, secondary and grade crossing programs. Working relations have been smooth despite the many technical requirements surrounding the submission and carrying out of projects. The quality of the final product achieved under the direction of Department engineers has received high commendation.

Maintenance Division

A. *Highway Encroachments.*[61]

Highway encroachments have long been a problem to the Maintenance Division because of the lack of effective legislation to prevent their creation or to abate them expeditiously once they are established.

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[60] See *pp. 177* to *180* for a full account of Federal grants-in-aid; *p. 431* for the Federal Aid Highway System in New Jersey; *pp. 433* and *434* for the use of Federal Aid funds in landscaping and beautification work; and *pp. 436* and *437* for details concerning the Federal Aid secondary system and grade crossing program in New Jersey.

[61] See *pp. 464* to *466*.

Despite repeated recommendations by the head of the Division, the Legislature has done nothing about passing the necessary laws. It is recommended that legislation be enacted which will give the Department a more effective and quicker method of suppressing encroachments before they are fully established, or of removing them where they already exist. The presently available legal remedies are entirely too cumbersome and slow to be of real use. The work of monumenting the rights-of-way on the State system should be pushed to an early conclusion in order to help the Maintenance Division check possible encroachments.

B. *Roadside Improvement.*[62]

The importance of roadside improvement has been realized during the past few years. Landscaping has a definite economic as well as an aesthetic value, especially in the prevention of soil erosion. The sharp increase in landscaping work during the last four years has been largely due to the increased mileage of dual highways built by the Construction Division and the encouragement given to roadside improvement and landscape development by the Federal Government under the Federal Aid program.

New Jersey is among the leading States in the scope and emphasis placed on roadside improvement, and ranks in the East with Connecticut, New York and Virginia in this aspect of highway work. The John Davison Rockefeller Memorial Highway (Route 40) is the finest example of roadside improvement in the State and has been favorably commented on by experts.

C. *Snow Removal.*[63]

The annual cost of the snow removal program naturally depends upon the weather. In recent years increasingly large sums have been spent on controlling ice conditions on the roads.

Costs could be reduced materially if the Department were to buy the additional snow fence which it needs. Due to an inadequate

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[62] See *p. 468* for the scope of the landscaping operations of the Maintenance Division.

[63] See *pp. 102* to *104* for the details of the snow removal organization; *pp. 472* to *475* for the work of the Maintenance Division, and *pp. 585* to *587* for the role played by the Equipment Division in these operations.

quantity of fence, the highway forces have had to deal with snow drifts. These drifts not only interfere with traffic but call for the use of a heavier type of equipment and sometimes require hand labor.

The Department has practiced false economy in trying to carry on some of its snow removal operations under present day conditions with 1917 army trucks. If they were replaced and a certain amount of additional modern equipment purchased, as already indicated, real economies could be effected. The need of renting equipment would be largely obviated. Modern equipment could do the job faster and better. Fewer men would be required. The need for modern equipment and additional snow fence is particularly important in view of the war effort. The roads must be kept clear so that vehicles serving defense industries as well as those used by the armed forces may move over the highways rapidly and safely.

The fine coordination between the Maintenance and Equipment Divisions has made possible the efficient conduct of the snow removal operations of the Department in recent years. A large measure of personal sacrifice on the part of the staffs of both Divisions enters into the careful setting up and carrying out of the program.

D. *Maintenance Program and Costs.*[64]

As the State Highway System grows older the problem of maintenance will assume increasing importance. Extraordinary repairs—the resurfacing, rebuilding and heavy patching of the main pavement, the rebuilding of paved shoulders and drains, new ditching and the replacing of guard rails and fences—will be a much greater problem than today. Future plans must take careful account of the expanded program which lies ahead, particularly in developing a coordinated field organization for maintenance work.

An analysis of maintenance expenditures for the roads on the main system indicates that the average costs are well in line with what might be expected, in view of the volume of traffic, weather, labor and material costs, and the geography of the System. The

[64] See *p. 479* for a comprehensive summary of maintenance expenditures; *pp. 478, 480* and *481* for a criticism of the increase in the maintenance labor payroll, and *p. 482* for annual maintenance costs per mile of road.

condition of roads is good, and every effort is being made to keep them safe and open for traffic. The snow and ice removal program is especially well-organized; landscape work is now in full stride; and the regular maintenance programs are set up so as to protect the large investment made by the State.

The Department calculates maintenance costs on a per mile basis. This is no longer a proper or an accurate method. The system under maintenance should be reduced to square yards if cost figures are to be exact and appropriate for comparison purposes.

Decreases in maintenance costs have been registered for the second year in succession after a rise continuing over a period of several years. As has already been pointed out, further decreases in costs could undoubtedly be effected by the elimination of personal and political considerations in the employment of maintenance laborers.[65]

State Aid Projects Division

A. *A Secondary Road System.*

New Jersey has provided grants in aid for county and municipal road improvement for half a century. Starting with a modest contribution of $75,000, the State Aid program now falls just short of $10,000,000 annually. In 1941 grants to counties and municipalities for road purposes amounted to practically one-third of all the expenditures and commitments administered by the Highway Department.

The State Legislature has increased the funds available to counties and municipalities for road purposes and broadened the State Aid program again and again, but it has failed to reexamine the basis of that program in its relation to the highway policies and needs of the State as a whole. The need for such a comprehensive reexamination has been suggested on many occasions but scant attention was given any of these proposals.

The amount of State Aid to counties, known as Motor Vehicle Aid (MVA), has increased over the years until it now totals $6,735,000 annually. State Aid to municipalities, known as Township and Bor-

[65] See *p. 614* of this summary.

ough Aid (T & BA), has likewise increased, and now amounts annually to $2,625,000 for construction and Dirt Road Fund purposes and $525,000 for maintenance needs.[66] Counties and municipalities generally have come to look upon State Aid as a political matter. The pressure is constantly for more funds that may be used for a greater variety of purposes. A detailed examination of the entire program leads to the conclusion that the present system of State Aid does not bear any precise relation to the needs of counties and municipalities, nor does it result in the most effective use of the funds.

Six million dollars is distributed annually to counties under a formula which takes into account the population, road mileage and area of each county in relation to the total population, county road mileage and area of all the counties. Although this formula may have been equitable at some past date it now constitutes a very rough approximation to the relative needs of these agencies. The formula is generally considered as prejudicial to the metropolitan counties. Despite their long and continued objection to it, this method of distribution has remained on the statute books because of the influence of the rural counties.

Counties spend more than 50% of the MVA funds on the maintenance and extraordinary repair of their roads, half of which are of gravel. Less than 10% is used for construction or reconstruction. Instead of employing MVA funds for intermediate and high type surfaces, counties are spending almost a quarter of the State Aid money in paying principal and interest on their road and bridge bonds. Essentially, this means that the Legislature, once interested in building up a durable secondary road system, has through amendment of the original act lent itself to helping counties keep their tax rates down.[67]

In the case of T & BA funds, almost a million dollars (the Dirt Road Fund) annually goes into maintaining roads of low type surface. This money is handed over to the county authorities who distribute

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[66] See the schedules on *pp. 487* and *490* for the increases in State Aid to counties and the comparison of these increases with the smaller increase in county road mileage on *p. 491*. See also, *p. 501* for the schedule of increases in State Aid to municipalities.

[67] See Schedule 9 on *p. 500*; and *pp. 490* and *491* for statistics relating to road construction with MVA funds.

the funds as their discretion dictates. The State has little or no control. The Highway Department, possessing no power under the statute, is practically limited to being the agency for handing the money over to the Boards of Freeholders.[68] The balance of the $2,625,000 of T & BA construction funds is used for construction purposes. The fact that more than half of the township and borough roads are still unimproved shows that the program of building up the rural mileage is proceeding at a slow pace.[69] Although the amount of State Aid available for maintaining and repairing T & BA roads has only recently been increased from $210,000 to $525,000, the latter sum is not enough to do the job.[70]

The Projects Division has done the best it could under the circumstances in carefully administering the State Aid program, seeking to get the maximum benefit out of the funds annually distributed to the counties and municipalities. Its task has been a difficult one because of the lack of adequate and effective authority under the statutes to follow all of the $9,885,000 into the secondary and local road projects that are carried out in every section of the State. There is some question, too, as to whether the inspection staff is large enough for the many projects involved in the State Aid program annually.

The present trend in highway administration is toward larger units of control. Highway authorities are agreed that smaller units of government are unable to cope successfully with the technical, economic and engineering problems that arise in the construction of highways suitable for present-day traffic. The same may be said for most counties where important through routes are concerned. The entire question resolves itself down to getting the best results from the huge sums spent annually. The desire of local officials to hold on to the authority which they have had over road work since colonial days is understandable. Even more clear is their desire to control the spending of as much money as they can get through their legislators. The political considerations which color their thinking need hardly be stressed.

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[68] See *pp. 517* and *518* for an account of the Dirt Road Fund.

[69] See *p. 505* for the mileage of roads built annually with T & BA funds; and see the schedules on *pp. 526* and *527*.

[70] See the schedule of T & BA annual maintenance programs on *p. 524*, and the critical analysis on *p. 525*.

It is recommended that a comprehensive study be instituted and diligently pursued to determine the feasibility of taking over certain county and municipal roads on which State Aid funds are being spent, in order to establish a State-controlled system of secondary roads. The study will develop the method by which the operation of the secondary system would be integrated with the present State highway organization and program.[71] The Federal Aid secondary system can well serve as a starting point for setting up the new system. It would probably be inadvisable to take over all the roads at one time. The ability of the available highway personnel and budget to absorb the added secondary program must always be considered. The study would also determine what township, borough and other local roads would be transferred to the counties, and the manner in which this will be accomplished.

Pending the carrying out of this study, there should be an immediate examination made of the present system of grants-in-aid to counties and municipalities. The amount of State Aid and the pattern of its distribution is the end result of long continued pressure from the beneficiaries of the program. Every indication points to the fact that the distribution does not always meet actual needs, nor does it always obtain the desired results.

B. *Force Account Work.*[72]

The policy of the Department is to allow municipalities to do work under the State Aid program by force account where the amount involved is less than $2,000. The Department has studied the comparative advantages and costs of work done by force account and by contract. It is generally agreed that the contract system is the more advantageous method, except in the case of projects involving a relatively small expenditure of funds or those which are of an experimental nature.

The trend of expert opinion is that the force account system has proved satisfactory in cases where the county or municipality has been

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[71] See *p. 530* for other States that have established a secondary road system, and *pp. 530* to *533* for an account of previous recommendations of a secondary system for New Jersey.

[72] See *pp. 510* to *512* for a discussion of the relative advantages of work done by force account and by contract.

building a single type of roadway surface year after year, and especially when the amount of new construction undertaken each year is too small to allow the advantages of the contract method to be realized. Routine maintenance work and miscellaneous construction offer the best fields for the force account method. In almost all other cases the consensus is that the contract system is better. Although small jobs done by force account show a savings, and have therefore served to encourage the continuance of that method, similar savings have not been realized on any considerable volume of work.

C. ***Lapsing of State Aid Funds.***

Under the present system, State Aid allocations to counties and municipalities do not lapse, but carry over from year to year. Federal Aid funds lapse at the end of the second fiscal year after the appropriation. The same arrangement should control under the State Aid program as long as it remains in force. If the separate State Highway Fund is abolished, the lapsed State Aid balances will be returned to the general State treasury.

D. ***Road Institutes.***

The Department should extend its administration of State Aid work to include a broad program of education for those in charge of local road building. This sort of program has many phases, including advice to counties and municipalities on the technical aspects of highway construction and maintenance, and the economic and financial problems connected with highway work. Benefits flowing from a properly conducted program would be better highway planning, more uniform and desirable standards of design, construction and maintenance, the pooling of information with reference to highway methods, and a better correlation of all aspects of highway work. The holding of regular road institutes throughout the State, to be attended by local road officials, is recommended.

Electrical Division

A. *Highway Safety Lighting Program.*[73]

The number of fatal accidents and fatalities on the State system has been reduced materially as a result of the highway safety lighting program initiated by the Highway Commissioner in 1937. The most notable reduction came in 1938. Since then the number of fatal accidents and persons killed at night has increased. The highway safety lighting program has not eliminated the subjective element represented by the driver himself. Education of the driver in the ways of safety seems more necessary than ever before, especially in view of the higher speeds at which vehicles travel and the increased volume of traffic. Everything is being done to eliminate hazards on the road itself.

An important aspect of the safety program is the reimbursement made to municipalities and counties willing to share in the maintenance of highway safety lighting on the State system wherever it can be justified. At the close of 1941, there were 194 municipalities and 20 counties who had negotiated reimbursement agreements with the State, the agreements covering 6,383 lighting units in the case of the former and 1,560 units in the case of the latter. The State maintained safety lighting at 266 locations, consisting of 4,927 units.

B. *Traffic Counts.*

The necessity of continuing some of the traffic counts that have been more or less of a permanent fixture in the program of the Electrical Division, is open to question. So is the number of traffic enumerators employed by the Division, particularly during the summer months. Enumerators have been carried on the payrolls under the designation of "laborers." As in the case of the Maintenance Division this classification was used in order to avoid the full impact of the Civil Service law, rules and regulations. Many enumerators found employment through personal or political recommendation. Most of the work of traffic enumeration has been completed, except for brief rechecks of certain locations from time to time, and perhaps, a more per-

[73] See *pp. 537* to *539* for a history of this program, and *pp. 539* to *544* for its operation.

manent type of counting station at certain vital points on the State Highway System.

It is recommended that the traffic safety work of the Division be reduced immediately to the essential and practical minimum which the program actually requires. This will result in the elimination of an estimated 90 to 100 traffic enumerators and investigators. Whenever circumstances require, it will be a simple matter to expand the personnel needed for traffic counting at a particular location or locations, or for special accident investigation work.[74]

Laboratory Division

The Laboratory Division was one of the first in the nation to adopt a research program that went beyond the mere testing of materials used in road building and maintenance. It not only tests materials at their source, but also standardizes much of the equipment employed in highway work, establishes formulas for bituminous and concrete mixes, makes sample tests of the materials in the course of construction and maintenance operations, and checks the quality of the final product. The personnel available for this work is generally sufficient. However, the staff is taxed when construction and maintenance work on State highways and State Aid roads is heavy. The Division could make good use of a few more chemists and material inspectors for routine inspection and testing work at the height of the season. The laboratory equipment available to the Division is adequate for the needs of its present limited program. When the proposed Research and Testing Bureau is established and an expanded research program adopted there will be a need for additional equipment and a somewhat larger staff.

