WOMEN WAGE-EARNERS—SPECIAL INVESTIGATION.
Sioux City—
Department and other retail stores:
Ages 170
At home or adrift 114
General statistics 134-141
Schooling 171
Wages 168, 169
Hotels and restaurants:
Ages 184
At home or adrift 116
General statistics 174-175
Schooling 185
Stores, Department (see Department and other Retail Stores).
Tips in hotels and restaurants 120
Vacations taken by woman wage-earners in stores 119
Wages (see Earnings). Discussion 119
Rates of, in department stores 122-167, 168, 169
Hotels and restaurants 120, 172-183
Relation of, to moral condition of women 119
Widows 117, 118
Woman Factory Inspector—
Statutory provision for 112
Special investigation by 112, 113

FIRST ANNUAL REPORT

OF THE

Iowa State Highway Commission

Covering the Periods

April 9, 1913, to December 1, 1913

AND

December 1, 1913, to December 1, 1914

DES MOINES
ROBERT HENDERSON, STATE PRINTER
1915

Ames, Iowa, December 1, 1914.

To the Hon. George W. Clarke, Governor of the State of Iowa:

Pursuant to the provisions of the Iowa Road Law, the State Highway Commission presents its report for the two periods, April 16, 1913 to December 1, 1913, and December 1, 1913, to December 1, 1914.

A. MARSTON,
J. W. HOLDEN,
H. C. BEARD,
State Highway Commissioners.

STATE HIGHWAY COMMISSION:

A. MARSTON, Chairman,
J. W. HOLDEN, Commissioner,
H. C. BEARD, Commissioner.

SIRS—In accordance with your instructions I am submitting a report of the detailed operations of the Commission since its organization.

Part One contains the departmental report covering the period from April 9, 1913, to December 1, 1913.

Part Two contains the departmental report for the period from December 1, 1913, to November 1, 1914.

Part Three is devoted to road legislation.

Part Four contains special chapters dealing with the most important phases of the highway work.

Part Five deals with investigations and research.

Part Six contains the financial report, which is given for the two periods, April 9, 1913, to June 30, 1913, and from July 1, 1913, to June 30, 1914, thus putting the financial report on the basis of the fiscal year, as is required.

Part Seven briefly outlines the requirements of the roads through and adjacent to the state institutions.

Part Eight contains the information summarized and tabulated from the reports of the county engineers.

This report has been prepared with the assistance of the department heads, C. B. McCullough, F. R. White, J. H. Ames and J. S. Dodds; J. W. Eichinger, Editor of the Service Bulletin; and L. A. Wilkinson, Sr., Accountant.

The acknowledgments of the Highway Commission are due the county engineers who have submitted complete and detailed reports for their respective counties.

Respectfully submitted,

THOS. H. MACDONALD,
Highway Engineer.

Dated at Ames, Iowa,
December First,
One Thousand Nine Hundred and Fourteen.

PART ONE

Departmental Report April 1913 to December 1913. Dated December 1, 1913.

PART ONE.

Departmental Report April 1913 to Dec. 1913
Dated Dec. 1, 1913

SECTION ONE

GENERAL REVIEW—1913.

Chapter 122, Acts of the Thirty-fifth General Assembly, under authority of which the present Commission is organized, became effective on publication on April 9, 1913.

Organization prior to April 9, 1913.

Prior to that time the organization of the Commission was under the law passed in 1904, which constituted the Iowa State College, as an institution, a highway commission for the State. Under this form of organization the activities of the Commission were directed by the Dean of Engineering, A. Marston, and the Dean of Agriculture, C. F. Curtiss, under the general administration, first, of the Board of Trustees, and, later, of the State Board of Education.

The first appropriation for the maintenance of the good roads work was thirty-five hundred dollars per annum, which was increased in 1906 to five thousand dollars per annum, and in 1910 to ten thousand dollars per annum. All bills, purchases and business details were handled through the Finance Committee of the Board of Education and the Secretary and Treasurer of the College, and the Commission's organization conformed to the same rules and regulations as did the regular departments of the College.

Under this organization it was possible to make a broad study of the needs of the State, and a considerable amount of information was gathered which formed the foundation of the later legislation. Standard plans and methods for highway improvements were also developed and distributed to public officials.

In all the detailed studies that were made in various counties and along various lines, the expenditure of the public funds raised for highway improvement received the keenest analysis.

Gradually it became evident that the expenditures for bridges and culverts should be the first to be placed on a businesslike basis.

Just as soon as the Commission found that the culvert and bridge situation must be bettered in the State before any considerable progress could be made, the work of the Commission at once became open to the attacks of those whose interests would be affected by the placing of the bridge work of the State on an open competitive basis. Two facts became immediately apparent:

First. That the State was divided into districts by the supply companies, and it was impossible to secure competition between them.

Second. That there were no standards of value, or any general knowledge, amongst the road officials of the market value of bridge materials and labor which were being supplied to the public. Likewise, there was no uniformity existing, either in quality or prices of the supplies furnished.

This vicious system began almost with the advent of the first iron bridges, and was developed through the stage of steel bridges and fastened itself with tenacious purpose upon the concrete bridge industry, augmented as it was by so-called patents and other practices amounting to little less than blackmail schemes for controlling the bridge and culvert funds of the State. These funds proper constituted about one-half the entire road taxes raised. In addition, however, to the bridge funds, more and more of the funds raised for road grading, road drainage and dragging were diverted to pay for bridges or culverts.

Just preceding the passage of the present road law probably not less than fifty per cent of the money for road work was going into corrugated, old boiler pipe, or other forms of culverts, or into road machinery, and a very small fraction indeed was actually reaching the roadway in the form of road work.

As soon as the Commission had secured sufficient information relative to the existing conditions, recommendations were made for corrective legislation. Bills were introduced in three successive legislatures to provide an adequate bridge law, and each time they were overwhelmingly defeated through the influence of the lobby maintained by the bridge companies in co-operation with an element which at that time held the control in the State Supervisors' Association.

It was not until several supervisors in Polk and Clinton counties were removed through the efforts of the Department of Justice and the Highway Commission that the people of the State became

aware of the conditions that were existent in some counties. This was followed by the recovery by the Highway Commission and the Department of Justice, in co-operation with the County Attorney of Clinton County, of over twenty thousand dollars illegally paid out for bridge work in Clinton County.

The existence of like conditions in other districts of the State, together with the insistent demand for an efficient and trained administration of road and bridge construction under a responsible head, resulted in the legislation under which the present state highway department was organized and a completely new system of highway administration established.

Organization of Present Commission.

After publication of the statute, April 9, 1913, which provided for a State Highway Commission, Governor George W. Clarke appointed Mr. J. W. Holden of Scranton, commissioner to serve the four year term, and Mr. H. C. Beard of Mt. Ayr, commissioner to serve the two year term, as provided, their terms to begin July 1, 1913, but as was stipulated in the law, they were to serve during the interim between the appointment and July 1st. Mr. A. Marston, Dean of Engineering of the Iowa State College, became, ex officio, a member of the Commission.

At the time of his appointment, Mr. Holden had just completed his sixth year as member of the Board of Superisors of Greene County and was president of the Association of State Supervisors. He had previously served in the capacity of township trustee of his township for about eleven years. Mr. Beard is a lawyer, and one of the originators of the Mt. Ayr plan of road work, which had been a successful method for securing road dragging.

The Commissioners met at Ames on April 16th, and effected an organization by electing A. Marston chairman.

The force employed under the old form of organization was at this same meeting taken over to form the nucleus of a force adequate to carry on the work under the new law. The personnel of the force taken over was as follows:

Thos. H. MacDonald, Highway Engineer.
J. E. Kirkham, Consulting Bridge Engineer.
C. B. McCullough, Assistant Engineer.
F. R. White, Assistant Engineer.
J. H. Ames, Assistant Engineer.
Annie Laurie Bowen, Stenographer.
Merle Crabtree, Stenographer.
J. A. Paulson, Draftsman.

The salary and terms of employment of these employes were continued until July 1, 1913, without material change.

At the time of the passage of the new law a considerable amount of furniture, supplies and equipment had accumulated which were continued in use after the reorganization. This equipment is listed in Schedule Seventeen.

Departments.

At an early meeting of the Commission it was decided that the proper administration of the new road law and the performance of the duties imposed upon the Commission require an organized force operating through four different departments, viz:

(1) Office Department.
(2) Designing Department.
(3) Field Department.
(4) Educational Department.

It will be noted in this connection that it has been necessary to develop the force of the Commission almost entirely on the basis of the experience in this State. There is no other road law in any of the states that is formulated on the principle of state supervision or state control without state aid. All other state laws which provide state control also provide state aid in some form.

The present departmental organization has satisfactorily handled the demands up to this time. In order to present the work taken up by these departments in detail, the organization, expenditures and activities are presented each in a separate section, which has been prepared in co-operation with the head of each department.

The general activities of the Commissioners have been directed to a broad enforcement of the law, which has required the distribution of a large amount of general and detailed information relating to the requirements of the statute and the proper interpretation thereof, and the rulings of the Commission.

Service Bulletin Number One, May Edition.

Owing to the radical change in the requirements of the law, at an early meeting of the Commission, Mr. George Cosson, Attorney General, was requested to prepare in co-operation with the Highway Commission, a detailed explanation of the provisions of the law with the rulings of his department as to these provisions. Mr. Henry E. Sampson, Special Counsel, was assigned to this work, and a seventy page pamphlet containing all the new road laws passed by the Thirty-fifth General Assembly with explanations

and interpretations of each of the provisions, and answers to all the questions that had been received up to that time, was prepared.

The first edition of one thousand copies was quickly exhausted, and as soon as the text could be carefully corrected, a second, June edition, of eight thousand copies was issued of which all but about two thousand copies have been distributed to the road officers of the State. The call for this bulletin has been such that it was decided to begin the publication of a monthly service bulletin the first of December.

In addition to the publication of Service Bulletin Number One, the county supervisors, county auditors and county engineers have been communicated with frequently through official communications, as well as personal letters. Of these communications sixteen have been issued to December 1, 1913, copies of which are included in the appendix to this report.

Road Maps.

Under the requirements of the law the Commission was required to furnish a map to each county board, drawn to uniform scale. On investigation, the only complete sets of county maps that could be found were those published by the Iowa Publishing Company of Des Moines, Iowa. A quantity of stock maps were purchased to be used as preliminary maps, and a contract was entered into with this company to supply a new set of maps for each county, on a scale of three-fourths inch to one mile. This contract included the printing of all the county road systems as finally approved, in red, and the remainder of the roads, in black.

In order to secure as correct a map as possible, black and white prints were first taken from the new plates, copies of which were furnished all the county engineers with the request to make corrections in the roads, stream lines, corporation boundaries, and other changes to give substantially a correct road map for each county. These corrected prints have been returned for over two-thirds of the counties, and the corrections on the plates are being made as fast as possible. The uncorrected first prints must be used on which to outline the final road system, which will be filed with the county before March 1st. As soon as the county road system is finally approved, this will be printed in red on the map for that county, and a number of copies will be furnished each county by the Commission.

Owing to financial difficulties the printing company was not able to carry out the original contract, and the Commission has

been obliged to order more copies than originally intended. Under this contract as amended, the Commission has secured an entirely new set of corrected road maps for the whole State, fifty copies of which are to be delivered to the Commission at a total cost per county of $75.72.

Meeting With Committee on Retrenchment and Reform.

On May 6, 1913, by arrangement with the Committee on Retrenchment and Reform, the Commission met with this Committee at the Capitol building at Des Moines, and went over the proposed organization of the engineering and office force, the auditing of bills, the accounting and other details of the business to be conducted by the Commission. These matters were also presented to the Efficiency Engineers employed by this Committee, and a number of suggestions were made by them.

A ruling was requested from the Committee on Retrenchment and Reform as to the proper amount of bonds to require of employes of the Commission, also the question as to the amount of bonds to be furnished by the Commissioners, there being no legal requirements as to the bonds for the Commissioners themselves. The bonds of the Commissioners and employes are shown in Schedule One.

Civil Service Phinciples.

At the meeting on April 24, 1913, the Commission decided to apply civil service principles to the qualifications and terms of employment and advancement of the force employed under the direction of the Commission.

Conference With the State Accounting Department.

A conference was held with the State Accounting Department on May 24, 1913, at which time it was agreed that the Highway Commission should become responsible for the preparing of a uniform system of blanks to be used in county and township offices for all accounts and reports relating to county road and bridge work.

Conference With Committee Representing the County Auditors.

At the meeting of the Association of County Auditors held at Council Bluffs on August 18th, 19th, and 20th, at the request of the Commission a committee was appointed composed of the following county auditors:

E. L. Marriage, Hardin County.
H. B. Rosenkrans, Floyd County.

M. T. Finley, Dallas County.
J. D. Hannan, Pottawattamie County.
James L. Hanrahan, Webster County.
B. S. McCully, Greene County.
B. E. Norton, Kossuth County.

Several conferences were held between the representatives of the Commission and this committee of auditors, and all of the blanks which are now in use have been passed upon and agreed to by this committee.

Conference With County Engineers.

In order to get the viewpoint of all parties interested in the blank forms and reports, a conference was held with a number of representative county engineers. This conference was held at Ames on November 17th, and all forms to be used by the county engineers which have been prepared at this time were discussed and corrected in accordance with the suggstions received.

Adjustment of Existing Contracts.

One of the most perplexing situations met by the Commission at the outset, was the existence of a large number of indeterminate or annual contracts for bridge supplies, and for bridge construction, which had been entered into prior to the passage of the new law. After consultation with the Attorney General it was decided to adjust these contracts to come under the provisions of the new law, in order not to confuse and hinder the work of bridge building during the year, and to avoid preventing the immediate replacement of dangerous structures.

The law requires that standard specifications for all such work be furnished by the Commission, and in order to bring these contracts under the specifications of the Commission, and in conformity with the letter and spirit of the law, an adjustment was made by changing the basis of payment from a unit of measurement, which existed in practically all of the contracts, to a unit of weight. The prices for many of the items were reduced by agreement below that in the existing contract, and the resulting prices are believed to average less than those contained in the existing contracts. This is somewhat offset by the fact that the bridges required by the Commission are designed to carry heavier loadings, and are more permanent structures, therefore, requiring heavier and more substantial designs.

The modifications of the contracts by the adoption of the unit of weight basis is the only method by which contracts in existence can be brought under the requirements of the road law. It was judged by the Commission to be in the best interests of the public to adopt this policy for 1913, in order that the work might continue without too much confusion or interruption.

One or two county boards have taken the attitude that the adjustment of these contracts was forced upon them, and that they had no other recourse than to accept such adjustments. In every instance the adjustments of the contracts were made subject to the approval and acceptance of the board of supervisors of the county, and the attitude taken by the Commission has not been misunderstood except in a few cases where this attitude was wilfully misinterpreted.

Because of the fact that one of the most costly practices to the counties has been these blanket contracts, this subject is taken up in more detail in Part Four of this report.

Adoption of Tentative Road System.

Section Six of the road law requires the Commission to pass upon portions of the county road system as outlined by the board of supervisors as a tentative system on which work can be begun immediately without waiting for final approval. Inasmuch as it was impossible to make any adequate examination of roads in all of the ninety-nine counties, the Commission adopted as the tentative system which the boards should take over and maintain, the entire system as outlined by them, but limited work of a permanent nature to the roads that were not in dispute.

Examination of Final County Road Systems.

For the final approval of the county road systems, the general policy was adopted of examining each county system in detail, together with all petitions and protests.

One of the Commissioners and one of the Field Engineers of the Commission went into each county, inspected the roads in question, conferred with the supervisors and property owners and then made a written report of their findings. This report has been filed, with the maps returned by the boards of supervisors, petitions, remonstrances, and all correspondence pertaining thereto.

Numerous delegations have appeared before the Commission to urge the adoption or rejection of particular stretches of road, and

this work has required a large part of the time of the three members of the Commission.

Changes of Engineers.

Under the provisions of the law, engineers were changed in Appanoose, Marion, Carroll, Clarke, Des Moines and Emmet counties. These changes for the most part were made after consultation with the boards, on account of quality of service rendered, or lack of time given to the work.

Approval of Contracts.

All bridge contracts for individual structures amounting to $2,000 or more have been forwarded to the Commission for approval. A list of contracts approved is given in detail under Schedule Fifteen.

Approval of Road Plans.

For the plans for permanent road improvement a standard profile and plan sheet has been adopted by the Commission, one sheet to each mile of road. Standard cross sections, maximum grades and other details of construction were furnished by the Commission, and the plans made by the county engineers in conformity with these standards.

As soon as the plans are prepared one of the district engineers from the Commission inspects the road which is to be improved in the field, and makes his recommendations to the Commission before the plan is finally adopted and approved by the Commission.

Meeting With County Boards of Supervisors.

An attempt was made soon after the passage of the law to have at least one member of the Commission meet with the boards of all of the counties to establish so far as possible harmonious working relations, and to discuss the details of the road law. Up to the first of December, 1913, the Commission had personally met the supervisors of practically all the counties, and had gone carefully into the methods of working under the road law.

Salaries and Per Diem of the Commission.

The two members of the Commission appointed by the Governor are entitled to receive ten dollars per day and their expenses. The ex-officio member received no compensation for his work as a member of the Commission, his expenses only being paid.

The statute limits the number of days for which salaries can be drawn to one hundred days per year, or a total compensation of one thousand dollars. Inasmuch as the work of the Commission has required every day that the Commissioners possibly could spend, Commissioners Holden and Beard will necessarily donate a large number of days work without compensation.

SCHEDULE ONE.

PERSONNEL AND SALARIES OF THE COMMISSION AND ADMINISTRATIVE DEPARTMENT.

Name	Salary	Employment	Appointment
A. Marston, Chmn...	None.....	Commissioner	Ex-officio
J. W. Holden.....	$10 per day.....	Commissioner	April 14, 1913
H. C. Beard.....	$10 per day.....	Commissioner	April 14, 1913
Thos. H. MacDonald.	$2,400.....	Highway Engineer...	Temporary Appointment, April 23, 1913
J. E. Kirkham.....	$300*.....	Consulting Bridge Engineer	Temporary Appointment, April 23, 1913

*Part salary only.

SCHEDULE TWO.

BONDS OF COMMISSIONERS AND EMPLOYES.

The duty to require bonds of employes and to fix the amount lies with the Commission. Personal bonds are not required of the Commissioners and these are given voluntarily under a resolution passed by the Commission, August 5, 1913, covering the entire term beginning July 1, 1913.

Name	Position	Amount
A. Marston, Chairman.....	Commissioner.....	$5,000.00
J. W. Holden.....	Commissioner.....	5,000.00
H. C. Beard.....	Commissioner.....	5,000.00
Thos. H. MacDonald.....	Highway Engineer.....	$5,000.00
J. H. Ames.....	Office Engineer.....	3,000.00
F. R. White.....	Field Engineer	3,000.00
C. B. McCullough.....	Designing Engineer.....	3,000.00
L. A. Wilkinson.....	Accountant	3,000.00
W. H. Root.....	District Engineer.....	1,000.00
C. E. Olson*.....	District Engineer.....	1,000.00
E. Williams†.....	District Engineer.....	1,000.00
C. Coykendall.....	District Engineer.....	1,000.00
W. E. Jones.....	District Engineer.....	1,000.00

*Succeeded by J. S. Morrison, May 4, 1914.
†Succeeded by L. M. Martin, March 22, 1914.

SCHEDULE THREE.

APPOINTMENTS FILLED BY COMMISSIONERS APRIL TO DECEMBER.

County	Place	Date	By Whom
Adams.....	Corning.....	May 5.....	H. C. Beard
Adams.....	Corning.....	November 14.....	H. C. Beard
Allamakee.....	Waukon.....	May 22.....	J. W. Holden
Appanoose.....	Centerville.....	April 30.....	H. C. Beard
Appanoose.....	Centerville.....	May 24.....	H. C. Beard
Appanoose.....	Centerville.....	July 18.....	H. C. Beard
Appanoose.....	Centerville.....	July 25.....	H. C. Beard
Audubon.....	Audubon.....	May 29.....	J. W. Holden
Audubon.....	Audubon.....	August 8.....	J. W. Holden
Black Hawk.....	Waterloo.....	May 23.....	A. Marston
Black Hawk.....	Waterloo.....	May 11-12.....	J. W. Holden
Black Hawk.....	Waterloo.....	July 2-3.....	J. W. Holden
Black Hawk.....	Waterloo.....	August 12.....	A. Marston
Black Hawk.....	Waterloo.....	October 8.....	A. Marston
Boone.....	Boone.....	June 14.....	J. W. Holden
Boone.....	Boone.....	September 11....	A. Marston
Bremer.....	Waverly.....	June 20.....	H. C. Beard
Buena Vista.....	Storm Lake.....	May 7.....	A. Marston
Buena Vista.....	Storm Lake.....	October 8.....	J. W. Holden
Buchanan.....	Independence.....	October 3.....	A. Marston
Buchanan.....	Independence.....	June 19.....	H. C. Beard
Butler.....	Allison.....	April 30.....	A. Marston
Butler.....	Parkersburg.....	October 18.....	A. Marston
Calhoun.....	Rockwell City.....	May 13.....	A. Marston
Carroll.....	Manning.....	May 28.....	J. W. Holden
Carroll.....	Carroll.....	May 30.....	J. W. Holden
Carroll.....	Carroll.....	August 7.....	J. W. Holden
Carroll.....	Carroll.....	September 18....	J. W. Holden
Carroll.....	Carroll.....	November 14-15..	J. W. Holden
Carroll.....	Carroll.....	November 25....	J. W. Holden
Cass.....	Atlantic.....	July 8.....	J. W. Holden
Cass.....	Atlantic.....	July 8.....	H. C. Beard
Cass.....	Atlantic.....	June 5.....	H. C. Beard
Cass.....	Atlantic.....	November 13....	H. C. Beard
Cedar.....	Tipton.....	June 6.....	A. Marston
Cedar.....	Tipton.....	September 8-9...	A. Marston
Cerro Gordo.....	Mason City.....	April 28.....	A. Marston
Cerro Gordo.....	Mason City.....	May 24.....	A. Marston
Cerro Gordo.....	Mason City.....	October 10-11....	A. Marston
Cerro Gordo.....	Mason City.....	May 24.....	J. W. Holden
Cherokee.....	Cherokee.....	May 15.....	J. W. Holden
Cherokee.....	Cherokee.....	July 29.....	A. Marston
Cherokee.....	Cherokee.....	November 7-8....	J. W. Holden
Chickasaw.....	New Hampton.....	May 1.....	A. Marston
Chickasaw.....	New Hampton.....	October 9.....	A. Marston
Clarke.....	Osceola.....	May 2.....	H. C. Beard
Clarke.....	Osceola.....	July 26.....	H. C. Beard
Clarke.....	Osceola.....	July 28.....	H. C. Beard
Clarke.....	Osceola.....	September 26....	H. C. Beard
Clay.....	Spencer.....	May 15.....	A. Marston
Clinton.....	Clinton.....	June 7.....	A. Marston
Clinton.....	Clinton.....	July 24.....	J. W. Holden
Clinton.....	Clinton.....	November 19....	J. W. Holden
Crawford.....	Denison.....	April 30.....	J. W. Holden
Crawford.....	Denison.....	July 31.....	J. W. Holden
Dallas.....	Adel.....	June 15.....	J. W. Holden
Dallas.....	Adel.....	June 17.....	H. C. Beard
Dallas.....	Perry.....	June 19.....	H. C. Beard
Dallas.....	Adel.....	June 27.....	J. W. Holden
Dallas.....	Adel.....	September 9.....	J. W. Holden
Davis.....	Bloomfield.....	May 16.....	H. C. Beard
Davis.....	Bloomfield.....	July 25.....	H. C. Beard
Decatur.....	Leon.....	May 23.....	H. C. Beard
Decatur.....	Leon.....	June 2.....	H. C. Beard
Decatur.....	Leon.....	June 28.....	H. C. Beard
Decatur.....	Leon.....	July 26.....	H. C. Beard
Delaware.....	Manchester.....	May 21.....	A. Marston

SCHEDULE THREE—Continued.