Through patient experimentation, the Division gradually set up a high set of standards for the materials and methods used in constructing concrete pavements. The result has been a continuous improvement in the quality of New Jersey highways. Concrete has not only been made more uniform and workable, but denser and stronger. Peeling and scaling are practically eliminated under the present specifica-

[74] See *p. 553* for statistics on traffic counting and accident investigation personnel and costs.

tions. Surface finish and contour have been improved. Because of the work of the Laboratory Division, New Jersey's concrete roads are the finest in the country. Not only are they more durable but make for greater riding comfort, lower cost of vehicle operation, and a saving in construction costs.[75]

Because of the thoroughness of its inspection and testing methods, the Laboratory Division is able to maintain a strict control over the quality of materials used and the methods employed in road construction and maintenance. The excellence of its work is recognized throughout the country. A comprehensive system of recording the results of its inspections and tests, and of reporting them to the interested Divisions, contractors, and cooperating agencies, insures the maintenance of the standards set by the Division.

The personnel working in the Fernwood laboratory are well trained. However, the training given field men is not as thorough or continuous. New men should receive a complete course of training before being assigned to specific work in the field. They should also be brought back to headquarters for "refresher" courses from time to time, in view of the constantly changing practices in highway work. Aside from a multigraphed sheet of instructions, there is no complete manual of procedure for the use of the Division employees, or the Construction, Maintenance and State Aid Projects Division inspectors who coordinate with them.

There is a lack of central, coordinated research in the Department at the present time. A comprehensive research program has not been developed, and this despite the fact that certain Department officials have recognized the need for such a program for some time. The Department has been satisfied to let each Division carry on such studies as the official in charge deemed necessary.[76] In combination, the Divisions have barely scratched the surface of the host of research problems that should have received attention. Among these is the study of subsoils and soil stablization. This matter has but recently received attention, and then in a limited way only.

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[75] See *pp. 589* and *590* for some of the pioneer work done by the Laboratory Division in connection with obtaining a maximum strength concrete.

[76] See *p. 594* for some of the special studies being carried on in some of the Divisions.

Under the present circumstances there is a certain amount of overlapping in the research work of the Department, particularly in traffic counting. At the same time there are great gaps in what would be considered a desirable, rounded program. All research work should, therefore, be coordinated and centralized in the proposed Research and Testing Bureau. This Bureau will take over the functions now performed by the Laboratory Division and all other research work in the Department except that carried on by the proposed Highway Planning Bureau and the financial studies of the recommended Finance Bureau.

Regulation of Attorneys and Agents

The investigation into the affairs of the State Highway Department, particularly in connection with real estate acquisitions, indicates the need of regulating the activities of legislators and other persons where the business of the Department is concerned. It is, therefore, recommended that legislation be enacted providing that no member of the Legislature should during his term of office, and no officer or employee of the Highway Department should either during his employment or within two years thereafter, act as agent or attorney, either with or without compensation, with respect to the voluntary settlement of any claim against or the negotiation of any agreement or other transaction with, the Department, or intercede or participate in any such settlement or negotiation.

Although in the case of officers and employees of the Department, this recommendation may be accomplished by regulation or a required express agreement to that effect, a statute is considered the best means of achieving the desired end.

APPENDIX A

Executive Order No. 1

WHEREAS it was the intent of the Legislature when it created the office of Commissioner of Finance "to provide control by the Governor over state expenditures, to aid the several departments, boards, institutions, commissions, officers and other agencies of the state to exercise greater restraint in the spending of money available for their uses through legislative appropriation by the adoption of a system of allotments"; the ultimate purpose being "to provide complete legislative and executive control over every State expenditure * * *" and

WHEREAS experience has shown that the executive control intended by the statute can only be achieved when all spending agencies file work programs with the State Commissioner of Finance setting out the allotments requested by the spending agency quarterly and

WHEREAS all state departments, whether operating on a fiscal year beginning July 1st or on a fiscal year running concurrent with the calendar year, except the State Highway Department, have annually filed work programs, as provided by law, with the State Finance Commissioner and

WHEREAS the State Highway Department has appropriated to it each year a sum upwards of $50,000,000 and

WHEREAS the State Highway Department has continually refused to file a work program making impossible adequate executive control over the tremendous expenditures of said department and

WHEREAS it appears to my satisfaction that the appropriation of the State Highway Department is not being spent in the best interest of the State in that there is waste and extravagance in connection therewith,

NOW, THEREFORE, I, CHARLES EDISON Governor of the State of New Jersey, pursuant to the authority vested in me by law, order that further expenditures from appropriations to the State Highway Depart-

ment, contained in Chapter 141 of the Laws of 1941, more specifically described with the following account numbers R-8-A; R-8-B-C-E; R-8-D-R-8-F and R-8-I, and any and all unexpended balances and uncommitted sums in said accounts are hereby prohibited and enjoined until the following conditions have been fully performed:

(a) The State Highway Commissioner shall forthwith file with the State Commissioner of Finance fully detailed work programs setting out allotments requested by it by quarters commencing July 1, 1941, covering all unexpended balances and uncommitted funds; copies of monthly reports to the State Comptroller on the condition of State Highway accounts, monthly automobile records, and such other supplemental information as may be required by the State Commissioner of Finance;

(b) The State Highway Commissioner shall forthwith furnish to the Governor a detailed financial statement covering all funds of the State Highway Department, free or obligated, committed or uncommitted, showing in the case of committed or obligated funds, the project, date of commencement and completion, cost of labor and materials separately and in such itemized detail as to be readily understood;

(c) The State Highway Commissioner shall forthwith furnish to the Governor a detailed list of the monthly payroll of said department giving name, address, salary and nature of work of each employee by county for the following months: April, May, June, July, August, September, October, November, December of 1940, and it is further

ORDERED that pending full and complete compliance with the foregoing conditions to the satisfaction of the Governor, expenditures may be made from the accounts hereinbefore enumerated and necessary commitments and contracts made only upon the written approval of the State Commissioner of Finance, excepting, however, that in case of a catastrophe or an emergency resulting in damage to roads or bridges the Highway Commissioner may proceed as if this order had not been made provided said action does not involve an expenditure of more than $50,000, and it is further

ORDERED that this order shall become operative immediately when served upon the State Highway Commissioner, the State Comptroller and the State Purchasing Commissioner, and shall remain in full force and effect until modified, altered, or dissolved by me.

GIVEN under my hand and the Great Seal of the State of New Jersey, this twenty-fourth day of June, in the year of Our Lord one thousand nine hundred and forty-one, and in the Independence of the United States the one hundred and sixty-fifth.

CHARLES EDISON,
Governor.

ATTEST:

HARRY GILROY,
Secretary to the Governor.

Executive Order No. 2

I hereby, pursuant to the authority conferred upon me by law including, but not limited to, Chapter 16 of the Laws of 1941 approved March 15, 1941, appoint Roger Hinds, of South Orange, to examine and investigate the management of the affairs of the State Highway Department by the Highway Commissioner and the other officers and employees thereof, and to report to me, as Governor, his findings thereon; and I further direct that said Roger Hinds shall be assisted in said examination and investigation by such other persons as he shall select, to be approved and appointed by me; and I, hereby, request all State Departments, Boards, Bureaus and Commissions of the State, and the officers and employees thereof, to render their full cooperation in said examination and investigation.

GIVEN under my hand and the Great Seal of the State of New Jersey, this first day of July, in the year of Our Lord one thousand nine hundred and forty-one, and in the Independence of the United States the one hundred and sixty-fifth.

CHARLES EDISON
Governor.

ATTEST:

HARRY GILROY
Secretary to the Governor.

APPENDIX B

The New Jersey State Highway Department and the Courts[1]

The State Highway Department enjoys an almost complete immunity from the operation of the judicial process. It cannot be sued, either in contract or in tort, and the determinations of the Highway Commissioner are apparently not reviewable by *certiorari.* Thus, the relationship of the Department to the Courts raises serious problems in the administration of justice and warrants our pointing out generally the need for further study of this question with a view toward reform.

It has been stated judicially that the State Highway Commission, or the Commissioner, "is an *alter ego* of the State" and, therefore, immune from suit.[2] Recent decisions adhere to this principle and fail to offer any sound rationalization for the perpetuation of a rigid rule of governmental immunity.

The two reasons for the doctrine advanced in the case of *Strobel Steel Construction Co.* v. *State Highway Commission,*[3] are far from convincing. The Court reasoned, in the first place, that if a judgment is permitted against the Department "it is money of the State of New Jersey that would be used in payment." This would indicate that the doctrine is based upon an uncertain speculation concerning the effect of liability upon the State financially, and fails to meet the suggestion that the State, like anyone else, ought to bear the cost if found legally responsible. The Court reasoned, further, that a party suing the State in contract has no cause for complaint since "It knew when it entered into the contract, that in the event of a breach thereof, its remedy was an appeal to the legislature." This completely begs the question and the mere statement thereof seems sufficient to demonstrate its ineptness.

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[1] Contributed by a member of the staff of the Governor's Highway Examiner.

[2] *Strobel Steel Construction Co.* v. *State Highway Commission, 120 N. J. Law 298* (Court of Errors and Appeals, 1938). See also, *Empire Trust Co.* v. *Board of Commerce and Navigation of New Jersey, 124 N. J. Law 406* (Supreme Court, 1940); *Union Indemnity Co.* v. *State Highway Commission, 105 N. J. Law 656* (Court of Errors and Appeals, 1929); *De Santis* v. *D. L. & W. Ry. Co., 11 N. J. Mis. Rep. 22* (Supreme Court, 1920); *Curtis and Hill Gravel & Sand Co.* v. *State Highway Commission, 91 N. J. Eq. 421* (Chancery, 1920).

[3] *120 N. J. Law 298.*

The doctrine permitting the State to avoid responsibility is based on an historical fallacy[4] and has been severely criticised by students of public law.[5] As a matter of social policy, it is argued that the State should assume the same liability as is imposed on ordinary persons and corporations. The Research Department of the Kansas Legislative Counsel recently pointed out that "There appears to be a fundamental inconsistency in the State's imposing upon private business definite liability * * *, when government refuses to recognize the same principle in the conduct of its own affairs."[6] It has repeatedly been demonstrated that, as a matter of practical expediency, the device of legislative relief as the only available means of redress is a cumbersome procedure.

Though the principle of immunity has tenaciously lingered in the several States[7] and appears firmly "embedded" in the jurisprudence of New Jersey,[8] it has been repudiated in the place of its birth, England.[9] Recently the United States Supreme Court, recognizing "the present clime of opinion which has brought governmental immunity from suit into disfavor," has subjected to close scrutiny and limited operation "this exceptional freedom from legal responsibility."[10]

In addition to the general immunity from suit, the actions of the Highway Commissioner are not reviewable by *certiorari*. In *Strobel Steel Construction Co.* v. *Sterner*,[11] a contractor sought a writ of *cer-*

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[4] It is said to be derived from the political maxim, "The King can do no wrong." All this phrase means is, that if wrong be committed, legal responsibility does not attach. It is evident that the reasoning on which the argument is based is circuitous.

[5] See Borchard, *"Governmental Responsibility in Tort"* (1924), *34 Yale Law Journal 1, 129, 299;* Watkins, "The State as a Party Litigant" (1927), *John Hopkins University Studies in Historical and Political Science, Vol. XLV, No. 1.*

[6] *Claims Against the State,* Research Department, Kansas Legislative Council, Publication No. 106 (Nov. 1940).

[7] Annotation, *42 A. L. R. 1464,* shows the rule to have been reiterated by at least 40 State courts of final jurisdiction.

[8] *Empire Trust Co.* v. *Board of Commerce and Navigation of New Jersey,* footnote 1, *supra.*

[9] See generally, Robinson, *Public Authorities and Legal Liability* (London, 1925). *Cf.,* Laski, "The Responsibilty of the State in England" (1919), *32 Harvard Law Review 447.*

[10] *Keefer & Keefer* v. *R. F. C. 306 U. S. 381* (1939), opinion by Frankfurter, J.

[11] *125 N. J. Law 622* (Supreme Court, 1941).

tiorari to review the action of the Commissioner in disallowing a claim for extra work allegedly performed. In denying the writ the Court said (p. 623):

> "The defendant is an administrative officer of the State. *N. J. S. A. 27:1-1.* His action as such is not reviewable on *certiorari. 10 Amer. Jur. 523, et seq.* Nor was he, in reviewing the claim, acting as a special statutory tribunal. *N. J. S. A. 2:81-1.*"

Without attempting to champion the theory of complete judicial review of the determinations of administrative officers or commissioners, it is felt that the blanket immunity necessarily to be implied from the above decision is undesirable. The claimant should at least be afforded the opportunity of showing that the determination is an arbitrary one or unsupported by substantial evidence.

It is the recommendation of this report that further research into the field of governmental immunity be sponsored. While it is felt that the doctrine has no proper place in modern government, only after an extensive factual survey into its practical operation can the arguments for and against immunity be evaluated properly and the problem solved in a practical way. The results of such a study would constitute a valuable contribution to the administration of justice in New Jersey.

APPENDIX C

A Proposed Condemnation Act[1]

An Act concerning the acquisition of land or other property by the State Highway Commission, by agreement with owners or by condemnation proceedings.

BE IT ENACTED BY THE SENATE AND GENERAL ASSEMBLY OF THE STATE OF NEW JERSEY:

1. From and after the effective date of this Act, all lands and real estate, or interests therein that it may be necessary or desirable to acquire for the establishment, construction, improvement, maintenance, or use of any part of the State Highway System and approaches to State highways, or for any purpose or use incidental thereto, or of any road under the temporary or permanent jurisdiction of the State Highway Commission, shall be acquired in accordance with the provisions of this Act. The procedure herein prescribed shall be followed exclusively, any provisions in any other law to the contrary notwithstanding.

2. The State Highway Commission shall, as soon as practicable after the passing of this act, present to a Justice of the Supreme Court holding the circuit in or to a circuit court judge of the respective districts, a petition for the appointment of a board to be known as a "Right of Way Board" in each of the seven districts into which the State is to be divided for the purpose of this act. The first district shall comprise the counties of Bergen, Passaic and Morris; the second district shall comprise the counties of Hudson, Essex and Union; the third district shall comprise the counties of Sussex, Warren and Hunterdon, the fourth district shall comprise the counties of Somerset, Middlesex and Mercer; the fifth district shall comprise the counties of Monmouth, Ocean and Burlington; the sixth district shall comprise the counties of Camden, Gloucester and Salem; and the seventh district shall comprise the counties of Cumberland, Atlantic and Cape May.

3. There shall be appointed to said board, by said justice or judge, three reputable, fair, discreet and impartial freeholders, residents of the

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[1] Prepared by General H. L. Scott, Chairman of the New Jersey State Highway Commission, in 1931, as a substitute for Assembly Bill 202.

district and no more than one member from any one county, to serve to December 31st of each year following the date of appointment. Upon the expiration of the term of each member, he may be reappointed for the following year by a justice of the supreme court or judge of the circuit court upon formal request of the State Highway Commission, or another freeholder may be named in his place upon the presentation of a petition by the State Highway Commission to that effect. Within ten (10) days after appointment, the members of the Right of Way Board shall take and subscribe an oath or affirmation, faithfully and impartially to perform the duties prescribed by this act and, when so appointed and organized, shall have the power to administer oaths to witnesses and to compel the attendance of witnesses and the production of papers, documents and records by subpoena tested in the name of the circuit court judge and signed by a member of said board. Disobedience of such subpoena shall be certified to said justice or judge for such action as may appear to him advisable. Such board shall also have the power to regulate and control the conduct of its hearings. Each member shall receive not exceeding fifty dollars per day of each full day of not less than six hours devoted to the work, the same to be paid by the State Highway Commission as other bills are paid by said Commission. The State Highway Commission shall furnish or provide such technical, engineering, legal and clerical assistance as it may deem necessary or desirable or as the board may request. Any member of the board may be relieved of his duties by a supreme court justice or circuit court judge upon his request or upon recommendation of the State Highway Commission; a vacancy thus created may be filled in the same manner as appointments are made. Any report or award signed by a majority of the members of the board shall constitute the report or award of the board.

4. The State Highway Commission shall have the right to widen, straighten and regrade any State Highway and to acquire any lands or any rights therein by gift, devise, purchase or by condemnation, and to vacate any State Highway or any part thereof. The State Highway Commission shall have the right and power to enter upon and take property in advance of making compensation therefor in any case where it cannot acquire land or other property by agreement with the owner, whether by reason of disagreement as to price or the legal incapacity

or absence of the owner or his inability to convey valid title, or by reason of any other cause.

5. Where practicable and in all cases where agreements with the owners cannot be reached, when land is to be acquired for State Highways or related purposes, the State Highway Commission shall, at least sixty days before taking possession, adopt a resolution designating the location and width of right of way and directing the acquisition of the lands shown on the plan accompanying the resolution, and may, at its discretion, cause the land and premises to be examined and appraised by one or more licensed realtors and/or engineers, or other technical expert to be designated by said Highway Commission, possessing special training and knowledge of the value of comparable property. In determining just compensation to be paid, consideration shall be given to the following elements: Value of land or other property to be taken; the damages, if any, to the land remaining by reason of the taking; the purpose for which the land is to be taken; the special benefits, if any, conferred upon the remaining land by reason of the improvement; provided, however, that the allowance for such benefits shall in no event exceed the value of the land or other property taken and damages; when the land was acquired and whether the land was acquired by the owner, or a building was erected on the land to be acquired, subsequent to the adoption of the plan by the State Highway Commission, the notice to the owner in possession or the taking of possession by the State; the removal of buildings or other obstructions wholly or partly within the right of way and the relocation thereof on land remaining to the owner. In all cases where previous possession was taken by the State the value to be considered must be as of the time of taking possession, and where the removal of buildings or other obstructions are practicable and economical, such cost and resultant damage must be taken into consideration instead of the full value of the said buildings or improvements.

6. As soon as practicable, after the adoption of the resolution approving the plans for acquisition of the land required, the resolution and plans shall be filed in the county clerk's office in the court house in the county or counties where the land is located and public notice shall be given by posting signs conspicuously along the highway or by

publication and by written notice delivered to the owners or occupants of the property, at least twenty days before taking possession, of the intention of the State Highway Commission to take possession of the property and to make the improvement. The adoption of the resolution and the filing of the resolution and map and the recording thereof as lis pendens shall constitute a notice of the pendency of the proceedings to acquire the lands shown on the map and shall be good and sufficient notice to all owners and others interested, as well as subsequent purchasers, of the pendency of the proceedings.

7. The State Highway Commission shall file with the board of tax assessors in each municipality in the county affected by the improvement a copy of the map and of the resolution declaring the intention to make the improvement and said board of assessors shall not thereafter assess taxes against the lands shown on said map which are to be taken by the State Highway Commission in the name of the State, unless the State Highway Commission abandons the proceedings to acquire the lands or any parts thereof and so notifies, in writing, said board of assessors. Nothing in this section of this act shall affect the validity of taxes assessed for the current year in which the map and resolution are filed nor the collection of such taxes for that year, but properties required or taken for highway rights of way and/or shown on the map and in the resolution shall not be subject to sale for delinquent taxes, and the officials of the municipality in which the land may be located may be required to furnish a release to the State Highway Commission from all tax liens and assessments, which release is to cover that portion of the property to be taken by the State, upon tender of the proper proportion of the taxes or assessments.

8. The State Highway Commission shall, upon receiving a report of the result of the investigations and appraisals, and upon being satisfied as to the merits of each case, establish by resolution the fair and equitable amount to be paid for each parcel of land to be acquired, considering all the proper elements, and direct agreements to be reached in writing for the acquisition of the properties. Where agreements are reached at the prices designated, the purchase price with interest from the time of the delivery and taking possession of the property shall be paid within thirty days after delivery of deed, providing the title is

satisfactory. If the title is unsatisfactory, interest shall cease upon payment of the agreed amount into the Court of Chancery.

9. In all cases where agreements cannot be reached at the amounts designated by the State Highway Commission or where satisfactory title cannot be acquired, the State Highway Commission shall refer the matter or cause the same to be referred to the Right of Way Board of the district in which the land is located and request a hearing for both parties, which hearing shall be provided within sixty days from the date of the request by the State Highway Commission.

10. Upon receipt of notice of the time and place of hearing, it shall be the duty of the State Highway Commission to file with the Right of Way Board a copy of the resolution and map showing the improvement and showing all the properties on which agreements have not been reached with the date of possession, as well as the amounts agreed upon to be paid for the remaining properties on which agreements have been reached, together with a description of each parcel of land involved on which agreements have not been reached with such additional rights and interests as it may be necessary to acquire, together with the names and addresses, if known, of the owner or owners and of all other persons or corporations having an interest therein. It shall be the further duty of the State Highway Commission to serve notice, at least fifteen days prior to the hearing, either personally or by leaving at the residence, if known, or where the residence is unknown or is out of the State, by at least one publication in a newspaper published in the county wherein the lands are located, to the effect that the Right of Way Board will meet at the time and place specified to hear testimony as to the amount to be awarded for the taking of the lands and premises and interests therein. The proof of service of such notice shall be produced at the hearing. The notice herein described shall be valid and effectual to bind all parties interested in the lands and premises.

11. The Right of Way Board shall view the ground and at the time and place fixed and at such other time and place as may be fixed at adjournment shall examine the briefs that may be submitted, shall hear the testimony for the owner and for the State and shall make its award in the form of a report for each parcel of land. Said board shall consider the testimony offered and shall award fair and just compensation

for the lands and interests acquired after taking into consideration the elements specifically mentioned in section 5 of this act, fixing the value and damages as of the date of the adoption of the map and resolution under which the State Highway Commission determined to make the improvement and/or to acquire the property. Where prior possession has been taken the value and damages shall be fixed from the date of taking possession. More than one parcel may be included in one report where the ownership is the same. The award shall constitute the whole sum to be paid for each parcel of land and no attempt shall be made to apportion or distribute the award among the various interests involved. Where it can be clearly shown that the land was acquired specifically for sale to the State at an expected profit, or for the purpose of profiteering, the board shall have the right to base its award upon the fair market value previous to such purchase, providing it is not in excess of the value at the time of the adoption of the resolution, or in cases where prior possession has been taken, the value at the time of the taking of possession by the State.

12. The amount of the award shall carry interest from the date of taking possession of the land by the State Highway Commission.

13. If the owner of the lands involved or the State Highway Commission is dissatisfied with the award made by the Right of Way Board an appeal, by written notice, may be taken to the circuit court of the county wherein the land is located, said notice to be filed in the office of the clerk of said court within thirty days after the filing of the report of the Right of Way Board. The filing of such notice shall vest in the circuit court full right and power to direct a proper issue for the trial to be framed and to order a jury to be struck and a view of the premises to be had and to hear and conduct the trial in the same manner as other issues are tried and conducted in said court. The jury shall be instructed to take into consideration the elements, wherever applicable, specifically mentioned in section 5 of this act, and the jury shall assess the value of the land and damages, if any, as of the date of the adoption of the map and resolution under which the State Highway Commission determined to make the improvement, unless prior possession has been taken by the State, in which event the value and damage shall be considered as of the time of taking possession by the State. The amount of the verdict of the jury shall carry interest from the date of taking possession of the premises by the State.

14. If the appeal is taken by the owner and the trial results in a verdict for a sum greater than the award made by the Right of Way Board the owner shall be entitled to recover costs of appeal. If the verdict is less than the sum awarded by the Right of Way Board the owner shall not be entitled to recover costs. If the appeal is taken by the State Highway Commission and the trial results in a verdict for a sum greater than the award made by the Right of Way Board the said Highway Commission shall not be entitled to recover costs on appeal. If the verdict is less than the sum awarded by the Right of Way Board the said Highway Commission shall be entitled to recover costs on appeal and may deduct the amount thereof in making payment of the verdict.

15. Upon the refusal of a party entitled to receive the amount awarded by the Right of Way Board or by a jury on appeal or in case such party shall be out of the State or under legal disability or in case there are several parties interested in the fund who cannot agree as to the distribution thereof or in case the lands or premises taken are encumbered by a lien or if for any other reason the State Highway Commission cannot safely pay the fund to any person, in all such cases, on petition to the Chancellor, to which shall be annexed a copy of the petition to and a report of the Right of Way Board, the amount awarded may be paid into the court of chancery by an order of the chancellor and shall there be distributed according to law on the application of any person interested therein. Written notice shall be given by the State Highway Commission to the owner and persons interested that such money has been so paid into the court of chancery and such notice shall have the same effect as if the money so awarded had been actually tendered to the persons entitled thereto. Where notice cannot be personally served and is given by advertisement in such manner as the chancellor may direct it shall have the same effect.

16. The circuit court judge shall make such orders and direct such proceedings and permit such amendments of map, description and proceedings as may appear reasonable. Said judge may permit the abandonment of any proceeding under the condemnation provisions of this act upon payment by the State Highway Commission of such reasonable loss and expense, in the discretion of said judge, as may have been caused interested parties by reason of such abandonment.

17. The petition, report and orders, or copies thereof certified by the clerk of the county, and proof of payment or tender of the amount awarded shall at all times be considered as plenary evidence of the right of the State Highway Commission, its successors and assigns to have, hold, use, occupy, possess and enjoy the lands and premises acquired under this act, and shall also be plenary evidence of any other right thus acquired.

18. Where the improvement to be made by the State Highway Commission involves only a change in the elevation of the curb legally and duly established by the proper authority having proper jurisdiction along the existing street or road and no land is required to be taken from abutting owners, the damage, if any, to abutting property because of change in such established curb grade shall constitute the taking of an interest in land and the owners thereof may be compensated under this act for their reasonable damage. The procedure prescribed in this act for the ascertainment of the amount to be paid for lands acquired shall be followed for ascertaining the amount to be paid for damages under this section. Where no curb grade had been previously established, the State Highway Commission shall be the sole judge as to the justice of any claim of damage due exclusively to change of grade, where no land or easements are required to be taken, and in its discretion the State Highway Commission may allow such damages as it may deem fair and just.

19. Nothing in this act shall prevent the State Highway Commission from taking possession of or acquiring, as heretofore, land or other property by gift, devise, exchange, or by taking over by resolution from the public body having jurisdiction over an existing street or highway, or under any agreement heretofore entered into or that may be entered into by the State Highway Commission prior to the adoption of the resolution and plan.

20. All cases now pending in condemnation proceedings before commissions shall, within twenty (20) days after the appointment of the Right of Way Board in the respective districts be transferred to the Right of Way Board of said district and all the condemnation commissioners that may have been named who had not held the hearings in the cases to which they have been named shall be automatically relieved

from their duties. Cases pending under appeal in the circuit courts of the State shall be continued in accordance with the provisions of this act in appeal cases and the jury shall be instructed to take into consideration all the elements, wherever applicable, specifically mentioned in section 5 of this act.

21. In the event any clause, proviso or section of this act shall be declared, by a court of competent jurisdiction, to be invalid or unconstitutional, such clause, proviso or section shall be exscinded from this act, and the remainder of the act shall stand.

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

23. This act shall take effect immediately.

APPENDIX D

An Act Providing for the Acquisition and Development of Limited Access Highways and Parkways[1]

(Supplementing the existing State Highway Law)

Be it enacted by the Senate and General Assembly of the State of New Jersey:

SECTION 1. As used in this act,

"Limited access highway" shall mean a state highway especially designed for through traffic over which abutters have no easement or right of light, air or access by reason of the fact that their property abuts upon such way.

"Parkway" shall mean a state highway especially designed for fast moving passenger vehicles and with special treatment in landscaping and planting along its borders, which borders may also include recreational features such as pedestrian paths, bridle trails, overlooks and picnic areas.

SECTION 2. Upon designation by the Legislature of any projected state highway, or portion thereof, as a limited access highway or as a parkway, the State Highway Commissioner shall have authority to arrange with land owners, at the time of purchase of the rights-of-way for such highway or portion thereof, for the limitation of public or private access or for complete exclusion of direct access of abutters to the state highway right-of-way. Such arrangements shall be made parts of the purchase contract. In the event no agreement can be reached between the parties, the Commissioner shall have the power to acquire said rights by condemnation.