APPOINTMENTS FILLED BY COMMISSIONERS, APRIL TO DECEMBER—Continued.

County	Place	Date	By Whom
Delaware	Manchester	November 20	A. Marston
Dickinson	Spirit Lake	September 3	J. W. Holden
Dickinson	Spirit Lake	September 12	J. W. Holden
Dubuque	Dubuque	May 22	J. W. Holden
Dubuque	Dubuque	May 28	H. C. Beard
Emmet	Estherville	June 18	J. W. Holden
Emmet	Estherville	September 5	J. W. Holden
Fayette	West Union	April 29	A. Marston
Fayette	West Union	July 17-18-19	A. Marston
Fayette	West Union	November 21	A. Marston
Floyd	Charles City	May 23	A. Marston
Floyd	Charles City	July 26	A. Marston
Floyd	Charles City	October 10	A. Marston
Franklin	Hampton	June 12	A. Marston
Greene	Jefferson	April 21	J. W. Holden
Greene	Jefferson	May 19	J. W. Holden
Greene	Jefferson	June 2	J. W. Holden
Greene	Jefferson	June 26	J. W. Holden
Greene	Churdan	August 30	J. W. Holden
Greene	Jefferson	September 7	J. W. Holden
Greene	Jefferson	September 26	J. W. Holden
Grundy	Grundy Center	May 9	A. Marston
Guthrie	Guthrie Center	August 18	J. W. Holden
Guthrie	Guthrie Center	November 28-29	J. W. Holden
Hamilton	Webster City	September 24	A. Marston
Hamilton	Webster City	October 31	J. W. Holden
Hancock	Garner	June 19	A. Marston
Harrison	Logan	May 7	J. W. Holden
Harrison	Missouri Valley	September 14	J. W. Holden
Harrison	Logan	November 12	H. C. Beard
Howard	Cresco	July 7	A. Marston
Humboldt	Humboldt	October 30	J. W. Holden
Iowa	Marengo	June 5	J. W. Holden
Iowa	Marengo	October 14	J. W. Holden
Ida	Ida Grove	June 16	J. W. Holden
Ida	Ida Grove	September 19	J. W. Holden
Ida	Ida Grove	October 7	J. W. Holden
Jackson	Maquoketa	May 26	J. W. Holden
Jackson	Maquoketa	November 20	J. W. Holden
Jackson	Maquoketa	May 27	H. C. Beard
Jasper	Newton	October 22	J. W. Holden
Jasper	Prairie City	August 30	H. C. Beard
Jefferson	Fairfield	April 30	H. C. Beard
Johnson	Oxford	June 23	J. W. Holden
Johnson	Iowa City	July 9	J. W. Holden
Johnson	Iowa City	October 13	J. W. Holden
Johnson	Iowa City	May 29-30	H. C. Beard
Johnson	Iowa City	June 11	H. C. Beard
Johnson	Iowa City	July 9	H. C. Beard
Jones	Anamosa	November 21	J. W. Holden
Keokuk	Sigourney	October 2	J. W. Holden
Keokuk	Sigourney	May 8	H. C. Beard
Kossuth	Algona	September 6	J. W. Holden
Kossuth	Algona	October 28	J. W. Holden
Lee	Ft. Madison	August 8-9	A. Marston
Linn	Cedar Rapids	May 21	J. W. Holden
Linn	Cedar Rapids	November 18	J. W. Holden
Lyon	Rock Rapids	May 9	J. W. Holden
Lyon	Rock Rapids	September 13	J. W. Holden
Lyon	Rock Rapids	November 13	J. W. Holden
Lucas	Chariton	May 1	H. C. Beard
Louisa	Wapello	June 12	H. C. Beard
Madison	Winterset	September 18	A. Marston
Madison	Winterset	October 31	A. Marston
Madison	Winterset	June 16	H. C. Beard
Mahaska	Oskaloosa	June 20	J. W. Holden
Mahaska	Oskaloosa	September 29	J. W. Holden
Marion	Knoxville	July 10	H. C. Beard
Marion	Pella	July 24	H. C. Beard
Marshall	Marshalltown	November 28	A. Marston

SCHEDULE THREE—Continued.

APPOINTMENTS FILLED BY COMMISSIONERS, APRIL TO DECEMBER—Continued.

County	Place	Date	By Whom
Marshall	Marshalltown	July 1	J. W. Holden
Mills	Glenwood	June 6	H. C. Beard
Mills	Glenwood	November 21	H. C. Beard
Mitchell	Osage	June 18	A. Marston
Mitchell	Osage	July 25	A. Marston
Mitchell	Osage	November 6	A. Marston
Monona	Onawa	October 10-11	J. W. Holden
Monroe	Albia	May 1	H. C. Beard
Monroe	Albia	May 15	H. C. Beard
Monroe	Albia	August 1	H. C. Beard
Montgomery	Red Oak	June 6	H. C. Beard
Montgomery	Red Oak	June 25	H. C. Beard
Montgomery	Villisca	August 6	H. C. Beard
Muscatine	Muscatine	June 12	H. C. Beard
O'Brien	Primghar	July 30	A. Marston
O'Brien	Primghar	May 16	J. W. Holden
Osceola	Sibley	November 5	J. W. Holden
Page	Clarinda	May 13	H. C. Beard
Page	Clarinda	October 7-8	H. C. Beard
Page	Shenandoah	October 30	H. C. Beard
Palo Alto	Emmetsburg	July 25	J. W. Holden
Plymouth	Le Mars	May 14	J. W. Holden
Plymouth	Le Mars	November 13	J. W. Holden
Pocahontas	Pocahontas	June 13	A. Marston
Pocahontas	Pocahontas	November 3	J. W. Holden
Polk	Des Moines	April 23	A. Marston
Polk	Des Moines	May 26	A. Marston
Polk	Des Moines	April 23	J. W. Holden
Polk	Des Moines	Aug. 25-26-27-28	J. W. Holden
Polk	Des Moines	April 23	H. C. Beard
Pottawattamie	Council Bluffs	April 28	J. W. Holden
Pottawattamie	Council Bluffs	July 10-11	J. W. Holden
Pottawattamie	Council Bluffs	July 14	J. W. Holden
Pottawattamie	Council Bluffs	July 15	H. C. Beard
Pottawattamie	Council Bluffs	August 13-14	H. C. Beard
Pottawattamie	Council Bluffs	November 12	H. C. Beard
Poweshiek	Grinnell	June 5	J. W. Holden
Poweshiek	Montezuma	June 6	J. W. Holden
Poweshiek	Grinnell	October 21	J. W. Holden
Ringgold	Shannon City	July 12	H. C. Beard
Ringgold	Blockton	July 29	H. C. Beard
Ringgold	Blockton	September 5	H. C. Beard
Sac	Sac City	May 14	A. Marston
Sac	Sac City	October 8	J. W. Holden
Scott	Davenport	June 13	H. C. Beard
Shelby	Harlan	April 29	J. W. Holden
Shelby	Harlan	November 13	H. C. Beard
Sioux	Hawarden	May 8	J. W. Holden
Tama	Toledo	May 4-6	A. Marston
Tama	Tama	June 13	J. W. Holden
Tama	Tama	November 22	J. W. Holden
Taylor	Bedford	May 14	H. C. Beard
Taylor	Bedford	November 15	H. C. Beard
Union	Creston	November 7	H. C. Beard
Van Buren	Keosauqua	May 7	H. C. Beard
Wapello	Ottumwa	April 28	H. C. Beard
Warren	Indianola	October 30	A. Marston
Warren	Indianola	May 12	H. C. Beard
Warren	Yaggy	August 20	H. C. Beard
Washington	Washington	September 30	J. W. Holden
Wayne	Corydon	June 24	H. C. Beard
Wayne	Corydon	August 8	H. C. Beard
Webster	Ft. Dodge	May 13	J. W. Holden
Webster	Ft. Dodge	September 2	J. W. Holden
Webster	Ft. Dodge	November 1	J. W. Holden
Webster	Ft. Dodge	November 10	J. W. Holden
Webster	Ft. Dodge	June 26	H. C. Beard
Winnebago	Forest City	June 20	A. Marston
Winnebago	Forest City	October 23	A. Marston
Winnebago	Forest City	November 26	A. Marston

SCHEDULE THREE—Continued.

APPOINTMENTS FILLED BY COMMISSIONERS, APRIL TO DECEMBER—Continued

County	Place	Date	By Whom
Winneshiek	Decorah	November 7	A. Marston
Winneshiek	Decorah	May 23	J. W. Holden
Woodbury	Sioux City	June 17	J. W. Holden
Woodbury	Sioux City	October 9	J. W. Holden
Woodbury	Sioux City	November 11-12	J. W. Holden
Worth	Northwood	June 7	A. Marston
Worth	Northwood	August 10-11	A. Marston
Wright	Dows	October 22	A. Marston
Wright	Eagle Grove	June 11	J. W. Holden
Wright	Clarion	June 12	J. W. Holden

APPOINTMENTS FILLED BY THOS. H. MacDONALD, HIGHWAY ENGINEER, APRIL TO DECEMBER.

County	Place	Date
Cerro Gordo	Mason City	July 25
Cerro Gordo	Mason City	November 21
Greene	Jefferson	October 31
Jackson	Maquoketa	May 26
Monona	Onawa	April 10
Polk	Des Moines	April 23
Polk	Des Moines	August 29
Story	Nevada	October 23
Woodbury	Sioux City	April 8-9

PART ONE—SECTION TWO.

DESIGNING DEPARTMENT, APRIL 9, 1913, TO DECEMBER 1, 1913—DATED DECEMBER 1, 1913.

Engineer in Charge, C. B. McCullough.

The Designing Department, as developed by the Commission, is the outgrowth of the demand for plans for road and bridge work which had been gradually increasing under the former Commission from year to year, until at the time the new road law was passed the demand for such plans far exceeded the resources of the former organization to supply. It was the experience then, as it has been since the formation of a much larger Designing Department, that the demand for work of this character from the road officers is always greater at certain times of the year than can possibly be supplied by any force of reasonable size. This difficulty can be overcome if the county engineers and county supervisors will plan their work and make their requests for plans well in advance of the time when they will need them.

Mr. C. B. McCullough, as Designing Engineer, has charge of this department with the assistance of Mr. E. F. Kelley, Assistant Designing Engineer, the former having direct charge of the concrete, and the latter of the steel bridge work. Mr. J. A. Paulson, Chief Draftsman, has immediate charge of the employes in the drafting room.

In addition to the employes shown on the regular salary roll a considerable amount of extra help is employed during the rush season, and paid on an hourly basis. Engineering students are used for tracing, and considerable benefit is derived by the department in having this character of help available, which can be secured for such time as is necessary without an increase of the regular salary roll. The scale paid for this character of help varies from fifteen to forty cents per hour, depending upon the experience and proficiency of the man employed.

Methods and Cost Keeping.

All requests, as soon as received either through the mails or through district engineers, are given a serial number, and so far as is practicable the work is finished in the order that the request is received. So closely is the record kept for each job that passes

through the Designing Department that the number of hours and exact cost of each plan turned out is known, and all of the field notes, calculations and drawings are connected up by the same serial number so that this information is readily available. A record is kept of each job, regardless of the number of men who may do some work upon it. The cost to the Commission and all the other information relative to that particular piece of work are readily available.

County Bridge Maps.

Under the new road law, work of this character has been largely delegated to the county engineers, and consequently only one request for a map of this kind was received this year, this in fact being a piece of work left over from last year, and which the pressure of work would not permit finishing during 1912. The map referred to is of Story County, and consists of two sheets, 24"x48", upon which are shown, to a scale of 2" to the mile, all the roads and bridges of the county.

County Road Maps.

To comply with Section 20 of the new road law, it has devolved upon the Commission to furnish maps for the ninety-nine county road systems of the State. The background for these maps (a general county road map of each county) was furnished by the Iowa Publishing Company of Des Moines, the platting of the county road system on each map being done by the Designing Department of the Highway Commission. Four county maps for each county were required as follows:

MAP No. 1. Preliminary map for field use showing in red the county road system as designated by the board of supervisors, and in green, roads referred to in petitions and remonstrances.

MAP. No. 2. Duplicate Map No. 1, but in addition showing in blue changes in county road system made by Commission.

MAP No. 3. Final map showing in red the county road system as approved by the Highway Commission to be sent to the county auditor.

MAP No. 4. Duplicate of Map No. 3 for office files.

Of these maps (396 in all) 230 have been prepared. The total cost of this work to the Designing Department in salaries alone is $250.

County Bridge Plans.

Plans of two kinds are prepared, viz:—

Standard Plans.

Special Plans.

Special plans are prepared from notes furnished by the county engineers or from notes furnished by the district engineers of the Commission. These are detailed plans prepared for specific locations, and are required in letting contracts, especially for the larger bridges. The summary of special plans prepared showing the number of designs and the estimated cost of the structures designed is given in the following schedule:

SCHEDULE FOUR.

County	No. of Designs	No. Sheets	Estimated Cost of Structures Designed
Audubon	1	1	$ 1,000.00
Benton	5	5	9,038.50
Buchanan	2	2	2,781.14
Calhoun	2	2	1,040.45
Carroll	36	36	47,573.79
Cass	1	1	879.00
Cedar	5	5	6,084.97
Cerro Gordo	10	10	18,203.42
Cherokee	1	1	1,099.30
Chickasaw	5	5	4,875.32
Clarke	1	1	1,024.07
Clay	14	14	26,617.95
Clayton	14	15	21,986.04
Clinton	1	1	4,788.34
Davis	1	1	685.00
Decatur	3	3	7,919.25
Delaware	9	9	10,785.56
Des Moines	2	2	2,500.00
Dubuque	1	1	1,162.20
Emmet	2	2	10,000.00
Fayette	3	3	7,297.44
Floyd	2	2	3,884.10
Franklin	1	1	1,018.45
Greene	3	4	8,053.12
Grundy	1	1	1,561.65
Guthrie	1	1	4,398.97
Hancock	1	1	500.00
Hardin	3	5	43,888.95
Harrison	5	5	16,884.83
Henry	1	1	1,000.00
Howard	13	13	18,410.25
Humboldt	2	9	24,402.18
Iowa	6	6	3,358.88
Jackson	5	5	8,636.69
Johnson	1	1	1,000.00
Jasper	2	2	6,749.32
Jones	1	1	500.00
Kossuth	17	17	24,858.54
Lee	1	1	6,500.00
Linn	16	16	33,762.00
Lucas	4	4	2,800.34
Lyon	4	6	11,620.10
Madison	3	3	16,325.66
Mahaska	45	45	36,081.09
Marion	2	3	5,560.08
Mitchell	1	1	3,132.75
O'Brien	20	20	20,030.38
Osceola	7	8	13,587.39
Plymouth	6	6	17,435.18
Polk	29	29	37,954.72

SCHEDULE FOUR—Continued.

County	No. of Designs	No. Sheets	Estimated Cost of Structures Designed
Poweshiek	9	9	$11,621.65
Scott	4	4	8,892.98
Story	17	18	20,948.79
Tama	1	1	500.00
Warren	19	19	10,299.44
Wayne	1	1	3,098.25
Webster	1	1	1,095.50
Winneshiek	1	1	8,000.00
Woodbury	33	33	43,302.30
Worth	5	10	17,944.39
Wright	1	1	2,050.00

SUMMARY TO DECEMBER 1, 1913.

Total number of counties for which special plans were prepared... 61
Total number of bridges designed for specific locations 414
Total number of sheets made 435
Total estimated cost of bridges for which special plans have been made $683,980.66

In addition to the special plans for bridge work prepared during the year, the following tracings have been prepared in this department:

Tracings of designing data 26
Special plans for Iowa State College 3
Special County profiles 6
Miscellaneous tracings 17
Total number of tracings made to December 1, 1913 487

Description and Extent of Work Done on Standard Plans.

With the going into effect of the new road law, the need of standard plans for the guidance of the ninety-nine new county engineers was at once apparent. To meet this need the following standards were sent out to the county engineers on June 10, 1913:

(ROADS.)

1. Standard sample road profile.
2. Standard cross sections for county roads.
3. Standard cross sections for township roads.

(BRIDGES.)

4. Table of required waterway areas for different drainage areas from Talbot's formula.
5. Standard wood pile trestle, general details.
6. Standard wood pile trestle, blank dimension drawing for filing with county auditor. Single bent.
7. Same, but with two bents.

8. Same, but with three bents.
9. Same, but with five bents.
10. Standard 2'x2' concrete culvert with flaring wings.
11. Bill of material for above.
12. Standard 4'x4' concrete culvert with flaring wings.
13. Bill of material for above.
14. Standard 6'x6' concrete culvert with flaring wings.
15. Bill of material for above.
16. Standard 2'x2' concrete culvert with straight wings.
17. Bill of material for above.
18. Standard 4'x4' concrete culvert with straight wings.
19. Bill of material for above.
20. Standard 6'x6' concrete culvert with straight wings.
21. Bill of material for above.
22. Standard abutments for concrete bridges.
23. Standard abutments for steel bridges.
24. Standard 8'x8' concrete box culvert.
25. Standard 10'x10' concrete box culvert.
26. Standard 12'x12' concrete box culvert.
27. Standard concrete slab bridges from 16' to 25' span.

Of the above list all but sheets 10 to 23 inclusive, and sheet 27 were prepared in 1913 especially for this purpose.

Besides the list above noted, during the summer several additional standard plans were sent to county engineers requesting same. These are given in the following list:

28. Standard 3'x3' concrete culvert with flaring wings
29. Standard 5'x4' concrete culvert with flaring wings.
30. Standard 6'x4' concrete culvert with flaring wings.
31. Standard 5'x5' concrete culvert with flaring wings.
32. Standard circular concrete culvert.
33-35. Standard blank dimension culvert for filling out and filing with county auditor.
36-37. Standard head walls for metal and other pipe culverts.
38-43. Various typical steel detail sheets of steel truss bridges.
44. Stress sheet for 45'x16' pony truss with concrete floor.
45. Stress sheet for 50'x17' pony truss with concrete floor.
46. Stress sheet for 55'x16' pony truss with concrete floor.
47. Stress sheet for 84'x16' pony truss with concrete floor.
48. Stress sheet for 96'x16'.
49. Stress sheet for 40'x18'.
50. Stress sheet for 45'x18'.
51. Stress sheet for 50'x18'.
52. Stress sheet for 60'x18'.
53. Stress sheet for 90'x18'.
54. Stress sheet for 100'x16' high truss bridge.
55. Stress sheet for 120'x16' high truss bridge.

In addition to the steel trusses given above, the following list of trusses was prepared for Carroll county early in the spring of 1913, but were used largely as standards for other counties desiring that type of bridge. These bridges were of the joist type, suitable for either timber or concrete floor, and while not possessing the neat appearance or the rigidity of the slab floor type of bridge, seemed to be very much in demand by the counties having a considerable number of drainage ditches to span, which deserved cheaper construction than that of the joistless slab floor trusses. The following is the list of Carroll county standards used for this purpose:

56. 35'x16' pony truss (stress sheet).
57. 40'x16' pony truss (stress sheet).
58. 45'x16' pony truss (stress sheet).
59. 50'x16' pony truss (stress sheet).
60. 55'x16' pony truss (stress sheet).
61. 60'x16' pony truss (stress sheet).
62. 65'x16' pony truss (stress sheet).
63. 70'x16' pony truss (stress sheet).
64. 75'x16' pony truss (stress sheet).
65. Floor systems using timber floor and joists, timber floor and stee joists, and concrete floor and steel joists for any of the above spans.

Permanent Standards.

About September 1, 1913, the routine work and work on special county plans was sufficiently under way to begin work on the new 1914 series, permanent standard plans. Below is given the complete list of standards contemplated.

(Reinforced Concrete Bridges)

Series A—Box culverts with flaring wings from 2' to 6' spans.

Sheet No.	Description.
1	2'x2' Box (details).
2	2'x2' Box (bill of material).
3	4'x4' Box (details).
4	4'x4' Box (bill of material).
5	6'x6' Box (details).
6	6'x6' Box (bill of material).

Series B—Box culverts with wings paralled to roadway, from 2'0" to 6'0" span.

Sheet No.	Description.
1	2'x2' Box (details).
2	2'x2' Box (bill of material).
3	4'x4' Box (details).
4	4'x4' Box (bill of material).
5	6'x6' Box (details).
6	6'x6' Box (bill of material).

Series C—Larger box culverts with flarings wings.

Sheet No.	Description.
1	8'x8' Box (details).
2	8'x8' Box (bill of material).
3	10'x10' Box (details).
4	10'x10' Box (bill of material).
5	12'x12' Box (details).
6	12'x12' Box (bill of material).
7	Low handrails for above culverts (details).

Series D—Circular reinforced culverts.

Sheet No.	Description.
1	18" diam. circular (details)
2	18" diam. (bill of materials)
3	24" diam. circular (details)
4	24" diam. (bill of materials)
5	36" diam. circular (details)
6	36" diam. (bill of materials)
7	42" diam. circular (details).
8	42" diam. (bill of material).

Series E—Concrete headwalls and specification of dimensions for corrugated and plain metal culverts.

One sheet only (Sheet 1)

Series F—Standard headwalls and dimension specifications for circular concrete pipe culverts.

One sheet only (Sheet 1)

Series H—Deck girder bridges 24 to 40 ft. span.

Sheet No.	Description.
1	Typical details.
2	Section for various spans.

Series I—Through girder bridges 24 to 40 ft. span.

Sheet No.	Description.
1	Typical details.
2	Sections for various spans.

Series J—Slab bridges for 14 to 26 ft. span.

Sheet No.	Description.
1	Typical details and table of designing data.

Series K—Abutments for heights of 10 to 18 feet.

Sheet No.	Description.
1	Typical details for abutments for steel truss bridges.
2	Typical details for abutments for slab and girder bridges.
3	Dimension diagram and data sheet for all abutments.

Of the above series, A, B, H, J and K are finished. Series C, D, E, F and I are detailed ready to trace. (Dec. 1, 1913.) About $600.00 has been expended on these series to date.

Wooden Bridges.

Series G—

Sheet No.	Description.
1	General details of standard pile trestle.
2	Standard wood pile abutment for steel joist, timber floor bridges.

Of the wooden bridges a new tracing of Sheet No. 1 is needed to replace one which is nearly worn out. No work has been done on Sheet No. 2.

Steel Bridges.

Series X—Pony trusses with concrete slab floor.

Sheet No.	Description.
1 to 28	Spans from 35′ to 100,′ inclusive, varying by five feet for both 16′ and 18′ roadway.