SECTION 3. Lands needed for limited access highways are declared to be all those lands required for the travelled way together with those

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[1] Prepared by the Highways and Parkways Committee of the New Jersey State Chamber of Commerce.

lands necessary for maintenance and protection of the present and future use of the highway, except that this shall not be interpreted to allow acquisition of a total width of right-of-way for a limited access highway in excess of 300 feet, except where needed in connection with a grade separation and connecting roadways at an intersection with another main highway. The State Highway Commissioner shall have the authority to control the number of access roads and their location and design.

SECTION 4. Lands needed for parkway purposes are declared to be those required for the travelled way, together with those lands necessary to protect scenic views and to provide overlooks, occasional parking areas and roadside picnic areas.

SECTION 5. The State Highway Commissioner shall have the authority to restrict, either continuously or to specified times, the use of roadways in parkways to passenger vehicles and to otherwise limit the size, type and weight of vehicles using such roadways.

SECTION 6. Upon designation by the Legislature of any existing state highway, or portion thereof, as a limited access highway or partial limited access highway, the State Highway Commissioner shall have the authority to acquire, either by purchase or condemnation, access rights for either any degree of restriction or for complete exclusion of the right of direct vehicular access of abutters to the state highway right-of-way.

SECTION 7. This act shall take effect immediately.

APPENDIX E

The Rule Making Power of the State Highway Commissioner[1]

The promulgation of rules and regulations is a normal function of modern government. In order to effectuate the authority of the executive it has been necessary for governmental agencies to issue rules and regulations, under the authority of basic laws and powers, which have all of the force of laws themselves.

There has been an increasing disposition on the part of the Legislature to enact statutes in broad, general form with provision made for the executive or an executive agency to fill in the outlines in detail by administrative action. In order to meet changing conditions or to cope with technical problems, rules and regulations are promulgated with the express sanction of the Legislature because they afford the best opportunity for administrative flexibility.[2]

The Basic Distinction:

A distinction must be made between those rules and regulations which are concerned with the internal operations of an executive department and those which affect the public directly. The former are common to any organization, public or private, and rest more on principles of management than upon legislative approval. These particular rules or administrative orders are concerned with such matters as procedures, methods, internal organization, and the minutiae of administration.

Rules and regulations of the latter type, however, are of greater importance because they affect the rights of persons and property. The State Alcoholic Beverage Control Commissioner, for instance, regulates the liquor industry in New Jersey, largely through the enforcement of extensive rules and regulations which he has promulgated and which

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[1] Prepared by a member of the Governor's Highway Examiner's staff.

[2] Report of the Attorney-General's Committee on Administrative Procedure, *The Administrative Procedure in Government Agencies,* Senate Document No. 8, 77th Congress, 1941, *p. 98.* See also Carr, *Delegated Legislation, passim.* Rules and regulations are sometimes referred to as sub-legislation.

must be observed to the letter. In a somewhat similar fashion, the State Board of Public Utility Commissioners regulates the conduct of the utility business in the State. Other examples could be cited in this and other States, as well as for the Federal Government.

The Powers of the Commissioner:

The State Highway Commissioner possesses ample rule-making powers under the law. It is possible, therefore, for most, if not all, important matters to be supervised by appropriate action of the Commissioner. Specifically, he has the wide authority to

> "determine and adopt rules, regulations and specifications, and enter into contracts covering all matters and things incident to the acquisition, improvement, betterment, construction, reconstruction, maintenance and repair of State highways."[3]

This provision of the law is sufficiently broad in scope so that the State Highway Commissioner need experience no difficulty in establishing any rules and regulations that, in his judgment, may be necessary. To insure that there could be no doubt of his extensive authority, however, the law also provides for the promulgation of rules in the following instances, among others:

1. *Rules Governing the Department:*

> "The Commissioner shall reorganize the department and establish therein such divisions as he may deem necessary and expedient. He may formulate and adopt rules and regulations and prescribe duties for the efficient conduct of the business, work and general administration of the department, its officers and employees."[4]

This additional delegated grant of authority makes it unmistakably clear that the State Highway Commissioner has the power to regulate the internal affairs of the State Highway Department. The Commissioner has never issued a manual of rules and regulations for the management of the Department, but he has adopted numerous rules and

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[3] *R. S. 27:7-21.*

[4] *R. S. 27:1-8.*

regulations which were issued to Division heads as orders in the form of memorandums. In fact, these memorandums constitute the principal body of rules and regulations determined upon by the Commissioner.[5]

2. *Railroads and Street Railways:*

> "No consent, grant or franchise affecting any portion of a state highway, or of any road included in the state highway system, shall be given for the construction of a railroad or street railway thereon except upon approval of and under conditions acceptable to the Commissioner; nor shall any person enter upon or construct any works in or upon any state highway, except under such conditions and regulations as the Commissioner may prescribe."[6]

3. *Other Rule-Making Powers:*

The consent of the Commissioner must be obtained before a public utility may use a road, bridge or viaduct, and he is privileged to lay down appropriate rules and regulations in these situations.[7] In connection with the State's contribution to counties for detour roads, the

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[5] The State Highway Commissioner, over the years, has issued a considerable number of rules and regulations to be observed by the personnel of the department in the discharge of their duties. For example, Regulation No. 2, issued May 10, 1935, states:

> "To All Concerned:
>
> Commissioner Sterner has made a ruling that all matters to be considered for official action by the Commissioner at a regular or stated meeting must be on the Secretary's desk twenty-four hours in advance of the time of the meeting at which the items are to be presented, in order that sufficient time may be had for preliminary consideration of same and preparation of the schedule.
>
> Very truly yours,
>
> A. Lee Grover
> Secretary"

[6] *R. S. 27:7-44.1.*

[7] *R. S. 27:7-12* and *13.*

Commissioner may establish certain conditions affecting the expenditure of State aid funds.[8] The Department is also authorized to prescribe rules and regulations governing charges for the use of piers or wharves which come under its jurisdiction.[9]

It is apparent that ample authority exists under the law to make all rules and regulations considered desirable or necessary. The Commissioner, as a consequence, is not placed in the position of requesting legislative assistance each and every time a new situation arises necessitating some form of regulatory action.

4. *Prequalification of Bidders:*

The prequalification of bidders was announced on February 7, 1936, effective April 1, 1936, in accordance with legislation recently enacted respecting bidding upon public work. The regulations issued

[8] *R. S. 27:3-5.* On February 19, 1937, the Commissioner issued the following order:

"It is hereby established that the regulations heretofore established relative to rates of wages to be paid for labor employed in the performance of county and township aid work, be amended in order to comply with the provisions of Chapter 230 of the Laws of 1932, and in accordance with Paragraph 2, on Page 24, of our Standard State Highway Specifications, to read as follows:

> Attention is called to the following State Laws. Chapter 230, Laws of 1932, providing, as a condition of the contract, an eight hour working day for laborers, workmen and mechanics, and requiring payment of prevailing rates of wages, and providing penalties for violations.

(Signed) E. Donald Sterner
State Highway Commissioner"

An example of an amendment to a previous order, issued January 17, 1939, is shown below:

"IT IS HEREBY ORDERED that Paragraph 6 of the Order made under date of July 16, 1936, determining the amounts in which the State will participate in engineering on township and borough aid work, be revised to read as follows:

> 6. The State approves the following schedule of engineering rates and will share in the engineering cost in accordance with the Township and Borough Aid Act except that in all counties other than first class counties the maximum amount in which the State will share shall not exceed $1,000.00 per mile with no allowance on engineering on funds expended by the Works Progress Administration:

$ 10,000.00	to	$ 25,000.00	10 to 9½%
25,000.00	"	50,000.00	9½ to 8%
50,000.00	"	100,000.00	8 to 6½%
100,000.00	"	250,000.00	6½ to 5½%
250,000.00	"	1,000,000.00	5½ to 4½%

(Signed) E. Donald Sterner
State Highway Commissioner"

[9] *R. S. 27:7-49 et seq.*

by the Commissioner set forth in specific terms those who may bid and under what conditions. Contractors are classified and are only permitted to submit bids on specific projects in accordance with the rating received. The right of appeal is granted to the contractor and provision is made for an impartial hearing before the Commissioner or the Board of Review, although the Commissioner may reject any bid at any time prior to the award of a contract. No deviations from the rules and regulations are permitted.[10]

5. *Standards and Specifications:*

These rules and regulations are also incorporated in the Department's handbook, *Standard Specifications for Road and Bridge Construction* (1941), which, in itself, is an exercise of the Commissioner's rule-making power. This booklet is complete in detail and informs a contractor in precise engineering terms what is expected of him by the State Highway Department in the execution of a contract. It embraces a set of standards and specifications by which State highway inspectors may judge the quality of the work being performed for the State.[11]

6. *Entrance to State Highways:*

Under the authority of the Highway Act, rules were issued regulating the "procedure, limitations and methods of construction under

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[10] New Jersey State Highway Department, "Regulations Covering the Classification of Prospective Bidders issued in accordance with Title 52:35, Revised Statutes of New Jersey, 1937."

[11] An example of an order of benefit to contractors is the following regulation which was issued on February 8, 1938:

> "Owing to the long period of time required by the representatives of the United States Bureau of Public Roads to make their final calculations on projects accepted as completed and give final approval of the as-built plans and final estimates as approved by the Department, in connection with Works Program Grade Crossing and Highway Projects off the State Highway System, which is occasioning unreasonable delay in making final payments to the contractors; IT IS HEREBY ORDERED that semi-final payments be made to those contractors, withholding an amount representing 10 per cent of the retained percentage on account of work completed under the contract or in accordance with executed Change of Plans, Extra Work Orders, and Supplemental Agreements which have been approved by the Federal Bureau, subject to the contractors complying with all necessary formalities.
>
> (Signed) E. Donald Sterner
> State Highway Commissioner"

which abutting owners may be permitted to construct vehicular entrances to State Highways." [12]

The policy of the State Highway Department is, generally speaking, as follows:

> "The Highway Department will authorize no construction within the limits of the highway which will adversely affect the stability, appearance or designed functioning of the highway itself, or any of its component or auxiliary structures. The Department will expend no public funds in assisting abutting owners to obtain access to the highway."[13]

The Department, in fact, reserves the right to relocate or eliminate any driveway previously authorized.

These regulations apply especially to protection of the traveling public, protection of the State from suit and protection of structures and drains. They allow the State Highway Department to impose special conditions at any time upon those who seek a permit for opening a driveway leading to a State Highway.[14]

Summary and Conclusions:

In those cases, therefore, where rules and regulations were clearly indicated, the Commissioner has not hesitated to use the full authority granted by legislation to establish the conditions which would govern the relations between the public and the State Highway Department. No such formality attends the issuance of rules and regulations relating to the operations of the Department itself.

On the whole, however, it would appear that the Commissioner has used his rule-making power wisely and discreetly. Where it was to the interests of the public that uniform standards be adopted, appropriate rules and regulations have been issued which have been of assistance in the administration of the Department. No attempt has been made,

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[12] New Jersey State Highway Department, "Regulations and Instructions Concerning the Construction of Driveways" (October, 1940), *p. 1.*

[13] *Ibid.*

[14] *Ibid., p. 11.*

however, to cover every conceivable situation by formal rulings of the Commissioner.

Nevertheless, a greater use of the rule-making power is possible and it is recommended that the Commissioner undertake a survey of all the activities of the Department in which rules and regulations should be promulgated. This would result in the standardizing of procedures and enable essential work to be performed efficiently without the loss of desirable flexibility.

Without attempting to impose a blanket requirement, which is not feasible, the Commissioner should, wherever he deems it appropriate, adopt a regularized procedure for the promulgation of recommended rules and regulations which have been formulated with the assistance of Highway Department executives. This procedure should employ such devices as investigations and reports on specific problems demanding attention, the holding of consultations and conferences with those groups who will be affected by the contemplated regulations, the holding of public hearings in appropriate situations, and the conducting of extensive research in the various problems under study by the staff of the Highway Department.

Once promulgated, new rules and regulations should be adequately publicized and extensively distributed to all who are interested.

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Index

Abell Commission, 12, 22, 23, 25, 27, 141, 143, 166, 164n, 171n, 182n, 191, 202, 203, 210n, 213n, 214, 215, 218, 250n, 262, 263n, 264n, 269n, 280n, 283n, 323n, 344, 353n, 354, 355, 420, 483, 486n, 488n, 505n
Absecon, 538n, 543
Accounting and Auditing Department, 203, 209, 212
Accounting Division, 203, 209, 210, 217
Accounts, 231-232
  director of, 217
  state highway, ii
Acts
  —of 1891, 486n; —of 1893, 3n; —of 1894, 3; —of 1906, 4; —of 1916, 181; —of 1917, 486; —of 1920, 327; —of 1929, 399; —of 1930, 212, 309; —of 1931 (*See* Budget Act); —of 1932, 171n, —of 1934, 434; —of 1935, 151; —of 1936, 78n; —of 1938, 78n, 433n, 437n; —of 1939, 78n, 244; —of 1941, ii
  bond, 399
  budget, 182, 192, 194, 199, 200, 201, 202, 203, 205, 206n, 214, 373, 486, 504
  commissioner of finance, 207, 208, 455
  condemnation, 323, 325, 326, 328, 329, 331, viii-xvi
  Connecticut, 346
  construction, 179n, 431n, 432n
  county planning, 346
  defense highway, 440n, 442
  Edge, 14
  emergency relief, 179n, 431n, 432n, 434n
  federal aid, 362n
  federal highway, 362n, 431, 432n, 437n
  federal road, 430, 432n, 434, 487n
  Hayden-Cartwright, 78n, 179, 362, 432
  highway, xxiii
  motor vehicle, 222
  municipal planning, 345
  National Industrial Recovery, 179, 362n, 432n, 433, 434n
  permanent road improvement, 486, 489n
  State highway, 443n
  State highway system, 328n
Adam, H. C., 174n
Administration
  centralized, 1, 3, 138
  costs, 223
  division, 17, 42, 44, 47-54, 230-285
  fiscal, 163-227, 215-216, 233
  forces, 70-73, 225
  personnel, 235
  public roads (*See* Public Roads)
  public works (*See* Public Works)
  reorganization proposals, 142-161
Administrative Functions, 284-285
Agents, regulation of, 348-349
Agg, Thomas R., and Brindley, John E., 137n, 138n, 140n, 141n, 149n, 150n, 151n, 153n, 173n, 174n, 219n, 220n, 411n, 510n, 512n, 527n, 529n, 530n, 532n
Aid
  county, 279
  motor vehicle, 54
  township and borough, 54, 279
  (*See* State Aid and Federal Aid)
Albany, 435, 439
Albright, William H., 166n
Alcoholic Beverage Control Commissioner, 571, xix
American Association of State Highway Officials, 151n, 174, 220, 280n, 393n, 405, 438
American Institute of Real Estate Appraisers, 320n
American Institute of Steel Construction, 404, 405
American Petroleum Industries Committee, 183
American Red Cross, 22n
American Society of Engineers, 404
Appraisal and Negotiations, Division of, 28, 285n, 298n, 315, 320, 323n, 324n, 325n, 333, 336, 337
Appraisal Procedure, 310-322
Appropriations, 197
  act, 165, 177, 190, 193, 194-202, 270, 377, 378, 445, 446, 516, 518
  joint committee, 197, 198, 213, 367, 370, 411
Approval Officer, 47, 157, 208, 210, 212, 230, 231, 256, 451