Series Y—Steel pony trusses with joists and concrete floor.

Sheet No.	Description.
1 to 28	Spans from 35′ to 100,′ inclusive, varying by 5′ both for 16′ and 18′ roadway.

Series V—I beam spans with concrete floor.

Sheet No.	Description.
1	Spans from 16′ to 32,′ varying by 2.′

Series U—Bethehem girders for 16′ and 18′ roadway, economical spans.

Series P—Plate girders for 16′ and 18′ roadway, economical spans.

Series T—Through riveted trusses 100′ and up.

Series S—Through pin connected trusses 150′ and up.

Of the standard steel bridges, only a few of Series X have been started, and all the other standard steel designs are as yet untouched.

Standards for Road Work.

Series R—General road standards.

Sheet No.	Description.
1	Standard cross section county road.
2	Standard cross section township road.
3	Standard road profile.
4	Standard guard rail for fills, and several others yet to be decided upon.

The first three of this series are completed but need new tracings, while sheet 4 is as yet untouched.

Besides the standards above listed, standard cost data sheets and designing data for the use of our own engineers have been prepared from time to time, and will be found in the list of miscellaneous drawings.

The preparations of standards has cost this department $970, as follows:

Temporary standards for distribution June 10, 1913	$150.00
Permanent standards, concrete	600.00
Permanent standards, steel	220.00
Total	$970.00

This is 13% of the entire department salary roll for the year.

Checking of Working Drawings for Steel Bridges.

The checking of these working or shop drawings is under the direction of the Assistant Designing Engineer, who reports the following list of shop drawings checked during the year:

SCHEDULE FIVE.

LIST OF SHOP DRAWINGS OF STEEL BRIDGES SUBMITTED FOR APPROVAL.

(Designs prepared by the Iowa Highway Commission.)

No.	Span and Roadway	County	Contractor
1	50x16	Benton	Clinton Bridge Works
1	50x16	Buchanan	Iowa Bridge Company
1	35x16	Carroll	Standard Bridge Company
1	40x16	Carroll	Standard Bridge Company
2	45x16	Carroll	Standard Bridge Company
3	50x16	Carroll	Standard Bridge Company
1	55x16	Carroll	Standard Bridge Company
2	60x16	Carroll	Standard Bridge Company
1	65x16	Carroll	Standard Bridge Company
1	70x16	Carroll	Standard Bridge Company
1	75x16	Carroll	Standard Bridge Company
1	100x16	Carroll	Standard Bridge Company
1	48x20	Cerro Gordo	A. E. Shorthill Co.
1	40x16	Cerro Gordo	A. E. Shorthill Co.
1	60x16	Cerro Gordo	A. E. Shorthill Co.
1	50x16	Clarke	Standard Bridge Company
1	24x16	Clay	Des Moines Bridge & Iron Works
1	30x16	Clay	Des Moines Bridge & Iron Works
1	50x16	Clay	Des Moines Bridge & Iron Works
1	120x16	Clay	Des Moines Bridge & Iron Works
2	60x16	Clayton	C. Barndt
1	40x18	Clinton	Clinton Bridge Works
1	60x18	Clinton	Clinton Bridge Works
1	75x16	Dallas	Federal Bridge Company
1	80x16	Decatur	A. E. Shorthill Co.
1	50x16	Decatur	A. E. Shorthill Co.
1	40x16	Delaware	Clinton Bridge Works
1	84x16	Des Moines	Federal Bridge Company
1	50x16	Dickinson	Des Moines Bridge & Iron Works

LIST OF SHOP DRAWINGS—Continued

No.	Span and Roadway	County	Contractor
1	99x16	Fayette	Federal Bridge Company
1	100x16	Floyd	Clinton Bridge Works
1	60x16	Greene	R. S. Harris
1	45x18	Grundy	Clinton Bridge Works
1	40x18	Grundy	Clinton Bridge Works
1	50x16	Harrison	Clinton Bridge Works
1	60x16	Harrison	Clinton Bridge Works
1	32x16	Harrison	Clinton Bridge Works
2	120x20	Humboldt	Iowa Bridge Company
2	88x18	Humboldt	Iowa Bridge Company
1	90x16	Linn	Waterloo Construction Co.
1	40x18	Linn	Waterloo Construction Co.
3	70x16	Linn	Federal Bridge Company
1	45x16	Linn	J. W. Palmer
1	45x18	Linn	J. W. Palmer
1	80x16	Lyon	Western Bridge & Construction Co.
1	60x16	Madison	Iowa Bridge Company
1	96x16	Madison	Iowa Bridge Company
1	55x16	O'Brien	Western Bridge & Construction Co.
1	80x16	Plymouth	Western Bridge & Construction Co.
1	45x16	Plymouth	Western Bridge & Construction Co.
1	50x16	Plymouth	Western Bridge & Construction Co.
1	60x16	Polk	Iowa Bridge Company
1	100x16	Pottawattamie	
1	120x16	Pottawattamie	
1	50x18	Scott	Frahm Construction Co.
1	60x16	Scott	Federal Bridge Company
1	50x16	Union	Standard Bridge Company
1	30x16	Union	Standard Bridge Company
1	70x16	Pottawattamie	

Estimated value of superstructures of above spans.....$150,000.00
Cost of designing engineering on the above approximately.. 1,000.00

Approval of Special Designs Submitted by County Engineers and Contractors for Analysis and Approval.

During the year, three hundred and twenty-seven different designs for bridge and culvert work have been submitted for approval. The work of analyzing each plan and of passing upon the same ranges from a mere comparison between the submitted plans and our standards to an extensive mathematical analysis involving several days' work. The three hundred and twenty-seven plans above mentioned are for work aggregating between $300,000 and $350,000, the number of counties thus served being sixty-five.

Following is practically the entire list of plans thus analyzed.

SCHEDULE SIX.

LIST OF SPECIAL DESIGNS SUBMITTED BY COUNTY ENGINEERS AND CONTRACTORS.

County	Description	Submitted by
Appanoose	1 vit. pipe box culvert	County Engineer
Appanoose	6 box culverts	County Engineer
Audubon	45x18 steel plate girder	Kimballton Constr. Co.
Benton	4 box culverts	County Engineer
Benton	1 wood pile trestle	County Engineer
Boone	2 concrete arches	Marsh Engr. Co.
Boone	2 concrete slabs	County Engineer
Boone	1 concrete arch deck girder	County Engineer
Bremer	2 concrete arch slabs	County Engineer
Buena Vista	11 steel trusses and concrete abutments	Iowa Bridge Co.
Butler	1 concrete through girder	County Engineer
Calhoun	11 steel trusses and concrete abutments	Iowa Bridge Co.
Carroll	1 steel truss	Red Oak Bridge & Iron Works
Carroll	Steel leg abutments	Red Oak Bridge & Iron Works
Cass	1 concrete pipe culvert	County Engineer
Cass	1 concrete deck girder	Kimballton Constr. Co.
Cass	7 circular concrete culverts	Kimballton Constr. Co.
Cass	9 concrete box culverts	Kimballton Constr. Co.
Cedar	1 whipple truss	County Engineer
Cherokee	2 I beams on pile abutments	Western Bridge & Construction Co.
Chickasaw	3 concrete deck girders	Chambers & Dobson
Chickasaw	1 I beam span	Chambers & Dobson
Chickasaw	1 concrete abutment	Chambers & Dobson
Chickasaw	2 concrete deck girders	N. M. Stark
Chickasaw	1 concrete slab	N. M. Stark
Chickasaw	1 concrete arch	N. M. Stark
Chickasaw	1 steel trusses	Elkhart Br. & Iron Co.
Clarke	1 steel truss	County Engineer
Clayton	1 arch culvert	County Engineer
Clayton	1 I beam span	County Engineer
Clinton	9 slab bridges	County Engineer
Clinton	2 box culvert abutments	County Engineer
Clinton	2 steel trusses	County Engineer
Clinton	1 I beam span	Clinton Bridge Works
Dallas	1 steel truss	County Engineer
Dallas	1 steel truss	Federal Bridge Co.
Des Moines	1 I beam span	County Engineer
Dickinson	1 steel truss	N. M. Bridge & Iron Co.
Dubuque	1 steel truss	County Engineer
Dubuque	1 steel leg bridge	County Engineer
Emmet	1 circular concrete culvert	County Engineer
Fremont	5 steel leg abutments	Red Oak Bridge & Iron Works
Fremont	1 I beam span	County Engineer
Fremont	1 concrete box culvert	County Engineer
Grundy	3 steel trusses	Clinton Bridge Works
Grundy	2 concrete through girder	County Engineer
Grundy	1 concrete slab	County Engineer
Hamilton	1 Bethlehem girder	County Engineer
Hardin	3 concrete arches	N. M. Stark
Hardin	1 concrete arch box culvert	R. R. Clampitt
Hardin	Rocksylvania viaduct	County Engineer
Harrison	1 concrete box culvert	Marsh Engr. Co.
Howard	2 concrete box culverts	County Engineer
Howard	1 steel truss	County Engineer
Howard	2 slab bridges	Chambers & Dobson
Ida	5 concrete arch culverts	County Board
Ida	8 concrete arches	Marsh Engr. Co.
Ida	3 steel trusses	Illinois Steel Bridge Co.
Ida	5 steel trusses	Iowa Bridge Co.
Ida	1 steel trusses	County Engineer
Ida	2 plate girders	Marsh Engr. Co.
Ida	7 concrete slab bridges	County Engineer

SCHEDULE SIX—Continued.

County	Description	Submitted by
Ida	3 concrete slab box culverts	County Engineer
Jackson	Concrete arches	District Engineer
Jasper	3 concrete arches	N. M. Stark
Jasper	1 concrete slab	N. M. Stark
Jefferson	1 abutment	County Engineer
Johnson	2 steel trusses	Iowa Bridge Co.
Jones	2 concrete box culverts	County Engineer
Jones	1 old steel truss	County Engineer
Keokuk	2 abutments	County Engineer
Keokuk	1 concrete box culvert	County Engineer
Lee	1 deck girder	County Engineer
Lyon	1 old steel truss and approach	County Engineer
Mahaska	1 concrete box culvert	County Engineer
Marion	2 stress sheets	Iowa Bridge Co.
Marshall	Standard concrete deck girder details	County Engineer
Mills	2 wood trestles	County Engineer
Mills	2 concrete box culverts	County Engineer
Mitchell	1 steel truss	Minneapolis Bridge Co.
Mitchell	1 I beam bridge	County Engineer
Mitchell	4 slab bridges	N. M. Stark
Mitchell	1 concrete through girder	N. M. Stark
Mitchell	2 concrete arch spans	N. M. Stark
Monona	3 steel trusses	Iowa Bridge Co.
Monona	1 concrete slab bridge	Iowa Bridge Co.
Montgomery	Concrete and steel abutment	County Engineer
Montgomery	Concrete pipes	County Engineer
Muscatine	1 plate girder skew span	County Engineer
Plymouth	1 concrete retaining wall	County Engineer
Plymouth	1 steel truss	Western Bridge & Construction Co.
Pottawattamie	5 steel trusses	County Engineer
Poweshiek	1 steel truss	County Board
Poweshiek	1 concrete arch	D. S. Carpenter
Poweshiek	7 steel trusses	D. S. Carpenter
Ringgold	Concrete tile for culvert	County Engineer
Sac	1 steel truss	County Engineer
Sac	2 concrete arches	County Engineer
Scott	1 steel truss	Day Mach. & Fdy. Co.
Shelby	1 steel truss	Omaha Struct. Steel Co.
Tama	40 small concrete culverts	County Engineer
Tama	3 steel trusses and concrete abutments	Clinton Bridge Works
Tama	3 I beam spans and concrete abutments	Clinton Bridge Works
Taylor	3 steel trusses	Red Oak Bridge & Iron Works
Union	3 concrete arch culverts	County Engineer
Union	1 "post and cap" culvert	County Engineer
Union	2 steel trusses	Red Oak Bridge & Iron Works
Washington	1 I beam masonry abutment	County Engineer
Webster	Old "Whipple" truss	County Engineer
Winnebago	1 box culvert concrete	County Engineer
Winnebago	3 concrete deck girders	Iowa Bridge Co.
Winneshiek	1 steel truss and concrete abutments	Clinton Bridge Wks. and Chambers & Dobson
Winneshiek	3 I beam spans	Marsh Engr. Co.
Woodbury	1 steel truss	Elkhart Bridge & Iron Works
Woodbury	1 steel truss	Illinois Steel Bridge Co.
Woodbury	7 concrete arches	Ward & Weighton
Woodbury	1 concrete deck girder	County Engineer
Woodbury	1 concrete slab bridge	County Engineer
Woodbury	3 concrete box culverts	County Engineer
Wright	2 steel trusses	Iowa Bridge Co.

SCHEDULE SEVEN.

INSPECTION TRIPS BY MEMBERS OF DESIGNING DEPARTMENT.

Engineer	Destination	Date	Purpose of Trip
			Re:
C. B. McCullough	Ida Grove	January 8	Choice of designs for Maple River bridge
C. B. McCullough	Ida Grove	January 22	Attending letting of Maple River bridge contract
C. B. McCullough	Cherokee	February 19-20	Attending meeting county road officers
C. B. McCullough	Harlan and Denison	April 29-30	Inspection trip through Crawford and Shelby counties
C. B. McCullough and E. F. Kelley	Marshalltown	May 14	Shop inspection of Charles City bridge
C. B. McCullough	Clinton	May 19	Adjustment contract prices and instruction re substructure
C. B. McCullough	Charles City	August 4-5	Assist County Engineer and inspect St. Marys street bridge
C. B. McCullough	Des Moines	September 26	Conference Marsh Engr. Co. re design Harrison county arches
C. B. McCullough	Ft. Madison	October 9-11	Design and contract for Front street bridge
C. B. McCullough	Dakota City	November 15	Est. 2-120' steel spans
E. F. Kelley	Clarion	June 9	Inspection steel pile abutments erected by Iowa Bridge Co.
E. F. Kelley	Humboldt	June 30-July 1	Inspection E. Des Moines river bridge at Dakota City
E. F. Kelley	Eldora	August 4	Letting contract, Eldora viaduct
E. F. Kelley	Sigourney and Mt. Pleasant	August 28-30	Inspect bridges in Keokuk and Henry counties
E. F. Kelley and E. W. Blumenschein	Charles City	October 24-25	Inspect St. Marys street bridge

Tests and Research Work.

A discussion of the research work and tests of the Commission is taken up in a succeeding chapter.

Cost of Operation.

The total cost of operating the Designing Department for the eleven months period ending November 30, 1913, is given in the following table:

SCHEDULE EIGHT.

Month	January	February	March	April	May	June
Supplies	$ 15.89	$ 6.44	$ 29.33	$ 36.35	.....	$ 56.83
Salaries	199.75	203.80	272.93	242.67	$ 553.95	708.30
Total	$ 215.64	$ 210.24	$ 302.26	$ 279.02	$ 553.95	$ 765.13

Month	July	August	September	October	November	
Supplies	$ 61.67	$ 148.12	$ 34.68	$ 32.16	$ 15.00	.....
Salaries	1,025.26	1,194.16	976.64	1,022.56	1,021.71	.....
Total	$ 1,086.93	$ 1,342.28	$ 1,011.32	$ 1,054.72	$ 1,036.71	.....

Total cost of supplies	$ 436.47
Total cost of salaries	7,421.73

The above table includes the months of January, February and March prior to the passage of the road law and the organization of a larger department. These months are included, however, to make the statement complete for the year.

Conclusion.

Summarizing the work of this department without attempting to reduce the amount of work handled to the exact dollars and cents, the following statements give an idea of the extent of the demands upon this department:

From January 1 to November 30, 1913, the Designing Department received shop drawings covering 68 steel structures for checking and approval, valued at $150,000. The estimated cost to the department of this work being $1,000.

For the same period the value of 327 miscellaneous designs, exclusive of steel structures, submitted for approval by county engineers, construction companies, and individuals, is estimated at $350,000.

Bridge designs exclusive of shop drawings, aggregating $683,980.66, have been made for 61 of the 99 counties in the state. No bridges were designed for the remaining 38 counties. A tabulated list by counties of all bridge designs for this period will be found elsewhere in this report.

The estimated valuation of all designs made and plans checked or approved by the Designing Department during the eleven months ending November 30, 1913, is $1,033,980.66, exclusive of shop drawings. The total cost of operating the department during the period, including all designing office and drafting room supplies, salaries, etc., was $7,858.20. Of this amount $970 was spent on various standard plans, $250 on county road maps, and $150 on miscellaneous drawings. This leaves a balance of $6,488.20 as the cost of the preparation of plans, checking of shop drawings and approval of plans submitted to the department, which is equal to .63 of 1% of the total estimated value of the work designed or passed upon by the departmment.

In 1912, under the previous organization of the Commission the cost of the work designed and approved was about $190,000, upon which the cost in the Designing Department was equal to 1.15% of the value of the work. Under the new form of organization the cost of preparing and passing upon plans has been decreased by almost one-half.

SCHEDULE NINE.

PERSONNEL AND SALARIES OF DESIGNING DEPARTMENT.

Name	Salary	Character of Employment	Appointment
C. B. McCullough	$1,500.00	Designing Engineer	Temporary Appt. April 23, 1913
E. F. Kelley	1,800.00	Ass't Designing Engineer	May 14, 1913
J. A. Paulson	1,080.00	Acting Chief Draftsman	Temporary Appt. April 23, 1913
L. H. Doughty	1,080.00	Designer	May 8, 1913
Neil Adams	900.00	Draftsman	May 1, 1913
Ivan E. Trottnow	900.00	Draftsman	May 1, 1913
Levi S. Gates	900.00	Draftsman	June 1, 1913
Julius Beach	480.00	Blue Printer	June 12, 1913

PART ONE—SECTION THREE

FIELD DEPARTMENT, APRIL 9, 1913, TO DECEMBER 1, 1913.
DATED DECEMBER 1, 1913.

Engineer in Charge, F. R. White.

The Field Department of the Highway Commission was organized to conduct the field engineering work and to represent the Commission personally in all the various phases of highway work. The work of this department may be separated into the following headings:

(1) Explanation of the road law.
(2) Examination of bridge sites for new structures.

(3) Attending bridge lettings.
(4) Inspection and supervision of bridge construction.
(5) Investigation of complaints.
(6) Investigation of county road protests.
(7) Examination of emergency work.
(8) Approval of grade lines for road improvement.
(9) Special assignments.

In order to get more fully in touch with the work of the various counties and to prevent confusion arising from dealing with more than one engineer, the state was divided into five districts, and a district engineer appointed for each division. These districts were composed of the following counties:

DISTRICT NO. ONE.

Benton	Crawford	Hardin	Marshall
Boone	Dallas	Jackson	Polk
Carroll	Greene	Jones	Story
Cedar	Grundy	Linn	Tama
Clinton	Hamilton	Madison	Warren

DISTRICT NO. TWO.

Allamakee	Cerro Gordo	Fayette	Mitchell
Black Hawk	Chickasaw	Floyd	Winnebago
Bremer	Clayton	Franklin	Winneshiek
Buchanan	Delaware	Hancock	Worth
Butler	Dubuque	Howard	Wright

DISTRICT NO. THREE.

Buena Vista	Emmet	Monona	Plymouth
Calhoun	Humboldt	O'Brien	Sac
Cherokee	Ida	Osceola	Sioux
Clay	Kossuth	Palo Alto	Webster
Dickinson	Lyon	Pocahontas	Woodbury

DISTRICT NO. FOUR.

Adair	Decatur	Montgomery	Shelby
Adams	Fremont	Mills	Taylor
Audubon	Guthrie	Page	Union
Cass	Harrison	Pottawattamie	Wayne
Clarke	Lucas	Ringgold	

DISTRICT NO. FIVE.

Appanoose	Jasper	Louisa	Poweshiek
Davis	Jefferson	Mahaska	Scott
Des Moines	Johnson	Marion	Van Buren
Henry	Keokuk	Monroe	Wapello
Iowa	Lee	Muscatine	Washington

These districts were organized to make the work of the Commission more efficient. To bring it closer in touch with the road officials of the various counties, it was decided to establish headquarters for the district engineers at convenient locations in their

districts. During the first months of organization under this plan, however, it was thought best to have the district engineers make their headquarters at the office of the Commission at Ames, so that the work could be organized with a uniformity of action that would not be possible otherwise. The districts as outlined above were organized with only one end in view, that of grouping counties that could be easily reached by railroad from one central location.

After the work of the Field Department was fairly organized and the district engineers were appointed, it became obvious that special field engineers would be required to take charge of special projects in different counties, and during most of the past year two engineers have been engaged on such special work. The general work of the district engineers is as outlined below.

Explanation of the Road Law.

The new road law was such a radical revision of the old statutes, with their lack of definite system of any kind, that the local road officials all over the state were in doubt as to their duties under this law, and confused as to the degree of authority vested with them. This condition was further accentuated by the fact that the law became effective on April 9th, at the beginning of the construction season, and after plans had been more or less definitely outlined for the season's work by many of the boards. Practically all of these plans were dropped and all work was stopped.

The first duty devolving on the field engineers, in which all members of the Commission co-operated, was the explanation of the various features of the road law. The schedules show that at least 126 days were spent by the engineers of the Field Department between the first of May and the first of December, explaining the new law. Portions of days assigned to other duties, such as bridge work and road work, were spent in explaining the features of the new law, or answering questions, so that one-third of the time of the Field Department was given over to this duty during the past seven months.

Examination of Bridge Sites for New Structures.

Under the plan provided, each county is required to appoint a competent highway engineer. This provision suddenly created ninety-nine new offices, each demanding a competent and experienced engineer. The demand exceeded the available supply, and a number of engineers were employed who were not fitted by training or practical experience to carry the responsible duties of the

position. In such cases it became necessary for the district engineers to do more or less of the detailed engineering work, such as taking the measurements and notes preliminary to the design and construction of permanent culverts and bridges.

The law also requires that contracts in excess of $2,000 for single bridges and culverts shall be approved by the Commission. In order that such approval should not be a perfunctory matter only, and should extend the degree of supervision the statute was drawn to provide, the Commission judged it necessary to have their district engineers examine the sites of many structures, and make a report concerning the feasibility of the plans submitted before approving the contract. This field examination has been extended to practically all large structures.

Attending Bridge Lettings and Inspection of Bridge Construction.

In order to put into effect a uniform system of letting bridge contracts the Commission planned to have a representative present at every letting held, in so far as possible. Since the department was organized, field representatives have been in attendance at thirty-four bridge lettings, at which contracts were let aggregating $241,066.

Inspection trips have also been made to bridge sites after the construction work started, to settle controversies concerning specifications or material, and to inspect the quality of the work. In such matters the engineers of the Commission have attempted to maintain always an impartial and fair attitude toward the contractors, and it is gratifying to know that the number of bridge disputes which both parties to the contract wish to arbitrate are now being referred to the Commission for settlement in an increasing number.

Investigation of Complaints.

One of the duties not foreseen when the work was first organized, and which has of necessity been placed on the Field Department, is the investigation of complaints which are sent to the office of the Commission relative to the condition of bridges and roads. Up to December 1st, twenty-eight complaints have been investigated. Quite often it is found that these complaints are the result of neighborhood quarrels, politics, or even of family disagreements. In many cases simple difficulties have been seriously accentuated by matters purely of personal disagreement. In other cases the complaints were just ones.

The Commission adopted a uniform policy of taking up these individual conditions with the local road officials fully and frankly, and in most cases it has been possible to secure the cooperation of the road officials responsible, to the end that the cause for the complaints has been removed. In some cases it has been necessary to resort to the authority vested in the Commission to enforce the provisions of the law. Most of the antagonism to the road law, however, is a result of misinformation, and a great deal of this opposition is done away with by a careful explanation of its working features.

Investigation of County Road Systems.

In classifying the highways into the county and township road systems, the law provides that the board of supervisors shall lay out or designate a system of highways which in their judgment should be adopted as the county highway system, and provision is then made that any ten freeholders may protest against the designation of any road or parts thereof, and may offer as a substitute some other road in that vicinity. Finally, the provision is made that the Highway Commission shall examine the protests, and shall determine the correct lines to be followed. Complete figures are not yet available (Dec. 1, 1913) indicating the mileage which will be included in the county road system, but since there are over 100,000 miles of public highway in the state, it is safe to assume that over 15,000 miles will be designated as county roads. Since the petitions and plats returned to this office show that there are approximately 2,560 miles of road under protest, it follows that in determining the correct lines to be followed by the county highway system, it will be necessary to examine approximately 5,120 miles of road.

Prior to December 1st the protested roads in seventy-four counties were examined, and in making these examinations it was necessary to inspect approximately 3,847 miles of road. In all of these counties except two, a commissioner and a district engineer have worked together in examining the roads. The majority of these seventy-four county systems have been examined since September 1st. The attached schedules of field engineers show that they have spent one hundred and thirty-seven days on this work, while only twenty-two days of this time were put in before September 1st. These figures are for the field work only, and do not include the time required in writing up the reports.

Examination of Emergency Work.

Section 11 of the new road law provides that when a real emergency exists emergency measures may be adopted by the road officials, and the resolution of necessity and advertising features of the law may be set aside and the work constructed in the most expeditious manner possible. In order that this clause might not be abused and used as a subterfuge for setting aside the requirements relative to passing a resolution of necessity and advertising for bids on bridge work, the Commission adopted the rule that emergency work costing over $300 must be certified to by an engineer of the State Highway Commission, after he has made a personal examination of the site. The heavy rains which occurred in some sections of the state made it necessary for the field department to spend a considerable amount of time in examining such emergency work and certifying thereto. Notable among the emergency cases handled in this manner are the Shelby County case and the Humboldt County case. Criticism has sometimes been advanced that the new law involves an excessive amount of red tape, and, therefore, delays work unnecessarily. That these criticisms are unfounded will be shown in the Shelby and Humboldt County reports.

The Commission received a wire from the Shelby County Auditor on Saturday, May 17th, stating that seventy-five bridges had been carried away by floods. A respresentative of the Commission reported in Harlan Monday morning. Continued rain and impassable roads prevented the inspection of any bridge sites until Tuesday afternoon, when six sites were inspected and six new bridges ordered. Thus on the first available day after the flood the work of building the new bridges was started.

In Humboldt County the Rutland bridge across the Des Moines river collapsed under a threshing outfit about 9 o'clock p. m. Friday, August 1st. Saturday morning a Commission representative was on the ground to get measurements for a new structure. Monday the plans for the new structure were placed on file in the auditor's office and the contract entered into for building the new bridge.

Approval of Grade Lines for Road Improvement.

Section 9 of the new road law provides that the survey and report of each section of road, after having been prepared by the county engineer, shall be approved by the board of supervisors

and shall then be forwarded to the State Highway Commission for approval. In order to make intelligent approval of such profiles it is necessary to have the district engineer make an examination of the road in the field, and here again the criticism was advanced that unnecessary red tape was holding up construction operations. In order to avoid such conditions, the Commission adopted the rule that work could be started immediately on permanent road work after the survey had been made and the grade line approved, even though the profile was prepared in a rough manner not suitable for the records required by law. It was contemplated that such a ruling would relieve the county engineers from a great deal of detail drafting which could better be done during the winter.

Special Assignments.

Most important of the special assignments handled by the Field Department are:

(1) Larchwood-Inwood road, Lyon County.

In order to start the building of permanent roads in the northwest corner of the state, in June, 1913, the Commission offered to furnish an engineer to superintend the building of a model earth road in Lyon County. The Board of Supervisors accepted this offer, and on June 24th an engineer was assigned to this work. From that date until December 1st, the Commission maintained an engineer on the work practically all the time. Ten miles of road were surveyed and profiles prepared. Construction work was completed on four and one-half miles by December 1st. The average cost of engineering and superintendence (the engineer acted as superintendent) was $101.33, which includes all engineering salaries, expenses and miscellaneous items. The entire expense of building four and one-half miles of this road, including both engineering and construction was $4,407.33, an average of $971.71 per mile. The entire expenses and salary of the engineer were paid by the Commission.

(2) Bridge Investigation, Jackson County.

On the request of the committee of taxpayers in Jackson County an engineer was assigned to make an examination and report on the Jackson county bridge matters. This report required the equivalent of about twenty days time for one engineer. The prominent feature brought out by this investigation was the fact that no records such as plans, specifications, or definite contracts such as are required under the new road law, were on file. Without these records it was practically impossible to check up the bridge work which had been done. A considerable sum might have been recovered in the county had the records in the auditor's office contained the information that should have been on file.

(3) Eldora Viaduct.

On the east end of Edgington Avenue in the town of Eldora, there is being constructed a viaduct across the Iowa river, 70 feet high and 960 feet long. For nearly a quarter of a century the people of Eldora and vicinity had planned and boosted for this bridge, but nothing was accomplished until in the spring of 1913. In January, 1913, the Board of Supervisors requested the Highway Commission to submit plans for this structure. The Designing Department prepared a number of designs from which three were selected and submitted to the Board. After some consideration the Board selected the design for a plate girder viaduct, 18 ft. roadway, concrete floor, 960 ft. long and 70 ft. high. An appropriation of $25,000 was then made from the county bridge fund, and the city of Eldora was asked to make up the remainder, about $15,000.

In June an election was held at Eldora at which the city voted a tax amounting to $10,000 to aid in constructing the viaduct. Later the Commercial Club of Eldora and other interested citizens raised $4,000 more by subscription to complete the funds required, and all other obstacles having been cleared away, the contract was signed October 20th.

The raising of these funds had so taxed the resources of the city and county that neither felt able to employ an engineer to inspect the construction work. Accordingly the Commission agreed to furnish an engineer to do this inspection work, and since October 30th they have had a man on the job continuously.

The contractor began work about October 30th, and good progress was made, so that on December 1st the substructure was completed, except those piers located in the river channel. At this rate the work will be completed well ahead of contract time.

Detailed Statement of Activities of Field Department.

The following is a detailed statement of the activities of the Field Department during the period from April to December, 1913. As will be noted this list of activities has included a number of visits to practically every county in the state:

SCHEDULE ELEVEN.

DETAILED STATEMENT OF APPOINTMENTS OF FIELD ENGINEERS.

F. R. WHITE.

County	Date	Kind of Work	Miles Traveled
Ida	Apr. 9	Staking out bridge over Maple river	242
Polk	Apr. 14	Bridge letting—29 bridges	73
O'Brien	Apr. 15	Bridge measurements	341
Linn	Apr. 17-18-19	Bridge measurements	238
Chickasaw	Apr. 21-22-23	Adjusting bridge contracts bridge measurements	216
Butler	Apr. 24	Explaining new law	118
Ringgold	Apr. 28-29	Explaining new law	242
Butler	Apr. 30	Explaining new law	162
Chickasaw	May 1	Adjusting bridge contracts	93
Fayette	May 2-3	Establishing grade line	207
Jasper	May 5	Meeting board	140

SCHEDULE ELENEN—CONTINUED

County	Date	Kind of Work	Miles Traveled
Hardin	May 7	Meeting board	117
Tama	May 8	Emergency work	122
Wapello	May 9-10	Regarding new road law	256
Marshall	May 12	Regarding new road law	76
Grundy	May 13	Regarding new road law	
Grundy	May 14	Bridge measurements	154
Carroll	May 17	Regarding bridge repairs	132
Shelby	May 19-20-21	Emergency bridge work	215
Benton	May 22	Bridge work	264
Shelby	May 23-24-26-27	Emergency work	429
Benton	May 28-29	Regarding bridge work	196
Shelby	May 30	Regarding emergency work	215
Cedar	June 2	Bridge letting	293
Jasper	June 4	Bridge and road work	105
Guthrie	June 5	Regarding new road law	206
Lyon	June 6-7	Regarding new road law	345
Crawford	June 9	Adjusting blanket contract	188
Davis	June 13-14-15	Regarding new road law	294
Mahaska	June 19-20	Regarding new road law	193
Iowa	June 23	Regarding new road law	229
Linn	June 26	Regarding bridge advertisement	120
Clinton	June 27	Regarding new road law	271
Iowa	July 1	Regarding bridge contract	70
Shelby	July 2	Emergency bridge work	216
Linn	July 8	Bridge letting	228
Guthrie	July 16	Bridge and road work	142
Kossuth	July 22-23	Grade line approval	190
Lyon	July 24-25	Bridge measurements	206
Dallas	Aug. 1	County road approval	133
Humboldt	Aug. 2	Emergency work	140
Hardin	Aug. 4-5	Bridge letting	130
Cedar	Aug. 8	Inspection of bad culverts	283
Hardin	Aug. 12-13	Eldora viaduct	130
Hardin	Aug. 18-19	Eldora viaduct	31
Page	Aug. 19-20	Regarding filling bridge opening	384
Floyd	Aug. 25	Regarding St. Mary's street bridge	73
Dallas	Sept. 9-10	County road approval	133
Iowa	Sept. 16-18	Regarding filling in bridge	250
Jackson	Sept 22-24	Bridge investigation	255
Floyd	Sept. 25	Re: St. Mary's street bridge	214
Davis	Oct. 9	Meeting Representative Carson	218
Lee	Oct. 10-11	Re: Front street bridge	246
Dallas	Oct. 15	Re: Work on No. 9 road	133
Hardin	Oct. 20	Let contract, Eldora viaduct	82
O'Brien	Oct. 21	Grader demonstration	216
Calhoun	Oct. 22	County road approval	56
Buena Vista	Oct. 23	County road approval	57
Calhoun	Oct. 24	County road approval	60
Greene	Oct. 29	New bridge—Lincoln highway	73
Davis	Nov. 3	Re: Corrugated culverts called repair work	272
Polk	Nov. 4	Re: Foundation for Skunk river bridge	26
Kossuth	Nov. 18	Re: Foundation for three span girder bridge	204
Clinton	Nov. 20	Re: Wing walls on Hart's Mill bridge	378
Total			11,715

DISTRICT NO. ONE—C. COYKENDALL.

Guthrie	June 13-14	Measuring up bridges	152
Union	June 17-18	Measuring up bridges	127
Clarke	June 19-20	Measuring up bridges	116
Cass	June 23 24	Meeting with board	237
Polk	June 25	Investigating conditions	73
Linn	June 26	Meeting with board and engineer	120
Clinton	June 27	Meeting with board and engineer	270
Greene	June 30	Approving grade lines and getting out resolution of necessity	80
Franklin	July 1-2	Road work	65

SCHEDULE ELEVEN—CONTINUED

County	Date	Kind of Work	Miles Traveled
Grundy	July 2-3	General investigation of conditions	100
Polk	July 7	Establishing grade lines for profiles	73
Linn	July 8	Bridge letting	120
Tama	July 9-10	General investigation of highway work	242
Madison	July 11	Road work	131
Scott	July 12	Certifying emergency work	448
Cedar	July 14-15	Inspecting gravel and general investigation	169
Scott	July 16-17	Measuring up bridge work	210
Warren	July 18	General investigation	117
Dallas	July 19	Approving road profiles	121
Crawford	July 21	Meeting with board and engineer	188
Clinton	July 22-26	Lining up bridge work	472
Marshall	July 28	Examination of bridge foundations	80
Jones	July 29	Meeting with board and engineer	158
Jackson	July 30	Meeting with board and engineer	34
Clinton	July 31	Examining two bridges	39
Cedar	Aug. 1	General investigation	205
Carroll	Aug. 4	Bridge letting	66
Story	Aug. 5-6	Protested county roads and approving grade lines	102
Grundy	Aug. 7-8	General investigation of foundations	125
Benton	Aug. 9	Approving grade lines; general investigation	131
Greene	Aug. 11	Bridge letting	94
Crawford	Aug. 12	General investigation	94
Clinton	Aug. 14-16	Bridge work	378
Linn	Aug. 18-19	Road and bridge work	143
Jones	Aug. 20-21	Bridge letting and inspection of bridges	164
Carroll	Aug. 22	Bridge letting, investigations	132
Dallas	Aug. 25	Approval of road profiles	114
Warren	Aug. 26-27	Bridge letting and investigation	114
Clinton	Aug. 28	Bridge letting and investigation	227
Jackson	Aug. 29	General investigation	169
Polk	Sept. 1	Investigating road profiles	37
Madison	Sept. 2	Bridge letting	105
Warren	Sept. 3-4	Lining up bridge work	115
Tama	Sept. 5	Bridge and road work	122
Polk	Sept. 6	Road profile approval	73
Hamilton	Sept. 8	General investigation	74
Warren	Sept. 9	Bridge letting	117
Clinton	Sept. 10	Bridge letting	378
Boone	Sept. 11	Investigating road profile	28
Humboldt	Sept. 12	Inspecting bridge foundations	140
Cedar	Sept. 15	Bridge and road work	176
Jones	Sept. 16-17	General work	164
Madison	Sept. 18-19	Going over protested county roads	142
Jackson	Sept. 22-Oct. 3	Bridge investigation	670
Clinton	Oct. 4	Road matters	228
Polk	Oct. 6	Road profile approval	73
Jackson	Oct. 7-9	Bridge investigation	254
Clinton	Oct. 10	Road profile approval	189
Boone	Oct. 13-14	Road profile approval	56
Crawford	Oct. 15	Meet board and engineer	189
Warren	Oct. 21-22	Approval of profile and investigations	114
Greene	Oct. 23-24	Approval of profiles and investigation	160
Polk	Oct. 25	Protested roads	70
Tama	Oct. 27	Emergency bridge work	118
Cedar	Oct. 28	Investigating conditions of township roads	186
Warren	Oct. 29-30	Protested roads	59
Madison	Oct. 31	Protested roads	98
Hamilton	Nov. 4	Approval of grade lines	74
Linn	Nov. 5	Investigation of records and expenditures	120
Benton	Nov. 6	Re: Bridge contracts	48
Linn	Nov. 7	Re: Records and expenditure	120
Calhoun	Nov. 10	Emergency bridge work	138
Jackson	Nov. 11-14	Measuring bridge work for 1914	175

SCHEDULE ELEVEN—CONTINUED

County	Date	Kind of Work	Miles Traveled
Clinton	Nov. 15	Construction mistake on 40 ft. arch	228
Hamilton	Nov. 17	Road work	74
Clinton	Nov. 19-20	County road approval	198
Jackson	Nov. 21	County road approval	33
Jones	Nov. 22	County road approval	145
Boone	Nov. 24	County road approval	58
Crawford	Nov. 25	County road approval	122
Carroll	Nov. 26	County road approval	66
Marshall	Nov. 28-29	County road approval	76
Total			12,010

DISTRICT NO. TWO—W. H. ROOT.

Carroll	April 23	Bridge survey	132
Cerro Gordo	June 1	Trip to Ames to make profiles	190
Dubuque	June 5	Conference with board and engineer	333
Floyd	June 13	Bridge survey	38
Chickasaw	June 21	Bridge survey	230
Worth	July 2	Approval of road profiles	150
Howard	July 7	Bridge survey	202
Bremer	July 8	Conference with county board and auditor	83
Buchanan	July 9	Conference with county engineer and auditor	24
Delaware	July 10	Conference with county engineer	155
Hancock	July 11	Approval of profiles	138
Black Hawk	July 12	Approval of road profiles	118
Dubuque	July 14	Dyersville bridge investigation	180
Clayton	July 15	Emergency bridge work	110
Floyd	July 16	Bridge letting	70
Cerro Gordo	July 17	Conference with county engineer	
Mitchell	July 17	Approval of road profiles	53
Franklin	July 18	Approval of road profiles	107
Wright	July 21	Approval of road profiles	70
Butler	July 22	Conference with county engineer and auditor	50
Chickasaw	July 23-24	Conference with board and bridge survey	84
Mitchell	July 25	Conference regarding tractor work	47
Floyd	July 26	County road approval	193
Dubuque	July 28-29	Re: Employment county engineer	254
Fayette	July 30	Conference with county engineer and board	163
Winneshiek	July 31	Conference with county engineer	54
Allamakee	Aug. 1	Conference with county engineer	251
Winnebago	Aug. 4	Approval of road profile	175
Chickasaw	Aug. 5-6	Approval of county roads and investigation Greenwald contract	75
Howard	Aug. 7	General work with county engineer	72
Clayton	Aug. 8	Bridge letting	312
Wright	Aug. 11	Approval of road profile	90
Franklin	Aug. 12-13	County road approval	28
Bremer	Aug. 13	Investigation of bridge work	85
Floyd	Aug. 14	Re: St. Mary's street bridge	
Howard	Aug. 14-15	County road approval	250
Winneshiek	Aug. 18	Bridge letting	194
Buchanan	Aug. 19	Approval of road profile	103
Delaware	Aug. 20	Approval of county road profile	47
Dubuque	Aug. 21	Investigation of Isadore Huber road	47
Black Hawk	Aug. 22	General work with county engineer	180
Winnebago	Aug. 25	Approval of county road profile	141
Howard	Aug. 26	Bridge letting	136
Cerro Gordo	Aug. 27	Inspection concrete paving plant	144
Wright	Aug. 27-29	Investigation bridge contract	185
Fayette	Sept 10	Bridge letting	183
Floyd	Sept. 11	Bridge letting	72
Cerro Gordo	Sept. 12	Inspection of concrete pavement	138
Worth	Sept. 15	Inspection of Northwood arch bridge	191
Chickasaw	Sept. 16	Conference with county engineer	85
Clayton	Sept. 17	Inspection of road building equipment	47

SCHEDULE ELEVEN - CONTINUED

County	Date	Kind of Work	Miles Traveled
Butler	Sept. 18	Conference with board in regard to tractor	175
Winneshiek	Sept. 22	Bridge letting	240
Howard	Sept. 23	Approval of county road profile	40
Worth	Sept. 24	Emergency bridge work	210
Buchanan	Sept. 25-26	Approval county road profile	148
Franklin	Sept. 29-30	County road approval	228
Dubuque	Oct. 1	Approval county road profile	70
Buchanan	Oct. 2-3	County road approval	192
Wright	Oct. 7	Bridge letting	102
Franklin	Oct. 8	County road approval	20
Black Hawk	Oct. 8	Approval county road system	21
Chickasaw	Oct. 9	County road approval	61
Floyd	Oct. 10	County road approval	70
Cerro Gordo	Oct. 11	County road approval	96
Hardin	Oct. 14-15	County road approval	197
Butler	Oct. 16	County road approval	103
Hardin	Oct. 17	County road approval	
Wright	Oct. 21-22	County road approval	86
Hancock	Oct. 23	County road approval	20
Worth	Oct. 24	County road approval	53
Winnebago	Oct. 24	County road approval	53
Chickasaw	Oct. 28-29	Bridge survey	203
Fayette	Oct. 30	County road approval	32
Cerro Gordo	Oct. 31	Bridge survey	205
Franklin	Nov. 4	County road approval	165
Bremer	Nov. 5	County road approval	58
Black Hawk	Nov. 5	Investigation of Strayer road	23
Mitchell	Nov. 6	County road approval	17
Howard	Nov. 7	County road approval	26
Winneshiek	Nov. 8	County road approval	226
Chickasaw	Nov. 10	Settlement of contract, steel bridge work	186
Winneshiek	Nov. 11	County road approval	101
Butler	Nov. 12	County road approval	46
Worth	Nov. 12-13	Settlement with Miller-Hey Construction Co.	193
Dubuque	Nov. 14	Settlement with Clinton Bridge Works	217
Fayette	Nov. 17	County road approval	112
Delaware	Nov. 18-19-20	Regarding Lux bridge location, Co. road approval	44
Fayette	Nov. 21	County road approval	10
Allamakee	Nov. 22	County road approval	207
Butler	Nov. 25	Bridge contract settlement	218
Fayette	Nov. 30	County road approval	108
Total			11,050

DISTRICT NO. THREE—W. E. JONES.

Tama	June 5	Meeting board and engineer	
Tama	June 6-7	Meeting board and engineer	122
Cass	June 8-9	General work	237
Pottawattamie	June 10-11	General work	355
Marion	June 12-13	Bridge inspection	94
Monroe	June 14	Bridge site investigation	118
Kossuth	June 16	Road grading investigation	131
Clay	June 16	Profile approval	49
Dickinson	June 17-18	Investigation of protested road and grade across lake	21
Kossuth	June 19	Profile approval	62
Palo Alto	June 20	Profile approval	53
Sioux	June 21	Yearly contract	255
Hamilton	June 24	General work	37
Wright	June 25	Road and bridge investigation	25
Winnebago	June 27-28	Conference with engineer	167
Calhoun	June 30	Road investigation	67
Monona	July 1-2	General work	91
Woodbury	July 3	General work	38
O'Brien	July 5	General work	216

SCHEDULE ELEVEN—CONTINUED

County	Date	Kind of Work	Miles Traveled
Pocahontas	July 8-9	Profile approval	97
Lyon	July 10	General work	196
Sioux	July 11	General work	47
Webster	July 12	Bridge inspection	194
Emmet	July 14	Profile approval	187
Dickinson	July 15	Profile approval	
Monona	July 16	Profile approval	146
Ida	July 17	Inspection of arch construction	43
O'Brien	July 18	Profile approval	223
Buena Vista	July 21-22	Investigation of complaint on condition of road	118
Clay	July 23	Bridge measurements	63
Palo Alto	July 24-26	County road approval	151
Cherokee	July 28-29	General investigation	138
O'Brien	July 30	Bridge letting	26
Calhoun	July 31	Profile approval	85
Plymouth	Aug. 1-2	John Larson complaint	269
Humboldt	Aug. 4-5	Profile approval	70
Woodbury	Aug. 6	Bridge letting	115
Dickinson	Aug. 7	Profile approval	108
Emmet	Aug. 8	Profile approval	17
Palo Alto	Aug. 9	County road approval	156
Kossuth	Aug. 11	Bridge letting	86
Sac	Aug. 12	Profile approval	155
Cherokee	Aug. 13-14	General investigation	41
Clay	Aug. 15	Bridge letting	186
Ida	Aug. 19	Conference with engineer	101
Monona	Aug. 20	Profile approval	64
Woodbury	Aug. 21	Conference with engineer	48
Sioux	Aug. 22-23	Meetings with Senator Balkema and county engineer	219
Woodbury	Aug. 26	Profile approval	137
Kossuth	Aug. 27-28	Profile approval	179
Palo Alto	Aug. 29-30	Profile approval	136
Sioux	Sept. 1	Profile approval	174
Dickinson	Sept. 2-4	County road approval	70
Emmet	Sept. 5	Crinn complaint	7
Palo Alto	Sept. 6	County road approval	154
Pocahontas	Sept. 9	Profile approval	97
Sioux	Sept. 10	Profile approval	74
Plymouth	Sept. 11	Bridge investigation	24
Clay	Sept. 12	County road approval	119
Lyon	Sept. 13-14	Complaint against Besser	336
Kossuth	Sept. 16	Certificate of immediate necessity	86
Calhoun	Sept. 17	Complaint of county engineer	110
Sac	Sept. 18	Road profiles	19
Ida	Sept. 19-20	Road approval	291
Humboldt	Sept. 22	Profile approval and bridge investigation	70
Webster	Sept. 23	Bridge letting	23
Hamilton	Sept. 24	County road approval	57
Emmet	Sept. 25-27	General investigation	250
Greene	Sept. 28	Profile approval	59
Sac	Sept. 30	Profile approval	59
Woodbury	Oct. 1	Profile approval	130
Pocahontas	Oct. 2	Profile approval	126
Palo Alto	Oct. 3	Profile approval	30
O'Brien	Oct. 4	Bridge inspection	239
Ida	Oct. 6-7	County road approval	121
Sac	Oct. 8	County road approval	
Woodbury	Oct. 9	County road approval	102
Monona	Oct. 10-11	County road approval	17
Buena Vista	Oct. 13	Investigation of work done	118
Emmet	Oct. 14-15	General investigation	103
Osceola	Oct. 16	Profile approval	51
Dickinson	Oct. 17-18	Profile approval and general investigation	184
Humboldt	Oct. 20	Profile approval	156
Monona	Oct. 21	Profile approval	148
Calhoun	Oct. 22	County road approval	83
Buena Vista	Oct. 23	County road approval	150
Kossuth	Oct. 28-29	County road approval	86
Humboldt	Oct. 30	County road approval	22

SCHEDULE ELEVEN—CONTINUED

County	Date	Kind of Work	Miles Traveled
Kossuth	Oct. 31	County road approval	14
Webster	Nov. 1	County road approval	133
Pocahontas	Nov. 3-4	County road approval	100
Osceola	Nov. 5	County road approval	73
O'Brien	Nov. 6	County road approval	21
Cherokee	Nov. 7-8	County road approval	184
Webster	Nov. 10	County road approval	64
Plymouth	Nov. 11	County road approval	110
Sioux	Nov. 12	County road approval	42
Lyon	Nov. 13	County road approval	
Plymouth	Nov. 14	County road approval	58
Carroll	Nov. 15	County road approval	158
Calhoun	Nov. 24	Bridge measurements	62
Monona	Nov. 25	Profile approval	96
Sac	Nov. 26	County road approval	65
Calhoun	Nov. 28	Bridge measurements	84
Total			11,087

DISTRICT NO. FOUR—E. WILLIAMS.