Architect, 143
Architectural Division, 143
Asphalt Plant Inspectors, 131-132, 133, 135, 538
Atlantic City, 126, 383
Atlantic County, 112, 376, 513, viii
Atlantic Highlands, 349n
Atlantic Ocean, 401
Attorney-General, 26, 28, 29, 34, 57, 206n, 232, 243, 262, 286, 287, 291n, 355n, 416n, 517, xixn
Attorneys
  regulation of, 348-349
Auditing and Accounting Bureau
  32, 42, 47, 53, 66, 70, 85, 100, 123, 156, 159, 202, 208, 210, 211, 231, 256, 265, 266, 275, 276, 278, 281, 300, 409n, 420, 428n, 432n, 447, 449, 450, 451, 454, 455, 457, 471, 474, 475n, 476, 477, 480n, 482, 552n, 553n, 563, 566n, 567n, 582, 583, 584, 593n
Auditing and Clerical Staff, 125
Auditors, 50, 70, 81-82, 85, 91, 107, 109, 115, 116, 123, 208, 209, 213, 412, 415, 466, 575
  chief auditor and accountant, 48-50, 92, 109, 116, 154, 195, 197, 208, 209, 231, 238, 244, 265, 292, 299, 367n, 409, 415, 417, 418, 435, 436, 447, 478, 491, 492, 494, 495, 496, 498, 499, 508, 510, 514, 521-2, 545, 554, 555, 563, 580
  division, 50, 53, 70, 85, 125, 130, 264, 266, 267, 274, 451, 474, 476, 477, 478, 575, 579, 582
  junior, 70n, 109, 125
  maintenance, 100, 477
  principal, 100
  senior, 51, 100
  State, 202, 203, 208, 212-213, 216, 218, 354
Automatic Recorder, 365
Automobile Log, 363

B

Baldock, R. H., and McCullough, C. B., 251n, 253n
Barnegat Bay Bridge, 552
Batching Plant Inspectors, 132, 133, 134, 135, 413
Bateman, John H., 219n, 220n, 361n
Bauer, Jacob L., 22, 28
Bayonne Naval Drydock and Supply Base, 442
Bedminster, 126n
Belmar, 115, 552
Bendix Airport, 543
Benson, George S., 153n
Bergen County, 112, 346n, 359, 376, 489, viii
Betterment Projects, 426, 430, 449, 470, 471, 481, 523
Bids, 37, 49, 52, 74, 92, 110, 234-5, 265n, 267, 268, 269, 338, 339, 407, 410, 411, 412, 441, 446, 447, 494, 508, 509, 510
Black Horse Pike, 383
Blanket Count, 365
Board of Engineers, 21
Board of Review, 235
Bonds, 171-175
  act, 399
  revenues, 181
  state educational aid, 175
  state emergency relief, 175
  state institutional construction, 175
Borchard, E. M., vin
Bordentown, 126n, 552n
Borings, Supervisor of, 86, 89, 403
  (*See* Bridge Construction Inspector)
Bridge
  Barnegat Bay, 552n
  bureau, 42, 73, 74, 75, 76, 84-86, 89, 115, 116, 117, 121, 136, 157, 159, 161, 379, 380n, 400, 402, 403, 404, 412, 413, 418, 442, 459, 557
  Camden-Philadelphia, 143
  College, 404
  commission, 189
  construction inspectors, 85, 86, 413
  design, 401-407
  designers, 71, 85-86, 403
  detailers, 86, 116n
  division, 17, 39
  engineer, 69, 77n, 84-85, 86, 89, 136, 379, 380n, 402, 403, 405, 407, 408, 409, 413, 414, 415, 438
  George Washington, 283, 287, 343, 354, 383, 384, 386, 396, 404, 538n, 552n, 586
  Hackensack River, 232
  maintenance, 457-458
  operations, 557-560
  operators, 117
  Shark River, 405
  Shrewsbury River, 405
  Staten Island, 126n
  tenders, 103, 117n, 559
  toll-bridges
    commission, 182, 197
    commission for elimination of, 143
Bridgeport, 126, 574

Bridges and Structures
designer, 403
supervisor, 91, 96, 101, 161, 457, 458
Bridges and Tunnels
bureau, 143
commission, 189
Brielle Circle, 126n
Bright Investigating Committee, 142
Brooklawn Circle, 552n
Brunswick Pike, 389, 390
Buck, A. E., 166
Budget
act, 182, 192, 194, 199, 200, 201, 202, 203, 205, 206n, 213, 214, 373, 486, 504
annual, 194-202
commissioner, 191, 195, 198, 202, 203, 204, 205, 216, 217
department, 171n
director, 217, 218
division, 217
highway department, 190-194
State, 217
Buildings
bureau, 143, 144
commissioner, 143
Bureaus
auditing and accounting, 32, 42, 47, 53, 66, 70, 85, 100, 123, 156, 159, 202, 208, 210, 211, 582, 583, 584
bridge, 42, 73, 74, 75, 76, 84-86, 89, 115, 116, 117, 121, 136, 157, 159, 161, 379, 380n, 400, 402, 403, 404, 412, 413, 418, 442, 459, 557
buildings, 143, 144
construction, 157, 159, 337, 410, 442
employment, 435
federal and state aid projects, 158
finance, 156, 158, 231, 233, 256, 257, 284, 595
fish and game, 144
forest and parks, 144
geology and waters, 144
highway planning, 157, 158, 159, 371, 373, 595
highways, 12, 87-90, 101, 143, 144, 160
land and legal, 156
land purchase, 144
maintenance, 157, 159, 160
office management, 157
plant and equipment, 157, 159
public relations, 157, 158, 160
public roads, 3, 29, 362, 366, 370, 425-427
purchase and stores, 262, 276-277, 281n, 584
research and testing, 158, 160, 410, 443, 562, 592, 595, 596
riparian lands, 144
statistics, 42, 155, 240, 241, 281, 284
survey and plans, 159, 439, 584
waterways and coast protection, 143, 144
Burger, Alvin A., 257n, 260n, 271n, 273n
Burlington, 425
county, 112, 376, viii
Burnett, D. Frederick, 262n
Burton, George L., 16
Burton Commission, 140

C

California, 69, 142, 184n
Camden, 21, 126, 305, 351, 383, 384, 394, 543, 552n, 574
airport, 543
county, 112, 359, 376, 489n, viii
extension division, 21
terminal, 352
Camden-Philadelphia Bridge, 143
Canada, 560
Car Assignments, 575-577
Carpenter, 120
Chainmen, 77
Chancellor, xiv
Chauffeurs, 126
Chester, 126n
Chief Auditor and Accountant (*See* Auditors)
Chief Clerk (*See* Clerk)
Chief Engineer, 140
Chief File Clerk (*See* Clerk)
Chief Mechanic (*See* Mechanic)
Chief Settlement Clerk (*See* Clerk)
Circuit Court, 323, 324, 331
Civil Engineer, 61, 65, 75, 76, 77, 82, 83, 84, 111n, 139, 291
Civil Service, 20, 24, 34, 44, 60, 75n, 115n, 150, 156, 217, 235, 242, 243, 244, 286
commission, 49, 52, 205, 210, 217, 236, 237n, 243n, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255n, 256, 257, 258, 259, 260, 455, 584
annual report, 237n, 243n, 248n, 254n, 257n
department, 237n, 242, 246
laws and regulations, 34, 35, 235, 243, 245, 247, 254, 552
Claims, 36-37
Clerk, 125
abstract, 59, 60, 208, 210, 212, 230, 231, 246, 247, 256, 262, 265, 276, 281n, 286, 287n, 407, 409

chief, 42, 43, 44, 47-48, 53, 154, 155, 157, 418, 451
as custodian of labor payroll fund, 47, 157, 210, 230, 231, 256
as secretary, 47, 154, 246, 299, 304
assistants of, 48-49, 210, 246, 247, 250, 408
chief file, 48, 54, 155, 279
chief settlement, 60, 292
clerk-stenographer, 85, 87, 88, 108, 109, 110, 130, 131, 132-133
clerk-typist, 98, 120, 133
confidential, 241, 280
cost, 70, 125, 580
county, 76, 333
engineering, 63, 65, 107, 109-111, 112, 494, 497
file, 130
head, 48, 54, 70, 100, 155, 241, 281, 413
junior, 54
office appliance, 53
principal, 70, 108, 109, 110, 130
principal-bookkeeper, 100, 125
principal-cost, 63, 66
principal-stenographer, 85, 124, 125
purchase, 262, 263n
rental, 126, 575, 586
requisition, 120, 444
senior, 53, 273
senior-bookkeeper, 70
senior-stenographer, 45, 48, 53, 72, 74, 75, 76, 81, 108, 131
senior-stock, 273
settlement, 60, 291
stock, 53n, 273
telephone-operator, 81-82
workmen's compensation and claims, 57, 59, 254, 255, 256, 286, 287, 294-297, 477, 581
Cliffwood, 31, 123n, 126n, 571
Clifton, 355n, 378
College Bridge, 404
Colorado, 184n
Commerce and Navigation
board, 75, 84, 85, 189, 196, 381n, 403
department, 143, 176
Commercial Testing Laboratories, 135-136
Commissioner of Finance (*See* Finance)
Compton, Lewis, 166n
Comptroller
state (*See* State Comptroller)
Condemnation
act, 323, 325, 326, 328, 329, 331, viii-xvi
commission, 329, 330, 331, 332, 333, 335, 384
commissioners, 325
procedure, 323-336
Confidential Assistant, 241, 280
Congressmen, 348
Connecticut, 347n, 363n, 366n, 469, 530
Conservation and Development Department, 18, 584
Constitution of New Jersey, 146, 148
Construction, 419-423, 440-442
act, 179, 431n, 432n
bureau, 157, 159, 337, 410, 442
district, 25, 42, 80-84, 157, 160, 413, 414, 415, 416, 417, 418
engineer, 25, 69, 70, 73, 80-81, 82, 83, 84, 160, 252, 301, 303, 380, 412, 413, 415, 416, 417
northern, 80, 81, 83, 160, 429, 572
southern, 80, 81, 82, 83, 84, 88, 160
engineer, 392n, 393n
division, 17, 18, 19, 22, 25, 28, 42, 50, 69, 70, 71, 73, 84, 87, 93, 97, 116, 117, 119, 129n, 134, 136, 157, 158, 159, 241, 279, 298, 336, 339, 349-443, 450, 466, 467, 468, 494, 509, 534, 537, 554, 557, 562, 587, 588, 592, 594
engineer, 17, 18, 19, 21, 25, 26, 42, 49, 52, 58, 69, 70, 71, 72, 80, 81, 82, 84-85, 87, 89, 111n, 234, 235, 299, 353n, 354, 374, 377, 385, 386, 391, 392, 398, 400, 408, 409, 410, 411, 413, 414, 415, 416, 417, 418, 420, 427, 430n, 434, 439, 440, 441, 450, 589, 594
projects, 80, 434
superintendent of heavy, 91, 95, 101, 466
Construction and Maintenance, 36, 38, 39, 40, 41, 79
electrical, 554-557
Contractors, 37, 49, 52, 81, 103, 104, 234, 235, 410, 411, 441, 473, 474, 494, 509, 512
Contractors' Classification Officer, 51, 52, 234, 235, 408
Contracts, 37, 38, 74, 407-423, 446, 411, 512
Convict Labor (*See* State Labor)
Cost Accountant, 50-52, 266, 267, 274, 275, 276, 451, 455, 474
Cost Accounts, 581-583
Counsel, 24, 25, 26, 27, 58, 63, 64, 303
assistant, 58
legal assistant, 58
special, 58
County Aid, 279 (*See* Funds—MVA)
County Engineer, 492n, 493, 494, 495
County Park Commission, 38
County Planning Act, 346
County Solicitor, 493

County Supervisor of Roads (*See* Roads)
Court of Claims, 411n
Court of Errors and Appeals, 304, 324, 327
Cranbury, 76, 89
Culture Record, 364
Cumberland County, 112, 489, viii
Curtis and Hill Gravel & Sand Co. v. *State Highway Commission,* v
Custodian of Labor Payroll Fund, 47, 157, 210, 230, 231, 256

D

Deans, 126n
Dearing, Charles L., 219n, 220n, 222n, 223n, 224, 225n, 226n
Debt Service, 168, 172n, 174, 186, 196
Defense Highway Act, 440n, 442
Delaware Bay, 401, 402
Delaware River, 21, 173, 401
Delaware River Drive, 349n
Delaware River Joint Toll Bridge Commission, 197, 584
De Santis v. *D. L. & W. Ry. Co.,* v n
Design, 384-401
Designing Draftsmen, 73, 75, 76, 77, 78n
Designing Engineer, 17, 69, 71, 129n, 157, 241, 410, 392n, 442, 562, 594, 595
Dirt Road Fund (*See* Funds)
District Engineer, 161, 412
(*See* Maintenance *and* Construction)
Division Auditors (*See* Auditors)
Division Construction Engineer (*See* Construction *and* W. P. A. Coordinator)
Donnell Lumber Company, 19
Dover, 31, 123n, 126n, 572, 573
Drafting Room, 32, 86, 98
Draftsmen, 63, 73, 75, 76, 77, 78, 79, 82, 86, 91, 98, 111, 115, 116, 338

E

East Rutherford, 355n, 378
Edge, Walter E., Governor, 14
Edge Act, 14
Edge Commission, 14, 16, 19, 140
Edison, Charles, Governor, 166, 172n, 173, 175, 199, 201, 207, 241n, 244n, 313n, 316n, 374n, i, iii, iv
Edison Bridge, 45, 383, 404, 546, 586
Edwards, Edward I., Governor, 16, 19, 140
Edwards Commission, 16, 19
Egg Harbor, 538n
Electrical
bridge mechanics, 117, 557, 558
bureau, 152, 537
engineer in charge, 115
construction and maintenance, 29
bureau, 115, 119
costs, 560
division, 53, 78, 96n, 115-121, 123, 157, 158, 160, 161, 237, 238, 242, 244, 264, 273n, 275, 276, 279, 282n, 297, 367, 379, 401, 457, 462, 478n, 537-562, 565, 584, 595
districts, 121
engineer in charge, 115, 116, 117, 120, 537, 538, 540, 543, 544, 547, 548, 549, 550, 554, 557
drawbridges supervisor, 115, 117, 557
engineer, 115, 119-121, 555, 556, 562
machinery supervisor, 117, 558
research, 560-562
reorganization, 562
signs, 547-549
signs, signals and lighting supervisor, 120-121, 554, 556
supervisor, 537
traffic bureau, 117
Elizabeth, 126n, 384, 538n
Emergency Relief Appropriation Act, 399, 431n, 432n, 434n
Empire Trust Co. v. *Board of Commerce and Navigation of New Jersey,* v n, vi n
Employment Bureau, 435
Engineer in Charge of Electrical Division (*See* Electrical Division)
Engineer of Permits (*See* Permits)
Engineers, Resident (*See* Resident Engineers)
Equipment and Laboratory Division, 18, 31
Equipment and Transportation Division, 123-128, 157, 241, 279, 563-587
district, 126
division, 43, 53, 77, 80, 81, 86, 102, 104, 159, 161, 238, 273n, 274, 275, 276, 281, 295, 297, 448, 565
equipment, 229, 565-570
inspectors, 123, 124, 126, 579, 580, 581
mechanic, 103, 104
operating costs, 563-565
operators, 126
servicing and repair, 578
supervisor, 43, 123, 124, 126, 154, 565, 576, 579, 580, 581, 584
superintendent, 17
Essex County, 112, 164, 359, 376, 489n, 517n, 518, viii
clean government group, 13
Ewing Township, 31

Examiner, Governor's Highway, 237n, 241n, 242, 243, 244, 311, 313, 316, 355, 375, 480n, v n, xix n
  chief, 250n
Executive Order
  No. 1, i-iii, 232, 246, 256, 266
  No. 2, iv
Expense Accounts, 477-478

F

Fairbank, H. S., 225n
Federal Aid, 39, 157, 161, 166, 178-179, 180, 220, 362n, 374, 430-438, 442, 509, 534, 536, 591
  act, 362n
  bureau, 42, 158
  engineer, 69, 72-73, 74, 380n, 400, 430, 431n, 433n, 434, 435, 438, 439, 440n, 442
  forms, 74
  funds, 70, 72, 73, 78, 84, 197n, 403, 412, 416, 439, 442
  grade crossing work, 400
  grants-in-aid, 177-190, 229, 399, 430, 432n, 433, 438
  highway system, 430n, 431, 432n, 433, 434
  National Industrial Recovery, 179-180
  projects, 72, 73, 74, 80, 81, 97, 380, 408, 409, 417, 430, 434, 435, 436, 438, 440, 441, 443, 468
    bureau, 158
  program, 72, 434, 436, 437, 438, 439, 441, 468
  Public Works Administration, 180-190
  road act, 487n
Federal Government, 229, 270, 348, 362, 380n, 399, 401, 411n, 426n, 428, 429, 430n, 435, 442, 468, 509n, 523, 596, xx
Federal Highway Act, 362n, 431, 432n, 433n, 434n, 437n
Federal Highway System, 178, 179, 362n
Federal National Youth Administration, 584
Federal Office of Road Inquiry, 3
Federal Road Act of 1916, 430, 432n, 434
Federal Trade Commission, 147
Federal Works Agency, 149n, 177n, 178n, 362, 366, 423n, 596n
Federal Works Program, 177n, 399
Fernwood, 18, 31, 32, 33, 53, 77, 94, 97, 98, 115, 116, 120, 123, 124, 126, 129, 273, 274, 275, 276, 387, 469, 540, 554, 560, 570, 571, 575, 576, 577, 578, 579, 580, 581, 583, 585, 587, 588, 592
Field Coordinator, 87, 88, 89, 161, 240
Field Engineer (Resident), 161
Field Offices, 76, 77, 78, 80, 81, 83, 88, 89, 98
  engineers, 21, 76-77, 82, 89, 161
  special assistants, 83-84, 116
Filing, 42, 206
  clerks, 48, 54, 130
Finance
  bureau, 156, 158, 231, 233, 256, 257, 284, 595
  commissioner, 33, 52, 164, 166n, 194n, 200, 202, 203, 204-207, 210, 214, 215, 216, 217, 233, 256, 257, 266n, 269, 270, 571, ii
  commissioner act, 207, 208, 455
  department, 143, 202, 216
Financial Survey, 79, 364
Fiscal
  agencies, 202, 215
  aides, 205
  department of control, 202
    commissioner, 202, 216, 217, 218, 233, 270
  officer, 215, 231, 233
  organization, 233
    defects, 215-216
  program, 185, 215n
  reform, 143n, 164, 203
  study, 364
  survey, 370
  system, 210
Fiscal Commissioner (*See* Fiscal)
Fish and Game Bureau, 144
Flemington, 76, 89
Follin, John W., 280n
Foran, Arthur F., 24, 28
Foran Commission, 28, 29, 140, 237, 238, 287, 298, 299n, 322, 323, 422
Forest and Parks Bureau, 144
Fort Dix, 442
Fort Lee, 354
Fort Monmouth, 442
Freeholders, 36, 39, 40, 328n, 346, 351, 382, 491, 492, 493, 494, 495, 497, 502, 503, 517, 518, 520, 521, 525, 529, 540, viii
  director, 492
Frenchtown, 425
Funds, 249, ii
  dirt road, 109, 502, 503, 507, 508, 517-518, 528, 529
  emergency, 488
  federal, 70, 78, 416, 428, 432n, 433, 439
  general state, 165, 186, 190, 195n, 211, 214, 218
  grade crossing elimination, 11, 176

labor payroll, 47, 51, 157, 210, 236, 242, 256, 477, ii
MVA, 54, 107, 108, 109, 110, 111, 484, 486, 489, 490, 491, 492, 493-496, 497-500, 509, 510, 513, 514, 518, 522, 528, 529, 532, 533, 535, 541
State, 166-190, 198, 214, 218, 219, 221, 227, 364, 428, 432, 485, 523, 525, 534, 535
State highway, 8, 9-10, 88, 163, 165, 171, 176, 177, 178, 181, 182, 183, 185, 186, 189, 190, 193, 194, 195n, 196, 198, 200, 204, 208, 211, 214, 219, 445, 486, 488, 535
State purchase, 270
State road, 5, 8, 9, 11, 168, 181, 200, 486
T&BA, 107, 108, 109, 110-111, 484, 499, 501-517, 517-518, 518-527, 528, 529, 532, 533, 535, 542

G

General Accounts, 51
General Assembly, 216, viii n
Pennsylvania, 255n
Virginia, 530n
General Election, 172
General Solicitor, 29, 34, 42, 43, 49, 57-59, 60, 61, 63, 154, 164, 198, 206, 234, 241, 243, 247, 285, 286, 287, 288, 290, 292, 294, 295, 296, 301, 311, 314, 408, 409
Geology and Waters Bureau, 144
George Washington Bridge, 283, 287, 343, 354, 383, 384, 386, 396, 404, 538n, 552n, 586
Giffin, Harold W., 393n, 394n
Glickenhaus, Jacob S., 164, 165, 166n, 167n, 183, 194n, 206n
Gloucester County, 112, 376, 517n, viii
Goethals, General, 14
Governor, 215, 282, 310, 311, 329, 332, 350, 366, 367, 370, 373, 376, 434, 444, 477, 480, 576, i, ii
Grade Crossing
elimination fund, 11, 176
elimination projects, 73, 75, 78, 158, 438
eliminations, 78, 80, 84, 177n, 399, 400, 402, 437
engineer, 42, 69, 71-72, 157, 158, 398n, 400, 437-438
program, 443
study, 363-364
Grants-in-Aid (*See* State Aid *and* Federal Aid)
Graves, Thomas J., 268n, 271n, 273n
Great Notch, 383

H

Hackensack Bridge, 232
Hackensack River, 402
Hammonton, 573
Hayden-Cartwright Act, 78n, 179, 362, 432
Hazard Inventory, 363
Head Clerk (*See* Clerk)
Health and Welfare Program, 255-256
Herrick Act, 501, 520
Highway Cost Allocation, 219-227
Highway
act, xxiii
advisory board, 149, 150
bureau, 12, 87-90, 101, 143, 144, 158
costs, 423-426
design, 384-401
director, 148, 149, 150
division, 149
encroachments, 464-466
federal system, 178
inspectors, 73, 77, 82-83
primary or interstate, 431n
program, 373-401
secondary or intercounty, 431n, 433
State system (*See* State Highway System)
(*See also* Roads, Public Roads)
Highway Engineers, Resident (*See* Resident Engineers)
Highway Planning, 285, 361-373
bureau, 157, 158, 159, 371, 373, 595, 596
survey, 363n, 366, 367, 371, 438
Highways and Parkways, xvii-xviii
committee, 344, 348
Hinds, Roger, 201, 241n, iv
History of State Highway Department, 1-29
Hoffman, Harold G., Governor, 13
Holland Tunnel, 21, 143, 343, 404, 552
Hudson, H. W., Colonel, 28
Hudson County, 112, 359, 489n, 517n, 518, viii
Hudson River, 173, 401
Humphrey's Executor v. *United States*, 147n
Hunterdon County, 112, 516, viii

I

Idaho, 184n
Illinois, 142
Information Division, Public Roads Administration, 366
chief, 366
In-Service Training, 253-254
Inspectors, 574
asphalt plant, 131-132, 133, 135, 538
batching plant, 132, 133, 134, 135, 413

bridge, 85, 86, 413
electrical lighting, 120, 555, 556
electrical signal, 120, 555, 556
engineer, 77, 111n
equipment, 123, 124, 126, 579, 580, 581
highway, 73, 77, 82-83, 99n, 107, 110, 111, 112, 413, 414, 415, 485
junior, 485
laboratory, 455, 494, 495
lighting, 556
maintenance, 94, 99, 456, 498
material, 132, 134, 135, 589
report, 131
permits, 462, 463
right-of-way, 112
soil stabilization, 112
Institutional Construction, 175
Institutional Projects, 426, 449, 470, 471
Institutional Roads, 458-459, 478
supervisor, 96, 101, 458, 459, 471
Institutions and Agencies Department, 19, 103, 143, 247, 259n, 272, 273, 458, 584
Insurance, 232-233
Investigators, 43, 45, 60-61, 63, 65, 118, 154, 230, 241, 304, 305, 552

J

Jersey City, 21, 71, 143, 404, 546
Job Number Book, 99, 444, 445
John Davison Rockefeller Memorial Highway, 97, 283, 469

K

Kansas, 139, 184n
legislative department, vi
Keefer & Keefer v. *R. F. C.*, vi n
Kennedy, G. Donald, 151n, 153n, 154, 155
Key Station Count, 365

L

Labor, 238n, 242, 244n (*See* Maintenance *and* State Labor)
department, 294
payroll fund (*See* Fund)
Laboratory
chief assistants, 131, 135, 410
chief mechanic, 131
chief of testing laboratory, 43, 129-131, 132, 133, 134, 135, 438, 588
commercial testing laboratories, 135-136
division, 43, 85, 129-136, 158, 266, 281, 410, 412, 413, 414, 418, 455, 456, 494, 497, 498, 584, 587-596
Ladder Men, 120
Lamb, Bernard, 166n, 206
Lambertville, 384
Land and Legal Bureau, 156, 285, 291, 319, 320, 321, 322, 336, 337, 338, 339
Land Purchase Bureau, 144
Landscaping, 102, 229, 237n
engineer, 74, 96-98, 401, 467
supervising engineer, 79-80, 91, 96-98, 379, 439
Legal Assistants, 286-289
Legal Division, 42, 44, 57-61, 66, 156, 254, 265, 279, 285-286, 287, 288, 298n, 303, 304, 305, 308, 310, 338, 381, 476, 575
Legislation (*See* Acts)
Assembly Bill No. 116, 164
Legislature, 215, 218, 223, 227, 262n, 282, 283, 311, 323, 324, 329, 348, 349, 350, 351, 352, 353, 354, 355, 356, 366, 370, 374, 376, 377, 378n, 381, 411, 434, 445, 465, 484, 487, 490, 492, 501, 505, 518, 530n, 531, 533, i, v, xvii, xviii, xix
Lewis, Harold M., 344
Loadometer, 365
Location Engineer, 73, 74, 76, 89, 160, 252, 301, 377, 378, 380
Logan, James, 28, 29, 44, 164
Lutz, Harley L., 174n