Guthrie	June 4-5	Meeting county supervisors	197
Harrison	June 6	Bridge work in connection with washout	60
Cass	June 7	Culvert and road work	178
Delaware	June 11-12	Bridge work	198
Humboldt	June 13	Des Moines River Bridge at Dakota City	203
Benton	June 16-17	Bridge work	224
Harrison	June 18-21	Measurements for bridges, making survey for culvert between Logan and Missouri Valley, advising with county engineer and supervisors.	258
Audubon	June 23	Approval of grade on survey for permanent work	123
Adair	June 24	Meeting supervisors and county engineer	236
Adams	June 25	Advising with county engineer on bridge work	42
Clarke	June 26	Inspecting Blue Grass road east of Thayer	34
Decatur	June 27-30	Road approval and meeting C., B. & Q. R. R. engineer re: grade crossings	445
Pottawattamie	July 1-2	Bridge work	
Ringgold	July 3	Road approval	192
Pottawattamie	July 7	Approval of survey	178
Cass	July 8	Attending meeting of county supervisors	83
Lucas	July 9-10	Getting work started in county	148
Taylor	July 11-12	Approval of road survey	213
Clarke	July 14-15	Going over claims of county forces not allowed by auditor	95
Decatur	July 16	Road work	43
Taylor	July 17	Approval road survey	147
Mills	July 18-19	Approval of road survey and bridge work	271
Clarke	July 21	Advising with new county engineer	128
Decatur	July 22-23	Road work (new road)	138
Montgomery	July 24	Getting acquainted with conditions in County.	
Fremont	July 25-26	Getting acquainted wfth conditions in county	248
Ringgold	July 28-29	Inspecting county work	209
Union	July 30	Getting acpainted with conditions in county	161
Cass	July 31	Checking up work done in county	63
Harrison	Aug. 1-2	Bridge work	179
Adams	Aug. 4-5	Meeting supervisors and engineer	204
Cass	Aug. 6-7	Investigating conditions	35
Audubon	Aug. 8	Consulting with supervisor and county engineer	128
Decatur	Aug. 11	Approval of road survey	137

SCHEDULE ELEVEN—CONTINUED

County	Date	Kind of Work	Traveled Miles
Ringgold	Aug. 12	Road work	92
Wayne	Aug. 13	Consulting with supervisor and county engineer	216
Pottawattamie	Aug. 14-15	Meeting county engineers from Clarke, Union and Cass counties, also advising with county engineer Pottawattamie county	162
Harrison	Aug. 18	Bridge letting	318
Clarke	Aug. 20	Bridge work	191
Cass	Aug. 21	Advising with county engineer	204
Lucas	Aug. 22-23	General inspection and bridge work	150
Fremont	Aug. 25-30	Consulting with supervisors; road approval; bridge work	547
Adair	Sept. 1	Bridge work	151
Union	Sept. 2-3	Road approval	22
Clarke	Sept. 4-6	Road approval	128
Fremont	Sept. 8-10	Meeting with board of supervisors; bridge work	224
Harrison	Sept. 11	Bridge work	232
Ringgold	Sept. 14-15	Bridge work	179
Page	Sept. 16-17	Getting acquainted with conditions in county	76
Fremont	Sept. 18-20	Bridge work	271
Pottawattamie	Sept. 22	Approval road survey	161
Mills	Sept. 23-24	Bridge letting	125
Page	Sept. 25-27	Bridge work	249
Boone	Sept. 29	Emergency work	57
Lucas	Sept. 30; Oct. 1	General inspection; bridge work	173
Union	Oct. 2	Approval road survey	63
Cass	Oct. 3-4	Bridge work	154
Adams	Oct. 6	Bridge letting	175
Taylor	Oct. 7	Road approval	43
Page	Oct. 8-11	Road approval	245
Pottawattamie	Oct. 13	To meet supervisors	256
Guthrie	Oct. 14	General inspection	136
Fremont	Oct. 15	Investigation of accident at Horse Creek bridge	125
Shelby	Oct. 16-17	Road approval	169
Pottawattamie	Oct. 21	Meeting supervisors	166
Mills	Oct. 22	Investigating subway under C., B. & & Q. track near Malvern	37
Montgomery	Oct. 23	Meeting Villisca Commercial Club committee, bridge work	79
Adair	Oct. 24	Road approval	149
Clarke	Oct. 25	Consulting with county engineer	36
Union	Oct. 27-29	Meeting supervisors and county engineer	218
Audubon	Oct. 30	Bridge work	52
Cass	Oct. 31; Nov. 1	Bridge work	156
Guthrie	Nov. 3-4	Road work	153
Adair	Nov. 5	Inspecting township road near Fontanelle	142
Union	Nov. 6-8	Road approval	175
Guthrie	Nov. 10	Approval county road survey	186
Mills	Nov. 11	Road approval	37
Harrison	Nov. 12	Road approval	99
Shelby and Audubon	Nov. 13	Road approval	13
Adams	Nov. 14	Road approval	64
Taylor	Nov. 15-16	Road approval	217
Pottawattamie	Nov. 18-23	Investigating culvert work	354
Total			12,825

DISTRICT NO. FIVE—C. E. OLSON.

Greene	April 28	Consultation re: bridges	73
Carroll	May 19-24	Measuring up bridges	264
Lucas	May 26-28	Meeting with board and engineer	137
Mahaska	May 29	Meeting with board and engineer	150
Delaware	June 1-4	Meeting with board and engineer	151
Winneshiek	June 5-6	Bridge measurements	183

SCHEDULE ELEVEN—CONTINUED

County	Date	Kind of Work	Traveled Miles
Palo Alto	June 7	Road work	188
Wright	June 9	Consultation with board	124
Clayton	June 10	Bridge letting	207
Fayette	June 11-12	Consultation with county engineer	183
Greene	June 13	Bridge measurements	80
Poweshiek	June 15-16	Bridge measurements	159
Johnson	June 16-17	Railroad crossing investigation	23
Muscatine	June 18-19	Consultation with county engineer	169
Iowa	June 24-30	Bridge measurements	229
Louisa	July 1-2	Profile approval	181
Louisa	July 7	Meeting with board	346
Iowa	July 8	Consultation with engineer	43
Keokuk	July 9	Road approval	96
Henry	July 10	Meeting board and engineer	68
Davis	July 11	Meeting county engineer	148
Davis	July 14-19	Approval of bills	294
Marion	July 21	Consultation with engineer	99
Mahaska	July 22-23	Consultation with engineer	33
Monroe	July 24-25	Consultation with engineer	105
Jasper	July 28-29	Bridge and road complaint	187
Johnson	July 30	River to river road complaint	66
Poweshiek	July 31	Complaint relative to bridge	13
Johnson	Aug. 1-2	Consultation with engineer	130
Jasper	Aug. 3-4	Bridge letting	91
Poweshiek	Aug. 5	Consultation with engineer	90
Marion	Aug. 6	Road approval	70
Iowa	Aug. 7	Bridge settlement	176
Scott	Aug. 8	Approval of profile	28
Muscatine	Aug. 9	Profile approval	172
Poweshiek	Aug. 11-12	Bridge letting	208
Louisa	Aug. 13	Consultation with engineer	61
Keokuk	Aug. 14	Consultation with engineer	57
Washington	Aug. 15	Consultation with engineer	62
Wapello	Aug. 16	Checking up with engineer	163
Davis	Aug. 18	Re: culvert to be installed	184
Appanoose	Aug. 19	Meeting engineer	87
Jefferson	Aug. 20	Meeting engineer	117
Mahaska	Aug. 24-25	Meeting engineer	100
Scott	Sept. 2	Bridge letting	224
Iowa	Sept. 3	Road complaint	116
Johnson	Sept. 4	Meeting engineer	86
Jasper	Sept. 5	Meeting engineer	72
Muscatine	Sept. 8	Bridge letting	252
Scott	Sept. 9	Profile approval	137
Davis	Sept. 10	Bridge work	42
Monroe	Sept. 11-12	Road complaint	128
Mahaska	Sept. 15	Re: Piers under bridge	96
Marion	Sept. 16	Profile approval	115
Washington	Sept. 17	County road approval	53
Henry	Sept. 18	Meeting engineer	131
Des Moines	Sept. 19	Meeting with engineer	202
Poweshiek	Sept. 22	Meeting with engineer	174
Louisa	Sept. 23	Meeting with engineer	63
Jefferson	Sept. 24	Meeting with board	110
Appanoose	Sept. 25	Meeting with engineer	64
Van Buren	Sept. 26	Meeting with engineer	153
Washington	Sept. 29-30	County road approval	152
Keokuk	Oct. 1-2	County road approval	14
Mahaska	Oct. 3	General investigation	120
Mahaska	Oct. 7-10	General investigation	246
Johnson	Oct. 13	County road approval	140
Iowa	Oct. 14-15	County road approval	89
Marion	Oct. 16	Profile approval	105
Jasper	Oct. 17	Profile approval	105
Poweshiek	Oct. 21	County road approval	73
Jasper	Oct. 22	County road approval	38
Marion	Oct. 23	County road approval	35
Wapello	Oct. 24	Bridge measurements	219
Louisa	Oct. 28	Road approval	202
Louisa	Oct. 29	Road approval	60
Des Moines	Oct. 30	Bridge measurements	32
Lee	Oct. 31	Meeting engineer	244

SCHEDULE ELEVEN—CONTINUED

County	Date	Kind of Work	Traveled Miles
Mahaska	Nov. 3-4	Profile approval	178
Louisa	Nov. 5	Road complaint	33
Johnson	Nov. 6	River to river road complaint	17
Monroe	Nov. 7	Meeting engineer	126
Davis	Nov. 9-10	Bridge investigation	147
Appanoose	Nov. 11	Meeting engineer	28
Henry	Nov. 12	Meeting engineer	105
Scott	Nov. 13	Emergency work	212
Poweshiek	Nov. 14	R. R. crossing investigation	64
Johnson	Nov. 18-19	Bridge measurements	156
Washington	Nov. 20	Meeting engineer	38
Jefferson	Nov. 21	Meeting engineer	180
Louisa	Nov. 24-25	Profile approval	312
Mahaska	Nov. 26	Road investigation	158
Total			11,641

(Special Assignments)

A. L. GOLDENSTAR.

Madison	June 19-22	Bridge measurements	149
Lyon	June 24-30	Road survey	212
Lyon	July 1-Sept. 1	Road survey	205
Jackson	Sept. 1-7	Bridge measurements	340
Lyon	Sept. 7-10	Road construction	410
Lyon	Sept. 14-17	Road construction	422
Crawford	Oct. 10-11	Approval road profile	209
Lyon	Oct. 17-20	Road construction	424
Total			2,371

C. A. BESSER.

Lyon	Aug. 28-Sept. 13.	Road building	765

O. W. CROWLEY.

Cedar	Oct. 13-18	Working with county engineer	292
Jackson	Oct. 20-24	Re: bridge and culvert work	347
Polk	Oct. 29	Emergency work	58
Hardin	Oct. 30-Nov. 30	Inspection on viaduct	65
Total			762

F. O. LAING.

Warren	Sept. 1-5	Bridge measurements	193
Warren	Sept. 9-10	Bridge letting	80
Emmet	Sept. 11-15	Bridge work	310
Story	Sept. 16	Copying records	18
Warren	Sept. 17-21	Bridge work	117
Total			918

J. F. BOOTH.

Lyon	Sept. 14 30	Road building	
Lyon	Oct. 1-Nov. 30	Road building	

SCHEDULE TWELVE.

DISTRIBUTION OF TIME SPENT IN THE FIELD.

(1)	Explanation of Road Law	126 days
(2)	Examination of Bridge Sites	74 days
(3)	Attending Bridge Lettings	59 days
(4)	Inspection of Bridge Work	92 days
(5)	Investigation of Complaints	24 days
(6)	Investigation of County Roads	137 days
(7)	Examination of Emergency Work	21 days
(8)	Approval of Grade Lines	107 days
(9)	Special Assignments	239 days
(10)	Unclassified	56 days
	Total	935 days

SCHEDULE THIRTEEN.

PERSONNEL AND SALARIES OF THE FIELD DEPARTMENT.

Name	Salary	Character of Employment	Appointment
Fred R. White	$1,500.00	Field Engineer	Temporary Appt., April 23, 1913
W. H. Root	1,500.00	District Engineer	June 1, 1913
C. E. Olson	1,500.00	District Engineer	May 19, 1913
E. Williams	1,500.00	District Engineer	June 4, 1913
C. Coykendall	1,500.00	District Engineer	June 1, 1913
W. E. Jones	1,500.00	District Engineer	June 5, 1913

PART ONE—SECTION FOUR

EDUCATIONAL DEPARTMENT, APRIL 9, 1913, TO DECEMBER 1, 1913. DATED DECEMBER 1, 1913.

Engineer in Charge, J. S. Dodds.

The Educational Department of the Commission was organized to comply with Section 3 of the road law, which required the Commission, "to disseminate information and instruction to county supervisors and other highway officers on questions pertaining to highway improvement and reasonable prices for materials and construction."

Following the taking effect of the road bill the work of the force of the Commission was largely that of an educational character, but as this measure became more generally understood it was found that it would be necessary to have in the organization men who could carry on this work, as it formed one of the important activities for which a constant demand is reaching the Commission. This work was organized with one regular employe, whose time up to December 1st was occupied in arranging for highway meetings in each county, arranging for illustrative material and exhibits, and in publishing the service bulletin which the Commission established to comply with that portion of the

law which required the publication of prices for materials and construction.

Publication of Monthly Service Bulletin.

The publication of a service bulletin was determined upon after it was found that a number of highway departments, including California, New York, Illinois and Ohio, were all issuing monthly bulletins, relative to the progress of highway work within the state, which were greatly in demand by those interested. It was planned to issue this bulletin monthly, and to supplement the regular issues with such extra bulletins and specifications as are required to carry into effect the provisions of the statute.

Activities of the Educational Department.

The proposed activities of the Educational Department are outlined in the following classification:

Educational Meetings—
- Short courses, Agricultural Extension Department, I. S. C.
- Farmers' Institutes.
- Booster organization meetings,
  - Good roads clubs,
  - Commercial clubs,
  - Community clubs
- Trustees' road meetings.
- Consolidated school meetings, good roads days.
- Church organizations.
- Classes and societies in colleges.
- Conventions.
- Fairs.
- Road picnics.
- Road demonstrations.

Publications—
- Monthly service bulletin.
- Standard specifications
- Special bulletins.
- News service to state press.
- Articles prepared for special publication.

Exhibits (charts, maps, photographs, standard plans, special plans)—
- State Fair.
- County fairs.
- Road conventions.
- Supervisors' convention.
- Consolidated schools.
- Bankers' convention.
- County Engineers' Short Course.

Short Course for Engineers—
- Attendance.
- Program.
- Results.

Photographs—
- Illustrations for bulletin.
- Enlargements.
- Motion pictures.
- Lantern slides.

Until October 15, 1913, the one employe of this department was working under the direction of the Commission superintending concrete road construction in Cerro Gordo County, and the educational work proper was necessarily carried on by the Office, Field and Designing Departments. During the first few months speakers were furnished to county fairs, short courses, farmers' institutes, picnics and other gatherings of a like character. An exhibit and information bureau was maintained at the state fair, and served to bring the services of the Commission to the attention of many not otherwise familiar with the scope of the new law.

The work of an educational nature which has been done by members of the Commission is outlined in the various schedules under the other departments.

SCHEDULE FOURTEEN.

PERSONNEL AND SALARIES OF EDUCATIONAL DEPARTMENT.

Name	Salary	Character of Employment	Appointment
J. S. Dodds.....	$1,800.00	Educational Engineer	October 1, 1913

PART ONE—SECTION FIVE

OFFICE AND ACCOUNTING DEPARTMENT, APRIL 9, 1913, TO DECEMBER 1, 1913. DATED DECEMBER 1, 1913.

Engineer in Charge, J. H. Ames.

Prior to April 9, 1913, the date the new law went into effect, the organization of the Office Department was composed of an office engineer and one stenographer. Practically the same work was carried on by the department at that time, except that the volume of work was much less. No attempt was made, however, to keep as complete a record of the work accomplished by the

counties as is now kept, and for that reason the Commission does not have available at this time all of the records desirable for comparative purposes.

At the time the new law went into effect, the organization of this department underwent several important changes. The new law required that a close check be kept on the accounts of the counties, as well as the accounts of the Commission, and for this reason it was necessary to add to the force an expert accountant with sufficient help to enable that part of the work to be handled successfully. There was also a marked increase in the amount of stenographic work, and in order to handle this work promptly, it was found desirable to employ two additional stenographers. With the increase in correspondence came a corresponding increase in the amount of material to be filed, and this necessitated the addition of a filing clerk to take charge of that part of the work.

The outline of the work handled under this department is as follows:

All correspondence, accounting, filing, reports, Commission records, approval of contracts, purchasing supplies, uniform record blanks and inventories.

Correspondence.

With the inauguration of a completely new system of highway administration, which was not clearly understood, the correspondence of the Commission naturally became very heavy. The major part of this correspondence is carried on with officials and others within the counties of the State. There are, however, many inquiries from outside the state relative to the workings of the new road law, as well as inquiries concerning materials, specifications and other matters pertaining to road and bridge work.

Accounting.

A special effort has been made by the Commission to place the accounting for all receipts and expenditures on a particularly detailed basis. An expert accountant was placed in charge of the books, and very complete records are kept. All bills for supplies, all expense books, and all contracts entered into by the Commission are carefully checked and certified by the accountant before being allowed by the Commission. A complete financial statement is given in Part Six of this report.

After the bills are allowed by the Commission they are forwarded to the secretary of the Iowa State College, who enters these

on his books the same as college departmental accounts, and they are then forwarded to the treasurer of the college for payment. The college treasurer is custodian of the funds of the Highway Commission.

Filing.

A complete filing system has been installed, most of the correspondence being classified by the county units. On account of the fact that a greater part of the material which is retained for filing falls under this classification, the system has proven simple and satisfactory.

Reports.

A separate file is kept for a classification of all the reports of the field engineers according to counties and districts. These reports are one of the most important parts of the filing system, and it is very essential that they be so classified as to permit their being readily accessible. A classification according to counties referred to in these reports seems to give the desired results.

All Commission Records.

In addition to the filing of all correspondence and other material which is necessary to make the records of the Commission complete there are:

(1) Minutes of the Commission meetings.
(2) Requisitions for all supplies.
(3) Record of contracts above $2,000.
(4) Requests for material and services of the Commission.
(5) Records of toll calls.
(6) Trip cards.

The minutes of the meetings of the Commission are transcribed from corrected typewritten notes into a permanent minute book, which is open to inspection at all times, and gives a complete record of the transactions at each meeting.

A requisition system was installed about July 1st, to make a complete record of all material purchased by the Commission.

Contracts which are submitted to the Commission for approval are recorded in detailed form, and no contract submitted for approval is passed upon until the complete information is available concerning the location of the work, unit costs, plans and all other details pertinent to the record.

A system was installed about July 1st to provide for all requests for material, services or information received. Each request as soon as it is received is given a serial number. In this manner it is possible to keep a clear record of all such requests, and to fill them promptly and in the order named. Any complaints relative to the delay of filling such requests are promptly investigated, and if possible the cause removed. Due to the rush of work early in the season there was some delay in sending out information promptly, but as the work has become systematized this delay has been greatly reduced, and at this time very few complaints are received. All material as it is sent out is recorded, and since the system was installed, about July 1st up to December 1st, 1,866 separate requests have been filled by the Commission.

Due to the large number of toll calls sent and received, and in order to check up the charges and to keep a record of these calls, a blank form is filled out at the time each call is made, and these records checked against the bills when they are rendered. During the construction season the number of daily calls to and from all parts of the State reach a considerable number.

A weekly trip schedule for the members of the Field Department is made out at the beginning of each week. All other trips which are made by the members of the other departments are recorded by means of a trip card which is made out and filed previous to the trip. This gives complete information as to the location of every member of the force each day.

Approval of Contracts.

The law requires that contracts costing above $2,000 for single structures shall be submitted to the Commission for approval, but we have found that a large number of county officials have submitted contracts for much smaller amounts, solely in order to have the correctness of the agreement passed upon by the Commission. Contracts approved are shown under Schedule Fifteen.

SCHEDULE FIFTEEN.

CONTRACTS SUBMITTED FOR APPROVAL APRIL 1, 1913, TO DECEMBER 1, 1913.