M

MacDonald, Austin F., 138n, 150n, 174n, 530n, 536n
MacDonald, Thomas H., 149n
Machinist, 77
Madison, 543
Mail Room, 277
Maintenance
assistant superintendent, 443, 444, 445, 447, 449, 450, 452, 455, 471, 478, 586
auditors, 100, 477
bureau, 157, 159, 160
department, 52, 241
districts, 101-102
division, 29, 43, 50, 59, 73, 76, 80, 91-106, 115, 123, 125, 152, 157, 159n, 161, 238, 242, 244, 264, 267, 277, 279, 295, 356n, 392, 402, 426, 430, 443-483, 523, 537, 552, 554, 562, 563, 565, 567, 573, 574, 581, 584, 585, 586, 587, 588, 592, 594n
electrical and equipment division, 51, 53
engineer, 17
engineer and investigator, 96, 458
equipment and projects division, 17, 19
foreman, 94, 95, 96, 98, 101, 102, 103, 104, 161
general supervisor, 91, 93
laborer, 94, 95, 96, 98

patrolmen, 95, 101, 161
program, 443-446
road, 446, 455
senior supervisor, 91, 93-94, 102
superintendent, 17, 43, 79, 87, 91-92, 97, 98, 99, 100, 103, 104, 265, 267, 402, 417, 418, 444, 445, 446, 447, 448, 450, 451, 454, 455, 457, 458, 459, 460, 464, 465, 468, 471, 474, 477, 478
supervisor of highway, 91, 94-95, 102-103, 104, 161, 252, 444, 445, 449, 459, 463, 467, 472
timekeeper, 95n, 98n
Mandatory Dedications, 196, 199
Manual, N. J. State Highway Department, 261
Maps
county, 79
draftsmen, 76, 77
key, 75, 381n
state, 364
tract, 75
Marlton, 425
Massachusetts, 142, 536
Materials, Supervisor of, 91, 92-93, 445, 446, 447, 448, 449, 450, 451, 455, 457
Mays Landing, 396
McCullough, C. B., 251n
McKee City, 383
Mechanic, 126, 579, 582, 586
chief, 123, 124-125, 580, 586
laboratory, 131
(*See* Laboratory *and* Equipment)
Medical Director, 59, 295-296
Meeker, R. A., 15
Mercer County, 112, 359, 516, viii
Merchantville, 31, 102, 123n, 126n, 574, 575
Merritt Parkway, 347n
Metropolitan Division, 21, 25, 82
Metropolitan Terminal, 352
Michigan, 139, 142, 151, 184n, 280n, 362, 363n, 371n, 536
Middlesex County, 112, 376, 516, viii
Mimeograph and Printing Room, 277-278
Minnesota, 184n
Mississippi, 139
Missouri, 184n
Monmouth County, 112, 376, 489n, viii
Montclair, 76, 89
Moore, A. Harry, Governor, 24, 140, 144, 287
Morris County, 80, 112, 376, 489n, 540, viii
Motor Fuel Division, 129, 175
Motor Fuel Tax, 168n, 171, 172n
Motor Vehicle
act, 222
aid (*See* Funds)
commissioner, 177
department of registration and regulation, 3, 118n, 119, 181, 197, 221, 222, 259n, 284, 540, 544
fees and fines, 176-177, 183, 219, 220, 223, 224, 226, 356
fuel tax, 171, 175-176, 177, 181, 183, 186n, 197, 219, 220, 225
study, 79, 364
tax, 219
Mudjacking, 466-467
Municipal Planning Act, 345
Murray, Frank J., 165, 166n, 194n
Myers v. *United States,* 147n

N

National Highway Users Conference, 183
National Industrial Recovery
act, 179, 362n, 432n, 433, 434n
federal aid, 179-180
National Institute of Public Administration, 11, 12, 141, 143, 144, 144n, 152n, 166n, 182n, 191n, 250n, 264n, 277n, 280n, 340n, 353n, 354n, 410n, 411n, 465, 483n, 484n, 488n, 531
Negotiation Bureau, 64, 65
(*See* Right-of-Way)
Nevada, 139, 184n
New Brunswick, 339, 384, 389, 404, 467
New Hampshire, 184n
New Jersey
council, 284n
(*See* State)
New Jersey and New York Railroad Company, 232
New Jersey State Chamber of Commerce, 143n, 166n, 185n, 215, 257, 268, 343, 344, 348, xviin
New Jersey Taxpayers' Association, 166n
New York, 69, 119, 142, 143, 173, 202n, 384, 401, 469, 553, 562, 588
Newark, 29, 31, 53, 69, 71, 76, 77, 78, 80, 82, 88, 89, 102, 123n, 126n, 166n, 231n, 233, 268n, 273n, 276, 287, 339, 343, 352, 383, 384, 386, 404, 427n, 552n, 566n, 572, 573, 574, 575, 586
Newark Airport, 538n
Newark Bay, 401
Newmark v. *Civil Service Commission,* 65n
North Carolina, 530
North Dakota, 184n
North Jersey Construction District, 69

O

Ocean County, 112, 513, viii
Ocean Highway, 349n
Office Boys, 277
Office Engineer, 21, 22, 26, 27, 65, 73, 74-75, 76, 80, 81, 323n, 327n, 339, 340, 378, 379, 380, 381n, 439, 534n
  assistant, 75-76, 381
Office Management Bureau, 157, 245, 255, 284, 294
Operators, 558, 559, 579, 581, 582, 586
Oregon, 225
Oregon State Highway Commission, 251n
Organization and Administration of State Government of N. J., 144n
Organization of State Highway Department, 31, 136, 137, 138, 138-142, 229, 248
  model organization, 151n
  recommendations, 33, 229ff.
Organization Studies, 249, 250.
Overseers of Roads, 36
Owen, Wilfred, 137n, 220n, 221n, 223n, 224n, 225n, 226n

P

Paramus, 396
Passaic County, 112, 346n, 359, 489, 518, viii
Passaic River, 402
  bridge, 405
Paterson, 383, 396, 538
Patrolmen (*See* Maintenance)
Payroll Procedure, 256-260, 455
  Addressograph company, 258
  Addressograph machine, 278
  Ditto machine, 278
  Graphotype machine, 278
  International Business Machine Corporation, 258, 259, 276, 455
  labor payroll (*See* Funds)
  Multilith, 278
Penns Neck, 392
Pennsylvania, 119, 530, 536, 553
Permanent Road Improvement Act, 486, 489n
Permits, 462-464
  engineer, 91, 98-99, 101, 102, 104, 444, 462, 463
Personnel, 42
  administration, 235, 238, 285
  bureau, 155, 242
  classification, 248
  duties, 47-54, 70-89, 91-101, 108-112, 116, 124-127
  highway, 235, 248-249
  labor management, 254
  management, 245, 247, 248
  officer, 245, 247, 249, 250, 251, 252, 253, 254, 255, 294
  program, 255
  rating board, 251, 253
  State government, 257, 260
  statistics, 258
Perth Amboy, 173, 383, 384, 404
Phebe-Hobson, Fowler Award, 404
Philadelphia, 131, 133, 135, 136, 383, 401, 588
Phillipsburg, 80, 126n, 552n
Picatinny Arsenal, 442
Piers and Wharves, 39
Pit Scale, 365
Planning
  bureau of highway, 157, 158, 159, 371, 373, 595, 596
  commission, 144
    (*See also* Public Works)
  county act, 346
  county boards, 346
  municipal act, 345
  State board, 368, 373
  survey, 79, 229, 362
    (*See also* Highway Planning)
Plant and Equipment, 565, 570
  bureau, 157, 159, 285
  superintendent, 123, 124, 576
Pleasantville, 76, 77n, 89
Port Jervis, 384
Postmaster General, 178
Prequalification Committee, 49, 52, 58, 234
Princeton Survey, 12, 22, 23, 24, 28, 141, 144, 152n, 166n, 173n, 183, 184, 189, 192, 193, 202, 203, 206n, 214, 215, 218, 224n, 226n, 270n, 273n, 285n, 286n, 287n, 320, 321, 323n, 324n, 325n, 327n, 329, 330, 332, 342n, 344, 350n, 353n, 355n, 356n, 361n, 367n, 368, 369, 373n, 423n, 490n, 531, 532, 533, 534
Process Servers, 60, 61
Projects
  division (*See* State Aid)
  engineer, 17, 18, 107, 108-109, 110, 111, 493, 495, 507, 509, 514, 522, 533
Publicity, 230
Public Relations, 280-284
  bureau, 157, 158, 160, 282, 284, 285
Public Roads
  department, 5
  supervisor, 108, 119
Public Roads Administration, 71, 72, 78, 79, 97, 149, 166, 177n, 340n, 362, 366, 400, 405, 408, 416, 417, 423, 434, 435, 438, 439, 440, 441, 517, 535n, 591, 594, 596n

Public Roads Bureau, 3, 29, 362, 366, 370, 425, 430, 431, 434, 438, 536
Public Roads Commissioner, 1, 3, 4-5, 149n, 349n, 362n, 501, 528
Public Service Railway Company, 232
Public Utility
board of commissioners, 17, 71, 176, 189, 398, 400, xix
division of bridges and grade crossings, 15, 17
Public Works
Administration, 72, 180
commissioner, 12, 148, 149
department, 12, 139, 140, 142, 143, 144, 148, 149, 150
director, 154
planning commission, 13, 144, 361n, 368, 370, 532
P. W. A., 72, 180
federal aid, 180-190
projects, 45, 434n
Pulaski Skyway, 22n, 71, 283, 355, 383n, 404, 457, 586
Purchase
act, 262, 264, 272
agent, 52, 203, 262
clerk, 262, 263n
commissioner, 23, 199, 205, 215, 216, 217, 263, 264, 267, 268, 270, 272, 273, 276, 446, 447, 451
director, 217
division, 16, 17, 217, 262n
fund, 270
law, 262
procedure, 262-273
Purchase and Stores, 42, 51
bureau, 262, 276-7, 281n, 584
supervisor, 48, 52-53, 115, 124, 154, 262, 263, 264, 265, 266-267, 271, 272, 273, 274, 275, 276, 277, 278, 446, 447, 455, 555, 579
Purchasing Department, State, 52, 92, 216, 263, 264, 266, 267, 271, 272, 274, 276, 446, 448, 451, 456, 469

R

Railway, 80
Railroads and Street Railways, xxi
Raritan Bay, 401
Raritan River, 402, 546
Real Estate
acquisitions, 24, 37, 289, 323
director, 24, 28, 29
acquisitions division, 28, 29, 348
disposition of property, 40, 338-339
division, 24, 25, 42, 58, 60, 61, 63, 66, 71, 76, 97, 156, 241, 279, 281, 285, 286, 290, 292, 297-349, 378, 381
engineer, 65, 239-240
Reed, Edward E., 15, 16, 28
Reorganization of the State Highway Department, 137-161, 442-443
external, 145-151
internal, 151-161
recommendations, 144, 158, 190, 193, 195, 227, 232-233, 261, 264n, 291, 332, 348, 369, 372, 411
Research and Testing, 229, 593-596
bureau, 158, 160, 410, 443, 562, 592, 595, 596
Resident
bridge engineer, 77n, 86, 89, 412n
commissioners, 19
engineers, 65, 66, 72, 76, 77n, 78, 81, 82, 83, 85, 89, 412, 413, 414, 415, 416, 417
field engineers, 161
highway engineer, 73, 76, 77n, 78, 111n, 298n, 303, 338, 414, 465
Revenues, 183, 185, 190n, 192, 196, 202, 218, 220, 271
tax and revenue division, 217
Revised Statutes of 1937, 164, 268, 517
Right-of-Way, 144, 145, 391
acquisitions, 74, 75, 76, 339, 378
agents, 18, 25, 27, 29, 42, 63, 64, 66, 154, 290, 292, 297, 298, 299, 300, 301, 302, 303, 304, 305, 314, 315, 317, 319, 320, 321, 322
board, 331, 332, viii, xii, xiii, xiv, xv
bureau, 16, 17, 18, 50
commission, 328n
division, 25, 26, 27, 28, 63, 75, 298n, 313
engineer, 17, 18, 25, 26, 29, 65
engineering, mapping, 336-338
investigator, 63, 65, 304, 305
legal division, 26-27, 28, 63, 66, 290
negotiators, 60, 63, 64, 66, 303, 304, 305, 317, 321
surveys, 337
widths, 339-342, 369
Riparian Lands Bureau, 38n, 144
Ripper Act, 19-20, 24
Road Inventory Procedure Report 387n, 397n, 405n
Roads, 39, 223, 224, 589
county, 426
supervisor, 492, 496, 497, 498, 521
Cumberland, 1
detour, 35, 94
dirt road projects, 426

equipment operator, 53, 126n
general-use, 221, 224
institutes, 535-536
institutional, 103
supervisor, 91, 101, 458, 459, 471
life study, 364
local-use, 221, 365
location, 381-384
municipal, 220, 426, 515
overseers, 36
patching, 455-457
primary, 220
public (*See* Public Roads)
secondary, 220, 221, 339, 365
State, 220, 384, 530
township, 220
(*See also,* Highways, State Highway System)
Roadside Control, 342-348
Roadside Improvement, 439-440
Robbinsville, 552n
Robinson, vi n
Rodmen, 77
Route Book, 92, 99, 445, 446, 447
Route 1 Extension Division, 21, 22n, 25, 26, 283
Rutgers University, 254
Rutherford, 378

S

Safety, 233
Safety Lighting, 537-544
Safety Program, 549-551
Salem County, 112, viii
School of Public and International Affairs of Princeton University, 141, 144 (*See* Princeton Survey)
Scott, Hugh L., General, 21, 23, 24, viiin
Scott Commission, 21, 22, 23, 25, 140, 323, 333
Sea Girt, 458
Searches
Chancery, 60
federal court, 60
searching company, 60
State Supreme Court, 60
title, 291
Secondary Highway System (*See* State Highway System)
Secretary of Agriculture, 362, 431, 433, 434, 437
Service Rating Schedules, 250-253
Settlement Clerk (*See* Clerk)
Shark River Bridge, 405
Sherbaum, E. R., 538n
Shrewsbury River Bridge, 405
Sign Program, 461
Silzer, George S., Governor, 19, 24
Singac, 573
Sinking Fund, 168, 171, 186n, 196
commission, 175
Sloan, William G., Major, 21, 22, 28, 29, 351, 361, 530
Snow Removal, 102-104, 229, 237n, 452, 472-476, 566, 585-587
Somerset County, 112, viii
Somerville, 31, 123n, 126n, 571
South Amboy, 76, 89, 383, 552
South Carolina, 139
South Dakota, 184n
Special Assignments, Engineer of, 17, 19, 73, 77, 158, 387, 392, 443, 467, 594, 595
Special Design, Engineer of, 43, 154, 230, 280
Special Engineer, 45, 65-66, 154, 156, 238, 286, 298, 318, 320n, 338
Special Origin and Destination, 365
Staff Conferences, 260-261
Standards and Specifications Committee, 272, 273
State Aid, 2, 5, 6, 11, 17, 19, 28, 84, 129, 132, 165, 200, 220, 227, 229, 357, 382, 501, 503, 505, 527, 528
act, 3
administration, 531
annual work program, 40, 108
county and municipal, 1, 40-41, 42, 50, 74n, 87n, 107, 484, 486-493, 504
division districts, 112
funds, 219, 221, 403
law, 2, 527
program, 194, 437, 484, 485, 533, 535
projects division, 28, 43, 74, 87n, 107-114, 136, 158, 161, 430, 431n, 443, 484-536, 587, 591, 592
engineer (*See* Projects Engineer)
supervisor, 107, 108, 109, 492, 493, 495, 496, 497, 507, 509, 518, 522, 533
State Auditor, 202, 203, 208, 212-213, 216, 218, 354
State Board of Education, 458
State Capitol Building, 277
State Comptroller, 34, 47, 58, 60, 164, 165, 166n, 171, 191, 195, 199, 202, 203, 205, 208-211, 212, 213, 215, 216, 218, 231, 256, 257, 258, 259, 260, 276, 291n, 292, 409, 415, 477, ii, iii
State Defense Council, 540
State Employee's Retirement System, 49, 246, 256
State Employment Service, 408

State Farm Bureau, 183
State Fiscal Reform, 143n, 203
State Freeholders Association, 183
State Funds, General (*See* Funds)
State Geologist, 282n
State Highway Act, 443n
State Highway Bureau, 12, 87-90, 101, 143, 144, 158, 160
State Highway Commission, 4, 5-7, 138, 139, 164, 176, 183. 191, 192, 193, 206, 241, 243n, 280, 308, 316, 320n, 331, 342n, 343, 369, 370, 384, 419, 422, 469, 486, 487, 488, 533, x
  advantages and disadvantages, 140, 141, 142, 161, 230
  advisory highway board, 141-142
  Burton Commission (*See* Edwards Commission, *post*)
  chairman, 19, 20
  commission
    of *1909,* 4
    of *1912,* 349
    of *1917,* 6, 7, 8, 14, 262, 323n, 528
  criticisms, 12-13
  department under the highway commissions, 14-29
  Edge Commission, 14-16, 140
  Edwards Commission, 16-19, 140
  Foran Commission, 24-28, 140, 237, 299n
  minutes, 65n, 69n, 97n, 115n, 457n, 489n, 510n, 513n, 537n, 577n
  public works planning commission, 144, 532
  replacement, 13, 14, 28, 33
  reorganization of 1923, 7, 8, 19, 20
  reports
    annual, 281, 283n, 323n
    1927, 10, 350, 351, 352, 353, 354, 355, 484n, 530, 531
  salary, 4, 7, 16, 20
  Scott Commission, 14, 21-24, 25, 140, 323n, viii-xvi
State Highway Commissioner, 33-44, 139, 140, 347n, 506, 533, iii, iv, xvii, xviii
  appraisals and condemnations, 315, 316, 317, 318, 319, 320, 321, 322, 323
  creation, 13, 14, 141, 151
    1935 act, 13, 14, 28, 33
  duties, 33, 34, 52, 57, 71, 72, 85, 109, 110, 111, 118, 194, 195, 197, 199, 200, 201, 202, 206, 232, 234, 235, 246, 247, 265, 267, 272, 284n, 299, 300, 301, 304, 306, 308, 311, 313, 314, 339, 356, 367, 368, 373, 374, 492, 493, 494, 495, 496, 497, 502, 503, 504, 508, 509, 510, 512, 513, 514, 517, 518, 519, 520, 521, 522, 523, 525, 528, 541, 544, 545, 546, 547, 554, 555, 575, ii, vii
  equipment policy, 565
  meetings, 70
  minutes, 34, 480n
  powers, 14, 28, 29, 33, 34, 35-41, 149, 150, 151, 152, 198, 336, 349, 374, 485, 501, 503, 504, 520, 528
  removal, 14
  report, 211, 280, 281, 282
  rule making power, xix-xxv
  safety policies, 538, 539, 546, 549, 550n, 552
  salary, 14, 33
  staff, 43-44, 47, 49, 65, 69, 91, 108, 115, 154, 156, 161, 230, 237n, 242, 244, 245, 246, 247, 248, 251, 271, 286, 296n, 298n, 480n, 537
    conferences, 260
  Sterner, E. Donald, 33, 164, 173, 294n
  term, 14, 33, 375
State Highway Department
  annual report, 200
    inadequacies of, 280-283
    publication of, 282
    public relations bureau, 282-283
  history, 1-29
  objectives, 229
State Highway Engineer, 19, 27, 43, 44-45, 49, 152, 154, 195, 198, 286, 367, 376, 377, 395, 442, 448, 453n, 487, 502n, 519
  assistant state highway engineer, 7, 17, 19, 20, 21, 28, 29, 34, 44, 298n, 531, 533
  duties, 44, 156, 157-158, 265, 267, 299, 300, 304, 318, 319, 374, 409, 415, 416, 417, 418
  Logan, James, 44, 164
  prequalifications committee, 58, 234
  report
    annual, 281, 282, 323n
    of *1926,* 10, 350n, 351, 352, 353, 354, 361, 530
  salary, 7, 20, 21, 34, 44
  selection, 7, 13, 20, 21, 23, 28, 29, 34, 44
  staff, 44-45, 53, 54, 61, 63, 66, 69, 70, 71, 85, 87, 91, 107, 108, 115, 118, 123, 241, 242, 246, 247, 276, 279, 290, 292, 297, 301, 302, 303, 402, 537, 577n
  term, 7, 13, 20, 22, 44
State Highway Fund, 167-190, 204 (*See also* Funds)
  appropriation act (*See* Appropriations)
State Highway System, 42, 139, 141, 143, 174, 176, 197, 198, 229, 281n, 305, 364, 386,

401, 469, 497, viii
act, 328n
additions, 8, 9, 353, 354, 356
bond issues, 173, 174
of *1922,* 9, 10, 171, 175
of *1927,* 9, 11, 171, 175
of *1930,* 11, 38, 171, 172, 175
bridge bureau, 84, 402, 403, 404, 405, 406, 594
construction division, 69, 74, 375, 377, 380, 383, 384, 387, 388, 389, 390, 391, 392, 394, 396, 397, 398, 412, 420, 424
costs, 426
electrical division, 537
accident investigations and traffic surveys, 551, 552
safety lighting, 537, 539, 543, 545, 547, 549, 560
federal aid system, 431, 442
laboratory division, 129, 589
legislated state highway system, 357-361, 378
maintenance division, 91, 98, 102, 103, 445, 462n, 478
planning and research, 367, 368, 369, 371, 596
powers of commissioner, 34-35, 36, 38
routes, 8-10, 35-36, 73, 75, 78, 80, 118-119, 283, 339, 349-356, 376, 382, 383, 384, 396, 404, 405, 425, 469, 470, 538n, 546, 552n, 574
secondary system, 485, 505, 527-535
study of, 10, 530
system
of *1912,* 4-5
of *1917,* 8, 9, 10, 11, 505
of *1927,* 10, 22, 34-35, 36, 173, 353, 354, 355, 505
WPA—state highway bureau, 87, 470
State House, 31, 277
annex, 31, 32, 33, 53, 54, 60, 87, 214, 277, 278, 285, 295, 469n
commission, 37, 143, 200, 202, 203, 205, 213-218, 262, 269, 270, 509n
State Labor, 17, 19
camps, 5-6
supervisor, 17
State Librarian, 282n
State Library, 207, 282
State Manager, 79
State Museum, 31
Staten Island Bridge, 126n
State Police, 284, 459, 540
State Purchase Fund, 270
State Tax Commissioner, 175, 216, 217
State Tax Department, 176, 197, 259n
State Treasurer, 166n, 175, 177, 178, 202, 208, 209, 211, 212, 213, 215, 216, 256, 257, 258, 259, 260, 408
State Water Policy Commission, 403
State-Wide Planning Survey, 29, 73, 78-79, 89, 157, 159, 221, 362, 363n, 367, 371, 374, 387, 388, 397, 405, 433, 594
Statistical Bureau, 42, 155, 241, 281, 284
Sterner, E. Donald, 28-29, 33, 164, 173, 294n, xxii n, xxiii n
Storekeeper, 53, 120, 273, 274
Stores, 273-277
Strobel Steel Construction Co. v. *State Highway Commission,* v, vi
Superintendent of Heavy Construction (*See* Construction)
Superintendent of Maintenance (*See* Maintenance)
Superintendent of Plant and Equipment (*See* Plant and Equipment)
Supervising Engineer, 434
Supervisor of Electrical Drawbridges, 115, 117, 557
Supervisor of Electrical Machinery, 117, 558
Supervisor of Electrical Signs, Signals and Lighting, 120-121, 554, 556
Supervisor of Equipment and Transportation (*See* Equipment and Transportation Division)
Supervisor of Highway Maintenance (*See* Maintenance)
Supervisor of Institutional Roads (*See* Institutional Roads)
Supervisor of Materials (*See* Materials Supervisor)
Supervisor of Purchase and Stores (*See* Purchase and Stores)
Supervisor of State Aid Projects (*See* State Aid)
Supervisor of Titles (*See* Titles)
Supervisor of Traffic Safety (*See* Traffic)
Supreme Court, 323, 327, 330, 331, 333
Survey and Plans, 377-381,
bureau, 22, 24, 25, 28, 29, 42, 63, 64, 66, 70, 71, 73-80, 83, 84, 85, 89, 116, 119, 129n, 157, 158, 159, 279, 290, 298, 299, 301, 303, 304, 336, 337, 338, 363, 367n, 377, 379, 384, 387, 400, 401, 402, 403, 413, 418, 420, 439, 442, 443, 459, 465, 554, 572, 584
chief, survey party, 65
engineer, 73, 76, 77, 78, 79, 85, 129n, 302, 303, 304, 377, 378, 393n, 394n, 401, 438, 443

Survey Districts, 25
Survey Engineers, 18n, 19, 25, 65
Sussex County, 112, viii

T

Tax and Revenue Division, 217
Tax Economic Bulletins, 183
Taxes, 2, 8, 10, 11, 219, 220, 227, 336
  beverage, 216n
  billboard, 216n
  burden, 223
  bus excise, 168n, 181
  commissioner, 175, 216, 217
  corporation, 216n
  gasoline, 183, 226, 227, 353, 364
  general property, 172n
  income, 219
  inheritance, 186n, 216n
  local, 216n
  mill, 168-171
  motor fuels, 168n, 171, 172n, 175-176, 177, 181, 183, 186n, 197, 225
  motor vehicle, 219, 220, 350
  municipal purpose, 190n
  policy, 225
  property, 219
  railroad, 216n
  receipts, 218
  sales, 219
  State road, 168, 171n, 353
  State tax department, 129, 216
  utility, 216n
Technical Engineer, 45, 158, 241, 442
Tegnell, G. G., 257n, 260n
Telephone Operator, 130
Testing
  chemist, 131
  engineer, 129, 132-134, 135, 136, 588
Thompson, William G., 15
Timekeeper, 120, 555
Titles
  bureau, 26, 28, 32, 63, 66, 292, 293, 305, 308, 338
  examiner, 60, 291
  officer, 57, 60-61, 63, 66, 76, 279, 285, 290, 291-293, 301, 302, 303, 304, 381
  readers, 60
  searchers, 59, 60, 61
  Supervisor, 57, 59, 60, 63, 66, 241, 279, 285
Toms River, 31, 123n, 126n, 425, 573
Township and Borough Aid, 107, 108, 109, 110, 111, 484, 499, 501-517, 517-518, 518-527, 528, 529, 532, 533, 535, 542
Traffic
  act, 459, 461
  bureau, 115
  engineer, 73, 78, 148, 367n, 401, 443, 594, 595
  enumerators, 117, 551, 552, 553
  investigators, 118
  line work, 459-462
  safety, 540
    supervisor, 115, 118-119, 158, 544, 547, 551, 554
  signals, 544-546
  supervisor, 540
  survey, 79, 365, 551-554
Travel Lanes, 390
Trenton, 31, 66, 69, 80, 88, 93, 99, 101, 102, 103, 114, 123n, 126n, 171n, 214, 241n, 332, 339, 343, 349n, 351, 379, 384, 389, 392, 407, 435, 453, 464n, 467, 473, 495, 532, 538, 552, 553, 580, 581, 592
Trenton Terminal, 352

U

Unemployment Compensation
  commission, 79, 251
  commissioner, 576
Union County, 80, 112, 359, 376, 489n, viii
Union Indemnity Co. v. *State Highway Commission,* v n

V

Van Tine, Benjamin C., 29, 164n
Verona, 384
Victory Bridge, 19
Vincentown, 574
Vineland, 31, 123, 126n, 566n, 574, 575
Virginia, 469, 530

W

War Department, 84, 85, 403
Warren County, 80, 112, 489, viii
Washington, 71, 97, 435
Wasser, Thomas J., 16, 17, 22, 152
Waterways and Coast Protection Bureau, 143, 144
Weights and Measures Department, 207
Westchester County, 347n
Western Division, 16, 17
White Horse Pike, 126n
Wilbur Cross Highway, 347
Woodbridge, 31, 123n, 126n, 383, 396, 425, 538n, 552n, 571, 572
Woodbury, 574
Woodlynn, 76, 89

Workmen's Compensation
act, 294
bureau, 296
Workmen's Compensation and Claims, 232n
clerk, 57, 59, 254, 255, 256, 286, 287, 294-297, 477, 581
officer, 100
Works Committee, 18
W.P.A., 426n, 427, 433, 509, 523
bureau, 426, 442
coordinator, 69, 87-88, 89, 241, 426, 427, 428n, 429n, 470, 472, 522, 523
forms and records, 88
personnel, 79, 83-84, 471
projects, 92, 95, 97, 110, 269, 270, 279, 392n, 426-430, 469-471, 481, 519, 522
betterment, 426, 430, 449, 470, 471, 481, 523
bridge, 84
primary, 426, 427, 428n, 429, 470
road, 29, 78, 87, 88
program, 426, 427, 429, 467, 470, 471, 514, 518, 522
State highway bureau, 87-90, 158, 161
State office, 70, 79, 84, 87, 412, 427, 523
supervisors, 471
workers, 66, 84