County	Contractor	Date Approved	Amount Approved
Audubon	Kimballton Construction Co	May 15	
Benton	Clinton Bridge Works	October 4	$7,110.00
Bremer	Waterloo Construction Co	August 20	2,793.00
Bremer	J. H. Russell	July 7	2,587.00
Buchanan	Iowa Bridge Company	September 2	2,155.00
Butler	Miller-Hey Constr. Co	September 4	5,416.00
Carroll	Waterloo Construction Co	June 16	7,967.00
Carroll	Geo. W. Koss	June 16	1,686.00
Carroll	Standard Bridge Co	June 16	1,080.00
Carroll	Ward & Weighton	June 16	6,296.00
Cedar	Henry France	June 10	2,082.06
Cerro Gordo	William Henkle	February 11	11,077.00
Clay	Des Moines Bridge & Iron Wks.	September 2	11,266.00
Clayton	Gus Barnd	July 1	4,499.00
Clinton	Marsh Engineering Co	September 15	12,179.00
Clinton	John Kane	September 16	4,642.00
Dallas	Federal Bridge Company	October 11	3,839.00
Fayette	Federal Bridge Company	September 15	5,700.00
Floyd	Midland Bridge Co	July 19	2,260.00
Floyd	J. Anderson & Son	July 19	4,300.00
Floyd	L. S. Dobson & Son	September 18	540.00
Greene	Ill. Steel Bridge Co	August 15	2,750.00
Hardin	Modern Steel Struct. Co	October 27	38,750.00
Harrison	Marsh Eng. Co	August 20	1,800.00
Harrison	Clinton Bridge Works	October 17	1,737.37
Hamilton	A. H. Austin	October 17	1,340.00
Howard	Chambers and Dobson	August 20	4,817.00
Ida	Iowa Bridge Co	June 16	8,672.00
Ida	Iowa Bridge Co	September 8	4,249.40
Jasper	N. M. Stark & Co	August 26	6,109.00
Johnson	Iowa Bridge Co	August 26	5,225.00
Jones	Wm. Flaherty	August 30	490.00
Jones	V. L. Hanssen	August 30	850.00
Kossuth	Marsh Eng. Co	September 20	28,192.12
Lee	Ft. Madison and Appanoose Stone Company	September 27	5,622.00
Linn	Federal Bridge Co	July 11	4,172.00
Linn	Perry Jayne	July 11	5,391.00
Linn	Waterloo Const. Co	July 11	8,929.00
Linn	J. D. Palmer	July 11	5,228.00
Madison	Iowa Bridge Co	September 28	12,174.00
Muscatine	Chas. Winn	September 2	4,820.00
Polk	N. M. Stark & Co	May 20	39,219.00
Polk	Iowa Bridge Co	May 20	2,885.35
Pottawattamie	Monarch Eng. Co	September 24	10,100.00
Pottawattamie	Omaha Str. Steel Co	June 15	3,610.00
Poweshiek	D. S. Carpenter	August 21	5,968.00
Scott	Frahm Coal & Conc. Co	September 18	3,440.00
Scott	Frahm Coal & Conc. Co	September 8	3,520.00
Tama	Clinton Bridge Works	July 24	2,253.00
Wayne	Iowa Bridge Co	October 30	1,883.00
Winneshiek	Federal Bridge Co	September 27	7,687.00
Winneshiek	Clinton Bridge Works	November 26	7,425.00
Worth	R. M. Weblemoe	August 30	5,380.00
Total			$344,162.24

Purchasing of Supplies.

In order to keep a close check of all materials ordered, a requisition system has been installed, and all bills are checked against these requisitions. The college where the commission headquarters are located by law, has a purchasing agent, and practically all permanent equipment, such as desks and other furniture, is purchased by the Highway Commission through this purchasing agent under the very favorable contracts which the college has with various supply companies. Practically all the drafting room and office supplies are purchased through the book store, which is maintained by the college, and the Commission receives the same prices as do the departments of the college. The services of the purchasing agent and book store are extended to the Commission by the college without cost.

For all printing of any considerable size bids are taken from local and outside companies, and contracts awarded to the lowest bidder. Small printing jobs which need to be done in a short time are bid upon by the local companies.

Wherever possible to secure reduced prices by purchasing quantities for direct shipment, advantage is taken of such prices. This is true of blue print paper, stationery, etc.

Any special equipment or material which is needed by the Commission, if not supplied through the above sources, is bid upon by the companies handling this particular article, and the contract let to the lowest bidder, the quality of the material being taken into consideration.

Uniform Record Blanks.

Under the provisions of the law the entire work of preparing a system of uniform blanks devolved upon the Commission. The various provisions required a very complete system of records for the use of the counties and townships and the Commission itself.

SCHEDULE SIXTEEN.

BLANKS PREPARED FOR UNIFORM ACCOUNTING AND RECORDS.

(To December 1, 1913.)

1. **Bridge Record. Field Notes**
*2. **Bridge Record. Office Record.**
*3. **Bridge Record. Estimate sheet.**
*4. **Bridge Record. Inspection record.**
*5. **Bridge Record. Additional data.**
6. **Notice of Hearing on Road System.**
7. **Minutes of Board. "No Petition Filed."**

8. Petition of Ten Freeholders.
9. Minutes of Board. "Petition Filed."
10. Resolution of Necessity.
11. Final Resolution of Necessity.
12. Petition calling special meeting of Board of Supervisors.
13. Notice to members of Board of Supervisors.
14. Notice of special meeting of Board of Supervisors.
15. Engineer's certificate as to mileage in county road system.
*16. Trip report.
17. Statement of claims approved.
18. All Iowa counties balances, receipts and expenditures.
19. Bill for road and bridge claims.
*20. County Treasurer's report of account.
*21. Pay roll.
22. Pay roll for day labor system (engineer).
22-a. Time sheet for day labor system.
23. Pay roll for day labor system (timekeeper).
24. Contractor's bond.
25. Submission of survey and report.
26. Application to County Engineer to locate proposed lines.
27. County Engineer's location of lines.
28. Notice to destroy weeds.
29. County Auditor's certificate to Trustees for culvert fund.
30. Trustee's order to destroy weeds.
31. Auditor's letter transmitting copy of resolution of necessity.
32. Auditor's certificate as to valuation of townships.
33. Contract for dragging roads with Township Superintendent.
34. Trustees' application to Board of Supervisors for Engineer.
35. Commission's examination of final report of Engineer.
36. Notice to remove obstructions: Fences.
37. Notice to remove obstructions: Telephone Co., Telegraph Co., etc.
38. Engineer's estimate of work done.
39. Expenditure classification sheet.
*40. Certificate of accounts.
*41. Checking sheet.
*42. Index checking sheets.
*43. Bills against State Highway Commission.
*44. Statement of accounts for payment.
45. Complaint as to maturing noxious weeds on land.
46. February meeting Trustees, selection of draggable roads.
47. Receipt to Township Trustees for material.
48. Ten days' notice to owner of assessment.
49. Bills payable from 1913 culvert work.
50. Township Trustees' record creating 1913 culvert fund.
51. Form of bid.
52. Instructions to bidders.
*53. Acknowledgment of receipt of letter.
54. Examination of final report of Engineer.
55. Record of assessment of Special Tax by Township Trustees.
56. Township Clerk's certificate of assessment of Special Tax.

57. County Treasurer's report of account with Townships.
58. County Engineer's bond.
59. Resolution of Board of Supervisors to transfer account.
60. Registration of highway routes.
61. Certificate Highway Route.
*62. Toll line calls.
63. Request for Engineer.
*64. Accountant's record expense books.
*65. Requisition.
*66. Trial balance—general ledger.
*67. Designing room record.
68. Township Clerk's annual report as to weeds.
*69. Office record.
70. Bond of member of Board of Supervisors.
71. Complaint as to roads.
72. Poster notice of weed law—18x22.
73. Contract for dragging roads (County system).
74. Report of Township Clerk of work accomplished on Township Road System.
*75. Notice to contractors.
*76. Advance notice of Engineer's visit.
*77. Blank for application for employment.
78. Road Superintendent's annual report to the Township Trustees.
79. Report of Township Road Superintendent.

Inventories.

The inventories of all material, supplies and equipment purchased or taken over from the former Good Roads Department are included in the Financial Report, Part Six.

SCHEDULE SEVENTEEN.

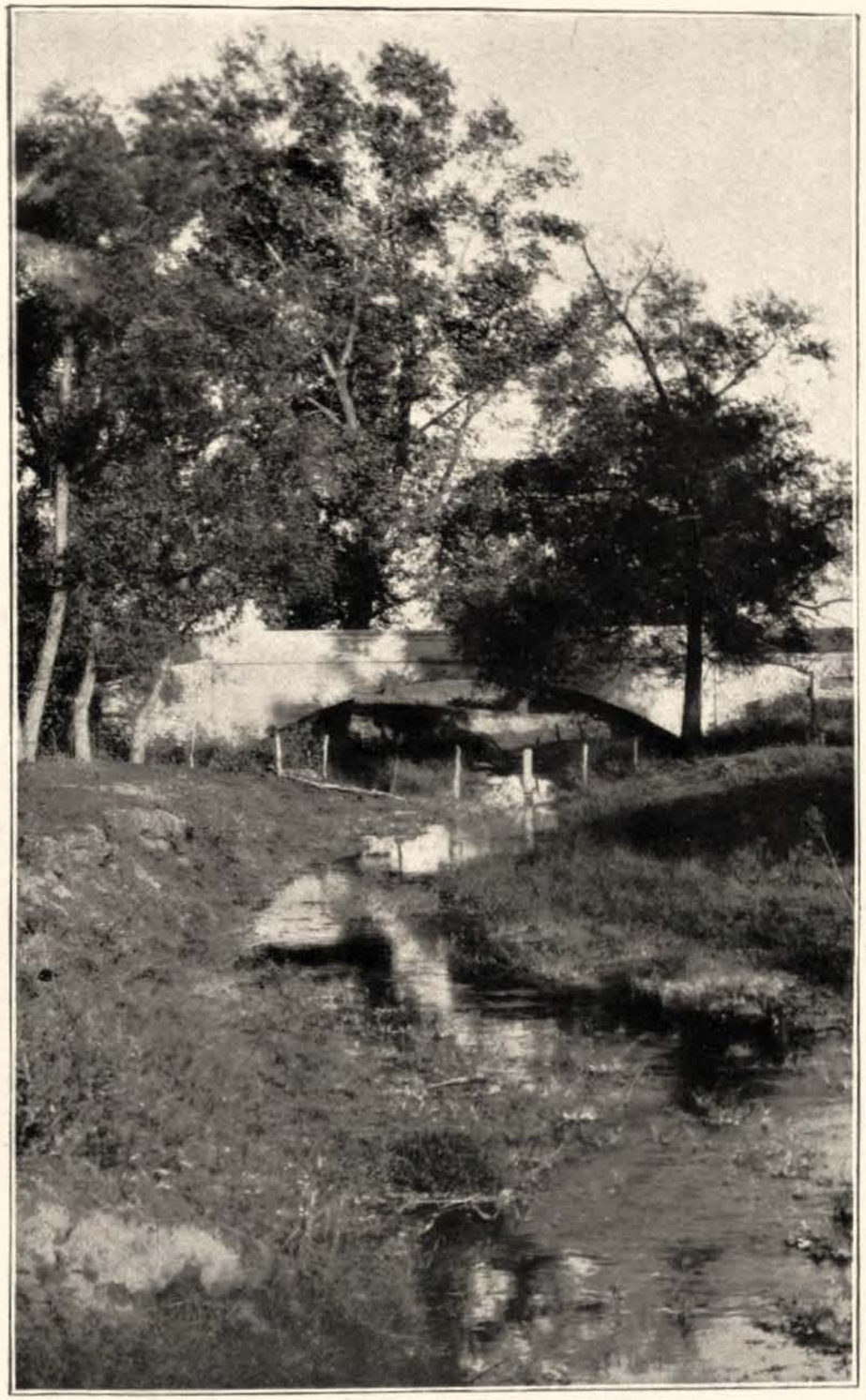
PERSONNEL AND SALARIES OF OFFICE AND ACCOUNTING DEPARTMENT.

Name	Salary	Character of Employment	Appointment
J. H. Ames.....	$1,080.00	Office Engineer.....	Temporary Appt., April 23, 1913
L. A. Wilkinson.....	2,000.00	Accountant.....	April 28, 1913
Annie Laurie Bowen..	720.00	Clerk.....	Temporary Appt., April 23, 1913
Janet Jacobsen.....	780.00	Stenographer.....	May 1, 1913
Anna Vanderlinden..	780.00	File Clerk.....	June 14, 1913
Merle Crabtree.....	300.00	Stenographer.....	Temporary Appt., April 23, 1913

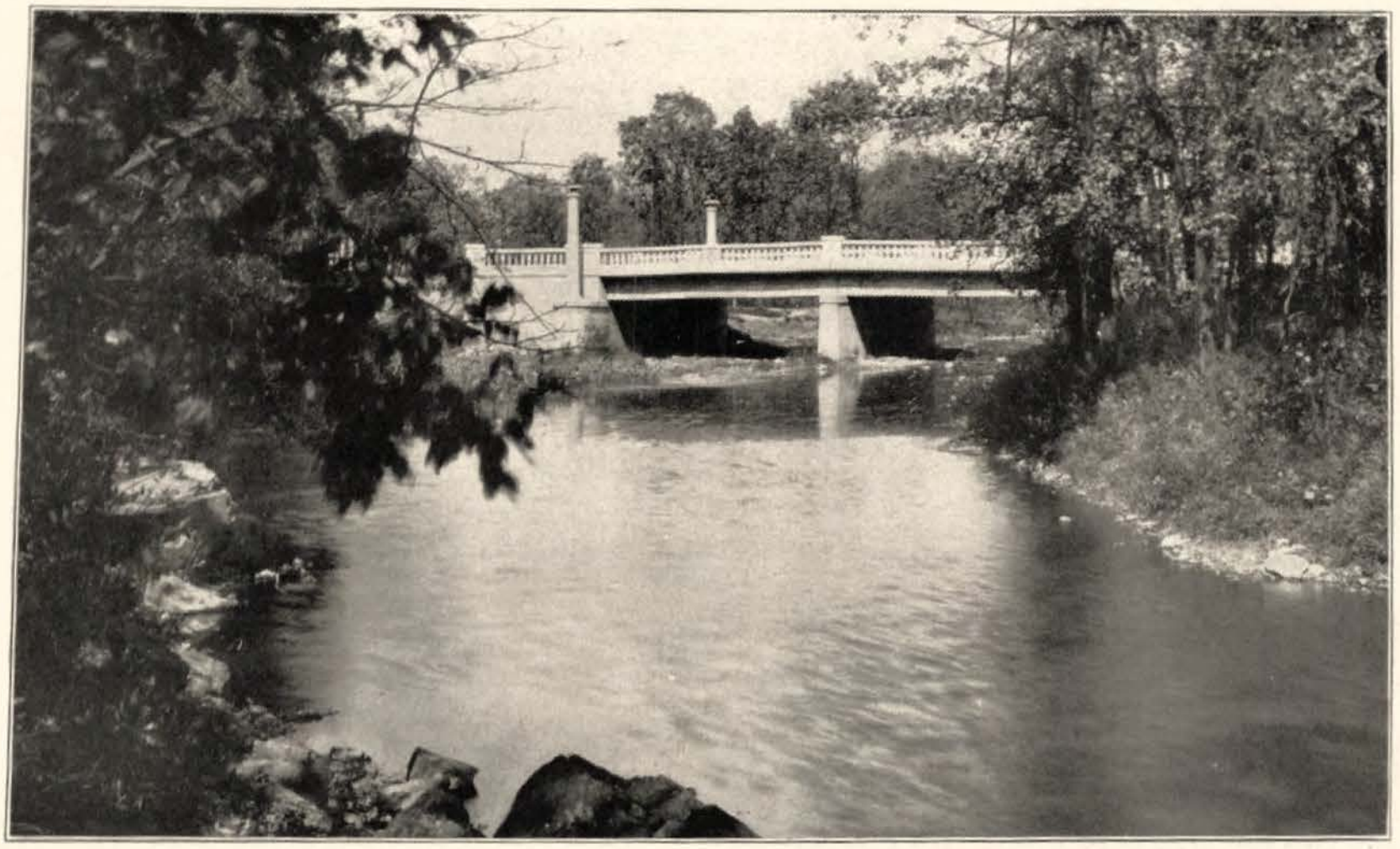
*Indicates form for the use of Commission only.

PART TWO

Departmental Report Dec., 1913, to Dec., 1914. Dated Dec. 1, 1914



SPECIAL DESIGN CONCRETE ARCH—This is a 45′ span with a 20′ roadway built on the Des Moines, Mason City and Minneapolis Highway, three miles northeast of Gilbert, Story County, in 1913. It cost $3,384.85.



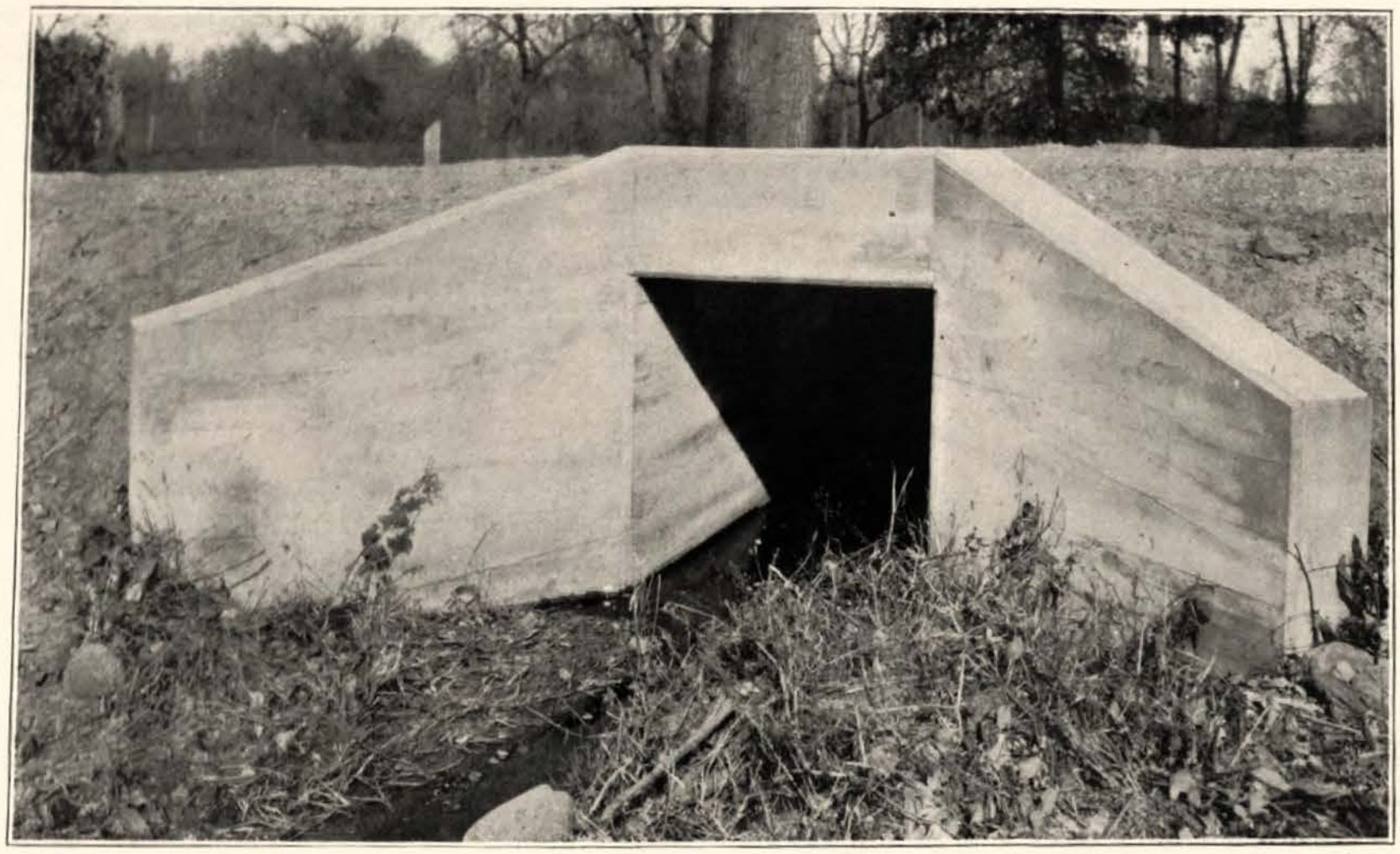
DECK GIRDER BRIDGE—Two 35′ deck girder spans over Willow creek in Mason City on Sixth Avenue. The cost was $4,923.00. The beauty of such a structure, not considering its value as a public utility, is a good investment for any community.



STEWART AVENUE BRIDGE—Cerro Gordo County replaced the bow string bridge shown on another page with this concrete arch structure. Its foundations are on solid rock. It has ample roadway, two sidewalks, and is built to carry an Interurban line.



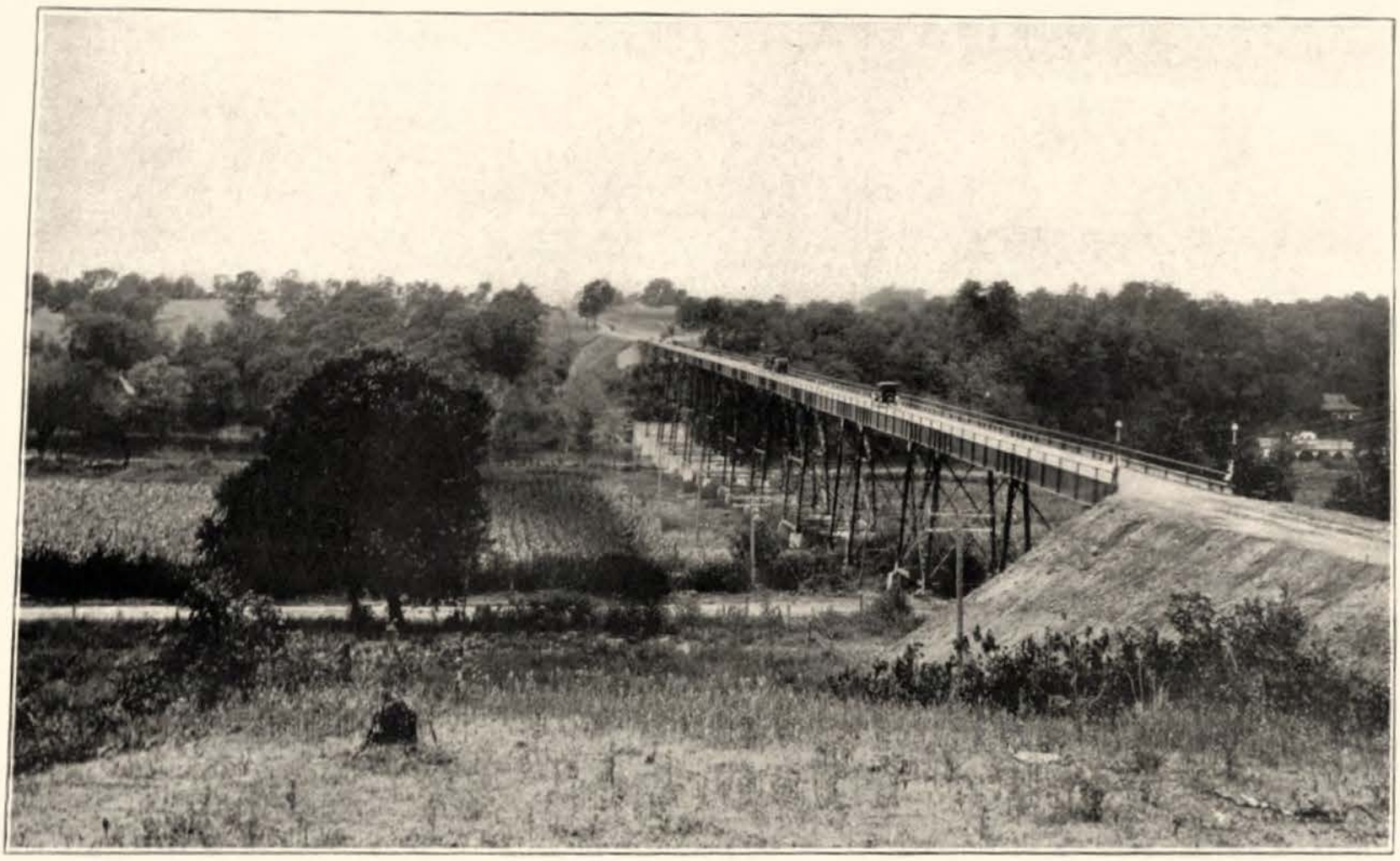
HEAD MEMORIAL BRIDGE—Two 55′ concrete arches over Butterick's Creek, Greene County, on the Lincoln Highway. A dangerous turn was eliminated by relocating the road and cutting a new channel for the creek. Flaring handrails form a safe-guarding feature in the approach to this bridge.



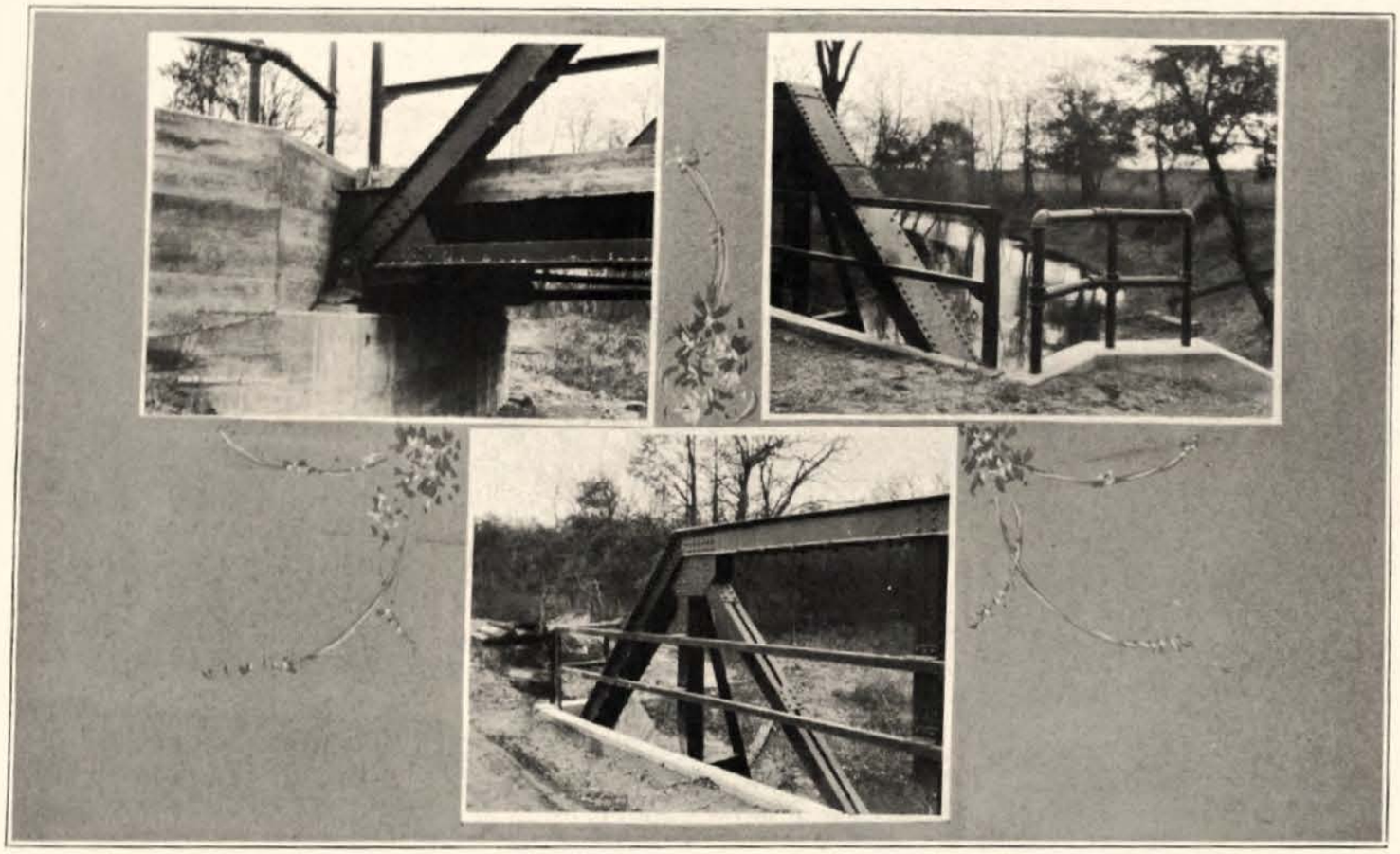
TYPICAL BOX CULVERT—Highway Commission standard type of box culvert with flaring wing walls. This culvert shows what a little care and accuracy in form building will do toward adding beauty to the Iowa highways. Such a culvert is an ornament to any road.



BOX CULVERT WITH STRAIGHT WINGS—Two types of wing walls are used on Highway Commission Standard plans. This shows straight wing walls. To add to the appearance of this particular culvert a flat coping has been added. Morgan Twp., Franklin County.



ELDORA VIADUCT—This bridge extending from bluff to bluff over the Iowa River east of Eldora is 960 feet long. At the highest point it is 80 feet above low water level. It is of steel resting on concrete abutments and piers. It cost $43,000.00.



CONSTRUCTION DETAIL IN STEEL BRIDGE CONSTRUCTION—Rocker shoe to accommodate contraction and expansion—Pipe handrail over flaring wing wall—Rigid intersection of end post and top chord.

PART TWO

Departmental Report Dec., 1913, to Dec., 1914. Dated Dec. 1st, 1914

SECTION ONE

GENERAL REVIEW, 1914.

Change in Sentiment.

The fall of 1913 was a very favorable one for outside construction work. This fact, fortunately, made it possible for many of the counties which were late in starting their work to accomplish more than seemed possible earlier in the season. As a whole the report for the year 1913 is a creditable one. About December the reaction seemed to take place, and the extended criticism of the new road law gave way to a fairer consideration of the principles involved. This change in sentiment was probably due in a large degree to the splendid results accomplished under the provisions of the law. A number of the counties, prominent among which are Fayette, Clayton, Worth, Benton, Cerro Gordo, Story, Black Hawk, Woodbury and others, began operations just as early in 1913 as it was possible for them to organize under the present system. By the end of the season they had built more miles of permanently graded earth roads and more permanent bridges and culverts than in any previous year. These results and the spirit of co-operation manifested by these counties proved, by actual demonstration, the practical utility of the methods outlined.

When the working season of 1914 began, the Commission met very changed conditions. County after county started construction on a broad scale. Through the force of the example set by these counties, and through the demands of an aroused public sentiment, it was possible to make a beginning in even the most backward counties. For example, this is true in Davis county. Last year practically no adequate results were secured. This year a number of very dangerous bridges and culverts have been repaired or replaced by permanent structures, brush and weeds have been cleared from the roadsides, and some reasonably good grading work has been done.

The quality, also, of construction work has been improving. Last year with an entirely new organization and many inexperienced workers, much work of poor quality resulted. This year better workmanship is evident. The concrete in bridges and culverts is smoother and better finished, and the road work, particularly the tractor grading, has improved materially over last year. In many of the counties the road grades have been finished in a manner that left little to be desired so far as workmanship is concerned.

The problems that now face the counties and the Commission in building an adequate system of highways are many. There are perhaps two that stand out more prominently than any others.

The first of these is the problem of adequate organization, that is, the securing of men to do the road, culvert and bridge work in a fitting, workmanlike manner.

The second, which is probably the greatest of all, is that of securing an adequate system of maintenance.

For a long period in the future we must depend upon our earth roads. Good earth roads need constant maintenance. Of all the problems to be met in the future, this problem of maintenance is the greatest. The Commission believes thoroughly in the adequacy of the patrol system. The results accomplished in a few counties are detailed in this report, and are of such character that we hope before the end of another season this system will be in use in a large percentage of the counties. In some plan of this character lies the secret of the proper maintenance of earth roads. This same fact applies, however, to roads of any type, and no matter what kind of road surface may be built, proper maintenance only, will secure adequate returns on the investment made.

Final Approval of County Road Systems.

During the fall and winter months, the Commissioners and field engineers continued their examination of the county road systems designated by the various counties as well as the petitions and protests which were filed with the Commission. Every day during December and January that the weather and the road conditions would permit were spent in the field until reports had been prepared on each county in the state, including each petition or protest.

On February 2nd the Commission met to give consideration to these reports, and to pass finally upon the county road systems. Notifications were sent to all the county supervisors, county auditors and county engineers, giving the date upon which final action would

be taken upon each county. In addition to these officials, notices were sent to all the interested property owners who had asked to be advised of final action. During February over three hundred officials and property owners called personally at the offices of the Commission to go over various matters relative to the county systems with the Commissioners. The county systems were transferred to large maps, each showing one-fourth of the entire state, and the county systems were connected into a great state system. On February 14th the entire list of county systems was completed. The official maps were then signed by the Commissioners and copies were forwarded to the county auditors for each county. Copies of the final maps were also turned over to the publishing company for completing the official county maps.

Judging by the information that has come to the Commission from personal visits to the counties, from the field engineers and from correspondence, the county systems are in the main satisfactory and adequate. In a few instances there have been found errors, which, under the advice of the attorney general, the Commission has corrected. In general, it may be said, there have been very few protests filed over the county systems as finally established.

Iowa is the first state in the Middle West to establish a state-wide system of main roads. The Commission believes that an adherence to this system for a period of five years will give the state a network of highways, reaching every market point, that will be unsurpassed in utility to the public. The selection of the important roads for first improvement is fundamental in any adequate road program.

In all, the system as finally established contains sixteen thousand miles of road. The details of the time spent in this work are included elsewhere in this report.

Road Meetings.

During the winter months the educational work of the Commission was pushed vigorously through road meetings all over the state. In addition to the commissioners, themselves and the educational department, Senator Asa L. Ames of Traer, assisted in these meetings, and at the end of March one or more public meetings had been held in practically every county of the state. These meetings were largely attended by the county and township officials, and may be credited with bringing about a much clearer understanding of the features of the road law. The whole measure is logically arranged, and is not difficult to explain or to understand. Without

a single exception, the Commission found that where any considerable opposition existed, or was manifested toward the measure it was due to the fact that some private, or selfish, interest had been interfered with in the disposition of the public funds.

Generally speaking, the road officials of the state, during the full course of the meetings, met the Commission in a fair and open minded manner, and gave careful consideration to all that was said. Few objections have been met in the past two years that were not founded upon some willful misrepresentation, or some lack of understanding of the actual provisions of the statute.

Short Course for Highway Engineers.

To serve a purpose similar to the road meetings, the Commission in cooperation with the division of engineering of the Iowa State College, established a short course for highway engineers. This was held at the college beginning December 29th and ending January 7th. Mr. T. R. Agg, professor of highway engineering of the college, and the engineers of the Highway Commission were the instructors in this course. Assistance was rendered by Mr. A. N. Johnson, then state highway engineer of Illinois; by Mr. A. R. Hirst, state engineer of Wisconsin; by Mr. L. I. Hewes of the office of public roads, Washington, D. C., and others equally well qualified along the line of highway engineering. The technical details of construction and maintenance of roads and bridges, together with the business side of contracting and accounting were fully discussed and all the sessions were well attended by those registered.

The short course closed with a convention of the county engineers, at which practically all the counties were represented. During the week one hundred fifteen engineers registered for the course. At the close of the convention an advisory board of engineers was selected to represent the county engineers in their dealings with the Highway Commission. This advisory board consists of the following men: C. H. Lehmkuhl, Greenfield, George K. McCullough, Storm Lake, J. M. Malloy, Davenport, Nathan B. Barber, Waterloo, and S. B. Gardner, Eldora. This advisory board has been called in consultation by the Commission in the preparation of specifications and the blanks for the use of the county engineers. They will also assist in the preparation of the program for the short course which will be held again this winter.

Standard Specifications and Classifications for Road Work.

During the year the specifications of the Commission have been revised and rewritten, and these have helped to put both road and bridge work on a much more uniform basis. There have been distributed during the year standard specifications for highway bridges, specifications for reinforcing bars, specifications for pipe culverts and a complete classification for road work. The reports made this year by the county engineers are based on the standard classification for road work.

Official Communications.

Since December, 1913, official communications Nos. 18 to 25 inclusive have been issued to the road officials of the state dealing with the following subjects:

School of instruction.
County road map.
Blank forms.
Standard rules for road plans.
Paints for steel bridges.
Plans for approval.

Copies of these communications are included in the appendix of this report.

Conference With the Board of Railroad Commissioners and Representatives of the Railroads in Iowa.

The alarming increase in the number of accidents at the railway crossings, prompted the Commission to undertake a campaign against dangerous crossings in the state. This subject is so important, that a chapter has been devoted to the details of the work which has been started. To inaugurate the movement a conference was arranged between the board of railroad commissioners, the representatives of various railroads doing business in the state and the Highway Commission at Des Moines on March 23d. There were present at this meeting:

Railroad Commission.
D. J. Palmer.
N. S. Ketchum.
Railroads doing business in Iowa—
J. C. Davis, C. & N. W.
F. H. Hammil, C. & N. W.
H. Rettinghouse, C. & N. W.
M. E. Thomas, C. & N. W.
P. Scanlin, C. & N. W.
P. J. McAndrews, C. & N. W.
R. G. Kenly, M. & St. L.

F. H. Helsell, Ill. Central.
D. J. Brumley, Ill. Central.
G. J. Bell, A. T. & S. F.
Robert Rice, C., B. & Q.
W. A. Christian, C. G. W.
W. H. Penfield, C., M. & St. P.
Jno. M. Hughes, C., M. & St. P.
W. H. Peterson, C., R. I. & P.
W. W. Greenland, Wabash.
T. E. Rust, W. C. F. & N.

Highway Commission—

A. Marston, Chairman.
H. C. Beard, Commissioner.
Thos. H. MacDonald, Highway Engineer.

After a detailed discussion of the various methods of securing the desired results, in which the Commissioners and the railroads discussed the best plans to follow and methods of financing the improvements, it was agreed, first, that the railroads would at once do all in their power to make a general improvement at their grade crossings, such as widening the planking and the approaching grades, and, second, that they would meet the railroad and Highway Commissioners in conference relative to each particular dangerous crossing that was taken under consideration by these boards.

The Highway Commission agreed that at least one engineer would be assigned to draw specific plans for each improvement contemplated, and to make an estimate of the cost. After such plans are prepared, it was agreed that a conference would be held to apportion the cost and to plan for the final execution of the project. The details of this work are taken up under Part Four of this report.

In a general way, it may be said, that the railroads have been cooperating with the Highway Commission in a very satisfactory manner, and the work of grade elimination has shown satisfactory results during the past year. Some idea of the problem confronting the state may be gained from the fact that there are over eight thousand railroad crossings on the country roads. Each crossing if improved permanently, involves a considerable outlay. For specific cases of grade separation, the estimates have run from seven to twelve thousand dollars each. On account of the cost it will be a matter of some years before it will be possible to secure a large number of such improvements.

One difficulty encountered by the Highway Commission has been the financing of such projects on township roads. It has also been found difficult in a few instances where more than one railroad was involved, to secure an equitable agreement between all parties concerned.

Report on Road Materials and Freight Rates.

In 1913 the Commission arranged to cooperate with the Good Roads Department of the Iowa State College and the State Geological Survey to secure a complete report on the road materials available in the state. Dr. S. W. Beyer was placed in charge of this work, and an extended report on the available materials in the state was secured. This report has already been published in one of the Geological Survey reports, and it will be used by the Highway Commission as a basis of information in an attempt to secure more favorable freight rates on road and bridge material in this state.

There are now in effect in Illinois and Wisconsin, rates on gravel, crushed stone, sand and such materials, very much lower than are in force in Iowa. The rates in the two mentioned states average about one-half cent per ton-mile, and in cases of long hauls, as low as three mills per ton-mile. In Iowa the charge for a fifty mile haul is fifty-two cents. It is evident on this basis that for hauls in the neighborhood of fifty miles in length these rates are double the rates of the adjoining states. If these lower rates can be secured a saving, especially to the southern half of Iowa, will be considerable, as there is very little local road material or aggregate suitable for concrete construction existing locally in the counties south of the Rock Island railroad. This matter will be presented to the railroad companies during this winter.

Changes of Engineers.

On account of inefficient work it has been found necessary by the Commission to require changes of engineers in Wapello, Clarke, Clinton, Warren and Monona counties. In each case new engineers have been appointed, and the work has been carried on much more efficiently.

Monthly Meetings.

In order to increase the efficiency of the engineering force of the Commission, it was decided to hold monthly meetings, at which time all the engineers employed would be present, including especially the district engineers. It has not been found possible to hold such a meeting each month, but a number of such meetings have been held,

and the conditions in the various districts have been fully discussed, and plans made to bring about better results.

Bonds Voted for Bridge Construction.

In view of the fact that increased expenditures have been strongly opposed in some quarters, it is interesting to note that each specific proposition for road improvement submitted to the voters of any county has carried. Emmet county voted fifteen thousand dollars for a concrete bridge at Estherville. The city of Eldora voted ten thousand dollars for the Eldora viaduct; Johnson county voted fifty thousand dollars for a handsome concrete structure at Iowa City at Burlington avenue; Clay county voted forty-two thousand dollars for a concrete arch bridge at Spencer. In fact, through a technical error, Clay county was forced to vote the second time. The sentiment of the whole state seems to be strongly in favor of permanent improvements, provided they are honestly built within fair prices.

Federal Post Roads.

In 1913 an appropriation of ten thousand dollars was secured from the federal government for the improvement of a post road through Story and Boone counties, fifty miles in length. In addition to the ten thousand dollar federal appropriation, the two counties appropriated twenty thousand dollars, and this work has been completed. The improvement consists in permanently grading the roads for the entire distance through the two counties. Permanent culverts and bridges have replaced all the temporary bridges which existed at the time the improvement was undertaken. Plans were prepared by engineers from the U. S. Office of Public Roads, approved by the Highway Commission, and the construction carried on under the direction of the government engineers. Favorable comments have been made by all who have been over the road, and the work was done in strict accordance with the standards adopted by the Highway Commission.

A second appropriation of thirty thousand dollars was secured for the improvement of a post road nineteen and one-half miles in length through Dubuque county. This road extends from the city of Dubuque to Dyersville on the west side of the county. The county was required to appropriate sixty thousand dollars for the improvement, and in addition to build the drainage structures and viaducts that would be required. The plans for this improvement have just been completed by the government engineers, and the Commission has spent considerable time investigating the proposed grades, sections and other details as planned. There has been some discussion between the Highway Commission and the Office of Public Roads, principally relative to the character of the surfacing material and the width of section to be used. We believe that these questions will be settled satisfactorily before the first of the year, and that contracts will be awarded soon after for the construction of the entire mileage. This matter is taken up in detail elsewhere in this report.

Registration of Routes.

A number of the organizations formed to promote the improvement of new routes east and west, and north and south, throughout the state have taken advantage of the provision in the law which provides for the registration of these routes. This registration protects the name, color scheme and symbols adopted, and these organizations have seen fit to take advantage of this method of protecting the integrity of the routes selected. Up to this time the following routes have been registered:

The Great White Way—Muscatine to Council Bluffs.

The Green Crescent Route—Muscatine to Cedar Rapids.

The Trans-continental Division of the Lincoln Highway—Clinton to Council Bluffs.

The Red Ball Route—St. Louis to St. Paul (Registered in Iowa).

Other requests are pending.

Quarters for the Highway Commission.

When the road law was under consideration the board of education agreed that a place would be provided in the buildings at the Iowa State College for the Commission. It was not foreseen at that time that the organization of the Commission would grow so rapidly. For a time the Commission was limited to smaller quarters than the work required, but this year additional rooms were set aside for the use of the Commission, and adequate quarters are now available. The rooms taken over had been planned for testing laboratories only, and were not suitable for offices on account of the dark walls and improper lighting. In consideration of the use of these quarters, the Commission had the necessary repairs made to improve the lighting, heating and ventilation. The acknowledgment of the Commission is due the board of education and the college authorities for the ample quarters now provided. The office rooms are located on the first floor in the north end of

Engineering Hall, the designing rooms on the second floor, north end of the Engineering Annex, and the blue print room on the third floor, north end of the same building. These quarters make very desirable and usable office and drafting rooms.

Convict Labor.

During the year 1913 about twenty-five convicts were employed at the Iowa State College under the provision of the law passed by the Thirty-fifth general assembly, which allows the use of convicts to be used on road work and other public work, under the supervision of the Highway Commission. During the past year, more than sixty men have been employed, principally on road work. The plan in operation has been so satisfactory that within the next few years it seems possible that a considerable number of the able-bodied men confined at the Anamosa and Fort Madison institutions can be used to advantage in the public work of the state. The details of the work done, and the compensation of these men are treated under Chapter Seven.

Conference in Franklin County.

Due to considerable agitation relative to improvements which have been built under the road law in Franklin county, principally in Morgan township of that county, and criticisms which were made concerning these improvements, the Commission held a meeting with the Farmers' Club at Dows on October 2d and 3d. An inspection was very carefully made of these improvements, and it was found that the principal criticism had arisen over the construction of certain bridges and culverts. This criticism was awakened by the fact that during June, 1913, two rather expensive structures which had been built previous to the passage of the road law near the town of Dows, were washed out by the high waters. These structures had been well built so far as the superstructures were concerned, but the foundations had not been carried to a sufficient depth, and no piling had been used. When the water rose it simply undermined the foundations, and caused the collapse of the structures. The cost of these structures could not be accurately determined, but was estimated to be in the neighborhood of $4,000. The fact that these were replaced this year by other structures not a great deal larger, awakened the criticism which was then turned towards other improvements of a like nature which were being built.

In two cases there was some basis for criticism, due to the fact that the stream channels had not been straightened above and below the culverts built. It was found, however, that in Morgan township alone, thirteen new permanent structures of splendid workmanship had been constructed during the past two seasons, and such criticism as was merited was met by doing a small amount of work above and below the two structures in question to provide a straighter channel for the water.

The only concrete structure still in use, that has been built prior to the taking effect of the present road law, was a badly dilapidated concrete structure which is likely to collapse at any time. This structure was full of cracks, badly designed and cost more in proportion than any of the newer structures of good workmanship.

An agreement was made by the Highway Commission to install experimental catch basins at three different points to determine the practicability of doing away with culverts where drainage districts have been established, and where tile have been laid under the road. These catch basins will be installed in the next few months. It was found also that the culverts in question had been built this year preparatory to grading the roads in accordance with the Commission's standards next year, and when this improvement is completed, it is believed that the entire criticism will be met by the practicability and appearance of the completed road.

It is the policy of the Highway Commission to investigate complaints which carry merit, and to adopt any suggestions which may be made by the taxpayers which seem to be in line with the best interests of the public. One of the striking features of the present system brought out by the conference at Dows was the fact, that for every structure in question, the exact cost was recorded and the responsibility for the size, type and entire improvement was definitely fixed. It was impossible to find the cost of the improvements built prior to the passage of the present law, or to fix the responsibility for poor workmanship and the disastrous results which followed the first high water.

Iowa Federation of Women's Clubs.

During the past two years there has been a keen interest developing among the women of this State in road improvement. The interest is not confined to those who live on the farm, but extends to the towns and cities as well. The broader vision which has characterized the public movements for better schools, better homes, better churches and recent activities in community life has included a strong interest in the improvement of the roads as a means to the other ends. Last winter the Federation of Wom-

en's Clubs of Iowa adopted as a part of their study course for the year the study of the Iowa Road Law. In compliance with the request of the Good Roads Committee of the Federation, the Highway Commission has published a bulletin for their use in this study. This bulletin contains a critical study of the Iowa Road Law in its social and economic relations, and was prepared by Prof. John E. Brindley of the Iowa State College.

Appointments of Commissioners.

The appointments filled by the Commissioners are listed under Section Four of Part Two of this Report.

SCHEDULE TWENTY.

PERSONNEL AND SALARIES OF COMMISSIONERS AND ADMINISTRATIVE ENGINEERS, JULY 1, 1913, TO JUNE 30, 1914.

Name	Salary	Position	Residence
A. Marston	None	Commissioner	Ames
J. W. Holden	$10.00 per diem	Commissioner	Scranton
H. C. Beard	$10.00 per diem	Commissioner	Mt. Ayr
Thos. H. MacDonald	$3,000.00	Highway Engineer	Ames
J. H. Ames	2,000.00	Ass't Highway Engineer	Ames
J. E. Kirkham	300.00	Consulting Bridge Engr.	Ames

(Note: The methods and organization of the departments of the Commission were fully detailed in Part One.)

PART TWO—SECTION TWO

DESIGNING DEPARTMENT, DECEMBER, 1913, TO NOVEMBER, 1914.

Engineer in Charge, C. B. McCullough.

The work of the Designing Department this year has been characterized by an increasing number of activities aside from the preparation of plans for bridge and road building. The extent to which such new activities has developed may be appreciated from the fact that whereas practically the entire 1913 salary roll was chargeable to the preparation of plans for bridge and road work, during the current year but 75% of the salary roll can be so charged.

Among the new activities undertaken by the Designing Department mention may be made of the following:

(1) Preparation of plans for the elimination of dangerous railroad crossings, for which work about 4.5% of the salary roll for the current year has been expended.

(2) Special inspection trips and technical reports furnished the counties, for which about 3.5% of the salary roll for the current year has been expended.

(3) A general investigation of the safety, permanency and relative cost of the concrete arch bridge structures built prior to the going into effect of the new law. This investigation extended over a period of over three months, and cost the designing department about 7% of the total salary roll for the current year.

(4) Experimental and research work conducted at Ames in conjunction with the engineering experiment station of the college, and for which about 1.7% of the total salary roll for the current year has been expended.

(5) Preparation of expert evidence in connection with litigation involving bridge patents for which about 3% of the current year's salary roll has been expended.

(6) Surveys and plans for improvement to buildings and grounds of state and county institutions, for which about 3% of the current year's salary roll has been expended.

(7) Preparation of material to be presented at the annual Highway Engineers' Short Course held at Ames during January of the current year, for which about .75% of the current year's salary roll has been expended.

(8) Traffic investigation work, for which about .90% of the current year's salary roll has been expended.

(9) Checking of the county engineers' annual reports, for which work about 1.1% of the current year's salary roll has been expended.

Bridge Designs for Specific Locations.

These plans have been prepared from field notes sent to the Designing Department by county engineers or by the district engineers of the Highway Commission.

The same bridge record blanks are used for each structure as set forth in the report of the Designing Department for 1913, Part One of this Report.

During the current year bridge plans whose estimated cost aggregate $1,053,871 have been prepared at a cost in salaries to the Designing Department of $4,990.42.

The following is a complete list of the special plans thus prepared during the current year:

SCHEDULE TWENTY-ONE.

BRIDGE DESIGNS FOR SPECIFIC LOCATIONS.

County	No. of Designs	Estimated Cost of Structures Designed	Cost of Engineering in Designing Department
Adams	1	$1,511.00	6.15
Benton	5	14,436	87.20
Boone	6	17,637.00	73.90
Buchanan	5	5,692.00	31.99
Buena Vista	12	16,535.00	138.48
Butler	11	28,615.00	165.17
Calhoun	6	26,486.00	164.49
Carroll	2	11,703.00	132.44
Cedar	9	4,550.00	67.00
Cerro Gordo	4	21,195.00	191.13
Cherokee	6	11,220.00	39.46
Chickasaw	29	38,799.00	85.86
Clay	12	73,347.00	275.98
Clayton	7	29,890.00	195.03
Clinton	2	7,430.00	28.83
Crawford	1	1,559.00	19.45
Dallas	2	14,730.00	108.26
Davis	2	7,903.00	28.03
Decatur	1	1,429.00	5.31
Delaware	1	3,736.00	15.95
Des Moines	2	2,634.00	33.34
Dickinson	18	34,412.00	190.54
Emmet	2	32,640.00	152.72
Fayette	10	26,776.00	96.29
Floyd	2	32,706.00	159.10
Franklin	12	22,916.00	60.94
Fremont	2	2,049.00	6.38
Greene	3	14,564.00	57.33
Grundy	3	19,651.00	66.11
Hancock	7	8,968.00	52.46
Harrison	10	13,781.00	58.57
Henry	6	10,988.00	65.32
Howard	7	11,122.00	47.38
Humboldt	8	12,978.00	65.29
Ida	4	8,284.00	27.57
Iowa	1	5,871.00	43.88
Jackson	6	15,329.00	10.84
Jasper	2	9,321.00	99.81
Jones	10	17,568.00	87.65
Keokuk	1	3,786.00	5.99

SCHEDULE SIX—Continued

County	No. of Designs	Estimated Cost of Structures Designed	Cost of Engineering in Designing Department
Linn	8	12,204.00	51.86
Lucas	3	11,153.00	22.63
Lyon	5	27,719.00	169.01
Madison	1	6,137.00	3.66
Mahaska	1	1,221.00	43.49
Marion	1	3,215.00	20.66
Marshall	1	3,004.00	21.99
Mills	1	2,833.00	18.39
Mitchell	1	5,014.00	15.14
Monona	2	5,174.00	29.93
O'Brien	15	18,413.00	112.54
Page	1	5,124.00	40.82
Palo Alto	15	21,742.00	97.06
Plymouth	10	19,518.00	65.29
Pocahontas	19	40,529.00	89.92
Polk	16	66,283.00	290.69
Pottawattamie	1	1,956.00	10.73
Ringgold	2	5,373.00	26.94
Scott	6	16,114.00	55.49
Sioux	4	11,521.00	61.16
Story	4	14,617.00	57.28
Tama	8	15,579.00	36.15
Union	2	5,833.00	9.88
Warren	2	4,088.00	22.71
Washington	1	3,489.00	16.55
Webster	2	9,437.00	42.92
Winnebago	1	1,079.00	7.96
Woodbury	15	32,433.00	148.84
Worth	6	10,772.00	55.56
Wright	21	27,550.00	99.55
Total	415	$1,053,871.00	4,992.42

ANALYSIS AND APPROVAL OF BRIDGE AND CULVERT DESIGNS SUBMITTED BY CONTRACTORS AND COUNTY OFFICIALS.

During the current year the work of checking and analyzing these designs has been conducted in much the same manner as in 1913, and as in the case of the former year's work, the work of analyzing each plan ranges from a checking against the standard, a matter of a few minutes' time to a detailed mathematical analysis involving several days' time.

During the current year at a cost to the Designing Department of $579.90, 179 plans have been thus analyzed and checked, the aggregate value of these plans from estimates made by this department being $346,700.

The following schedule shows the number of plans analyzed or checked for each county:

SCHEDULE TWENTY-TWO.

ANALYSIS AND APPROVAL OF BRIDGE AND CULVERT PLANS SUBMITTED.

County	No. of Designs	Submitted by
Adams	1	County Engineer.
Appanoose	1	County Engineer.
Benton	1	County Engineer.
Boone	1	County Engineer.
Boone	1	Marsh Engineering Co.
Bremer	4	County Engineer.
Buchanan	29	County Engineer.
Buena Vista	4	County Engineer.
Butler	4	County Engineer.
Calhoun	1	County Engineer.
Calhoun	1	Marsh Engineering Co.
Carroll	2	Standard Bridge Co.
Carroll	1	County Engineer.
Cedar	2	County Engineer.
Cerro Gordo	1	County Engineer.
Cherokee	1	County Engineer.
Chickasaw	2	County Engineer.
Clayton	2	County Engineer.
Clinton	2	Clinton Bridge Works.
Clinton	1	County Engineer.
Crawford	8	County Engineer.
Dubuque	3	County Engineer.
Emmet	9	County Engineer.
Emmet	1	Marsh Engineering Co.
Emmet	1	Gould Construction Co.
Fayette	1	N. M. Stark & Co.
Fayette	2	N. M. Stark & Co.
Floyd	3	County Engineer.
Fremont	11	County Engineer.
Grundy	9	County Engineer.
Hamilton	8	County Engineer.
Hardin	6	County Engineer.
Harrison	1	County Engineer.
Ida	3	County Engineer.
Jackson	2	County Engineer.
Johnson	1	County Engineer.
Jones	1	B. J. Lambert.
Keokuk	1	County Engineer.
Kossuth	1	County Engineer.
Lee	5	County Engineer.
Lee	3	County Engineer.
Linn	1	Clinton Bridge Works.
Louisa	5	County Engineer.
Mahaska	1	County Engineer.
Marion	2	County Engineer.
Marshall	2	County Engineer.
Mills	2	County Engineer.
Mitchell	1	County Engineer.
Montgomery	1	County Engineer.
Muscatine	2	County Engineer.
Page	1	County Engineer.
Polk	2	County Engineer.
Polk	1	N. M. Stark & Co.
Polk	1	State Fair Board.
Pottawattamie	4	County Engineer.
Poweshiek	1	County Engineer.
Shelby	2	Iowa Bridge Co.
Sioux	2	County Engineer.
Tama	1	Delbert Wheeler.
Union	1	County Engineer.
Union	1	County Engineer.
Winneshiek	1	Marsh Engineering Co.
	6	County Engineer.

Checking and approval of working drawings.

The checking of working and shop drawings during the current year has been conducted in much the same manner as in 1913. Shop drawings for work aggregating $240,000 in cost have been thus checked and approved. The cost to the Designing Department to do this work being $356.78.

The following is the list of shop drawings checked during the current year:

SCHEDULE TWENTY-THREE.

WORKING OR SHOP DRAWINGS SUBMITTED FOR APPROVAL.

County	Description	Contractor or Fabricating Firm
Benton	80′ steel span	Iowa Bridge Co.
	120′ steel span	Iowa Bridge Co.
	35′x18′ span	Modern Steel Str. Co.
	40′x18′ span	Modern Steel Str. Co.
Bremer	80′x16′ span	Clinton Bridge Works.
	50′x18′ span	Clinton Bridge Works.
	40′x16′ span	Clinton Bridge Works.
Butler	80′x18′ span	Des Moines Bridge & Iron Works.
Calhoun	45′x16′ span	Iowa Bridge Co.
	75′x18′ span	Clinton Bridge Works.
Carroll	80′x16′ span	Red Oak Bridge & Iron Works.
	70′x16′ span	Red Oak Bridge & Iron Works.
Cedar	70′ span	Iowa Bridge Co.
Cerro Gordo	95′x16′ span	Des Moines Bridge & Iron Works.
Cherokee	I beam span	Des Moines Bridge & Iron Works.
	60′x16′ truss	Ward & Weighton
	40′x16′ truss	Ward & Weighton
Chickasaw	18-20-22-24′ spans	Des Moines Bridge & Iron Works.
	40′x16′ span	Des Moines Bridge & Iron Works.
	50′x18′ span	Des Moines Bridge & Iron Works.
	90′x16′ span	Elkhart Bridge & Iron Works.
	16′x18′ I beam span	Chambers & Dobson.
	80′x16′ span	Elkhart Bridge & Iron Works.
	40′x16′ span	Modern Steel Str. Co.
Clay	65′x16′ span	Des Moines Bridge & Iron Works.
	60′x16′ span	Des Moines Bridge & Iron Works.
	120′x16′ span	Des Moines Bridge & Iron Works.
	55′x16′ span	Des Moines Bridge & Iron Works.
	50′x16′ span	Des Moines Bridge & Iron Works.
Clayton	71′ 9″x16′ span	Clinton Bridge Works.
	96′ span	Modern Steel Str. Co.
	40′x18′ span	Modern Steel Str. Co.
	35′x18′ span	Modern Steel Str. Co.
	48′x16′ span	Modern Steel Str. Co.
	110′x18′ span	Modern Steel Str. Co.
	50′x16′ span	Modern Steel Str. Co.
	50′x18′ span	Modern Steel Str. Co.
	80′x16′ span	Modern Steel Str. Co.
Clinton	40′x18′ span	Clinton Bridge Works.
Crawford	50 x18′ span	Des Moines Bridge & Iron Works.
	53′ 9″x18′ span	Des Moines Bridge & Iron Works.
Des Moines	58′x16′ span	Illinois Steel Bridge Co.
	50′x16′ span	Stupp Bros. Bridge & Iron Works.
	38′x16′ span	Stupp Bros. Bridge & Iron Works.
	70′x16′ span	Milwaukee Bridge Co.
Dickinson	45′x16′ span	Iowa Bridge Co.
	60′x16′ span	Iowa Bridge Co.
	65′x16′ span	Federal Bridge Co.
	45′x16′ span	Iowa Bridge Co.
	45′x16′ span	Iowa Bridge Co.
Dubuque	45′x16′ span	Clinton Bridge Works.
Fayette	70′x16′ span	Clinton Bridge Works.
	117′ 6″x16′ span	Federal Bridge Co.

SCHEDULE TWENTY-TAREE—Continued

County	Description	Contractor or Fabricating Firm
Franklin	40'x16' span	Des Moines Bridge & Iron Works.
Fremont	65'x16' skew span	Standard Bridge Co.
Grundy	2-70'x18' spans	Des Moines Bridge & Iron Works.
Hardin	1-960' steel viaduct	Modern Steel Structural Co.
Harrison	60'x16' span	Illinois Steel Bridge Co.
Henry	60'x16' span	Clinton Bridge Works.
	40'x16' span	Clinton Bridge Works.
Howard	40'x18' span	Des Moines Bridge & Iron Works.
	50'x18' span	Des Moines Bridge & Iron Works.
	70' span	Iowa Bridge Co.
Humboldt	40'x18' span	Clinton Bridge Works.
Ida	35'x18' span	Modern Steel Structural Co.
	40'x18' span	Modern Steel Structural Co.
Jackson	50'x16' span	Clinton Bridge Works.
	90'x16' span	Clinton Bridge Works.
Jasper	120'x16' span	Des Moines Bridge & Iron Works.
	50'x18' span	Iowa Bridge Co.
	70'x16' span	Iowa Bridge Co.
Keokuk	60'x18' span	Clinton Bridge Works.
Lee	60'x16' span	Federal Bridge Co.
	40'x16' span	Clinton Bridge Works.
	60' span	Clinton Bridge Works.
Lucas	80'x18' span	Federal Bridge Co.
Lyon	40' span	Western Bridge & Construction Co.
	70' span	Western Bridge & Construction Co.
	60' span	Western Bridge & Construction Co.
	150' span	Western Bridge & Construction Co.
	2 100' spans	Des Moines Bridge & Iron Works.
Marion	50'x16' span	Federal Bridge Co.
Mills	60'x18' span	Red Oak Bridge & Iron Works.
Mitchell	60'x16' span	Clinton Bridge Works.
Monona	52'x16' truss and approaches	Illinois Steel Bridge Co.
Montgomery	60'x18' span	Red Oak Bridge & Iron Works.
O'Brien	50' span	Iowa Bridge Co.
Plymouth	50'x10' span	Clinton Bridge Works.
Pocahontas	35'x16' span	Des Moines Bridge & Iron Works.
	55'x16' span	Des Moines Bridge & Iron Works.
Polk	110'x16' span	Des Moines Bridge & Iron Works.
Pottawattamie	60' steel span	Lana Construction Co.
Sac	40'x16' span	Clinton Bridge Works.
Scott	40'x16' span	Clinton Bridge Works.
	70'x18' span	Clinton Bridge Works.
	55'x16' span	Clinton Bridge Works.
Shelby	70' steel span	Lana Construction Co.
Tama	40' truss span	Des Moines Bridge & Iron Works.
	20' I beam	Des Moines Bridge & Iron Works.
	40'x18' truss span	Des Moines Bridge & Iron Works.
	32'x16' beam span	Missouri Construction & Ballast Co.
	16' I beam	Missouri Construction & Ballast Co.
	40'x16' span	Missouri Construction & Ballast Co.
	90'x18' span	Continental Bridge Co.
	60'x18' span	Missouri Construction & Ballast Co.
Union	50'x16' span	Iowa Bridge Co.
Webster	50'x16' span	Des Moines Bridge & Iron Works.
	60'x16' span	Des Moines Bridge & Iron Works.
	38'x10' span	Des Moines Bridge & Iron Works.
Winneshiek	175'x16' span	Federal Bridge Co
	120'x16' span	Clinton Bridge Works.
Woodbury	60'x16' span	Clinton Bridge Works.
	60'x16' span	Ottumwa Supply & Construction Co.
	65'x16' span	Ottumwa Supply & Construction Co.
	40' span	Federal Bridge Co.
Worth	40' span	Crown Iron Works.

Work on county road profiles and maps.

In the report of the Designing Department for 1913 may be found a description of the work of preparing road maps for the ninety-nine counties of the state. Three hundred and ninety-six of these maps were required, two hundred and thirty of which were completed before December 1, 1913. During the current year the work of the Designing Department along this line has comprised the completion of the remaining one hundred and sixty-six maps, the final correcting and modification of all of them, the preparation of five large wall maps and numerous smaller copies for special registered routes, etc., and a general supervision of the preparation of lithographic copies of all the county maps.

The work is practically finished with the ending of the current year, and the cost to the Designing Department has been as follows:

Fiscal year, 1913—Salaries	$250.00
Current year, 1914—Salaries	604.22
Current year traveling expenses	57.12
Total	$911.34

The item for traveling expenses is due to the fact that the work of preparing lithographic copies was done in Des Moines.

County road profiles.

While the work of approval of road profiles has been under the direction of the Field Department, considerable drafting work has been done in this connection, the cost of which amounts to $185.79. This includes $22.16 spent in assistance rendered the Field Department in connection with the Dubuque County Post Road.

Miscellaneous road plats.

A few special road plats have been made by the Designing Department during the year, but as these constitute but a small item of expense they have been included under the head of miscellaneous tracings.

Preparation of plans for improvement of dangerous railroad crossings.

All the drawings as well as estimates of cost used in the work of dangerous crossing elimination have been prepared by the Designing Department. These have consisted of contour and situation maps and detailed designs for overhead crossings, and subways, and of plans to reduce the danger of the present grade crossings. During 1914 the cost of preparation of such plans was $592.09.

The detailed statement of the methods used and the progress made is included under the chapter on dangerous crossings in Part Four of this Report.

Standard plans.

In the report of the Designing Department for 1913, will be found a complete detailed list of standard plans for road and bridge construction both complete and contemplated. At the beginning of the current year reference to the above report will show the following series of standards incomplete:

Series C—Concrete Box Culverts Spans 8′ to 12′.
Series D—Circular Concrete Culverts.
Series E—Metal Culverts.
Series F—Concrete Pipe Culverts.
Series 1—Concrete Through Girder Bridges.
Series G—Timber Trestles.
Series X—Steel Pony Truss Spans without Joists.
Series Y—Steel Pony Truss Spans with Joists.
Series V—I Beam Spans with Concrete Floor.
Series U—Bethlehem Girders.
Series P—Plate Girders.
Series T—Through Riveted Truss Spans.
Series S—Through Pin Connected Truss Spans.
Series R—Road Work Standards.

Of the above series, C, D, E, F, G, X, I, V, and part of series Y are now completed, and some preliminary work has been done on Series T.

In addition to the above, considerable preliminary work has been done on a series of standard concrete arch bridges of varying rise and span.

The cost of preparing and completing the above standard plans has amounted during the current year to $1,452.16.

Special inspection trips and preparation of technical reports for counties.

During the current year in response to requests from the counties for expert examination and reports on existing steel structures, and for various other technical services, twenty-five inspection trips have been made by members of the Designing Department. The cost in salaries alone, including the cost of making reports for these inspections has amounted to $463.66. The average cost, including traveling expenses, was $25.22 for each inspection trip of this character.

SCHEDULE TWENTY-FOUR.

SPECIAL INSPECTION TRIPS AND PREPARATION OF REPORTS.

Engineer	Date	Place	Purpose
E. F. Kelley	January 29-30	Fairfield	Inspection of two steel bridges.
C. B. McCullough	January 31	Des Moines	Conference with county board re Beaver avenue bridge.
C. B. McCullough	February 25-26	Spencer	To take soundings for Main street arch.
E. W. Blumenschien	May 2-3	Eldora	Inspection of Eldora viaduct.
C. B. McCullough	May 9-11	Spencer	Conference with county board re Main street arch.
E. F. Kelley	May 20	Waterloo	Bridge inspection in Black Hawk county.
E. F. Kelley	May 23	Eldora	Inspection of Eldora viaduct.
E. F. Kelley	May 4-6	Bonaparte	Inspection of steel bridge at Bonaparte.
C. B. McCullough	June 5	Marshalltown	Conference with county board and engineer re Main street bridge.
C. B. McCullough	June 10-11	Iowa City	Conference with board re Burlington street bridge.
E. F. Kelley	June 18	Eldora	Inspection of Eldora viaduct.
E. W. Blumenschien	June 19-20	Wheatland	Inspection of 180′ "Petit" truss.
J. A. Paulson	June 24	Parkersburg	To take soundings for Parkersburg bridge.
C. B. McCullough	July 6	Marshalltown	Conference with county board and engineer re E. Main street bridge.
E. F. Kelley	July 7	Arnold's Park	To inspect draw span at Lake Okoboji.
C. B. McCullough	July 10	Marshalltown	To adjust differences between contractor and board re E. Main street bridge.
E. F. Kelley	July 28	Iowa City	Conference with Prof. B. J. Lambert re Burlington street bridge.
C. B. McCullough	August 8	Mason City	Conference with county engineer re design for concrete abutments.
E. W. Blumenschien	August 21-22	Oskaloosa	Inspection of old Skunk river bridge.
E. F. Kelley	August 25	Dakota City	Inspection of bridge at Humboldt.
E. F. Kelley	August 26-29	Dubuque	Viaduct survey on Hawkeye highway.
E. F. Kelley	September 25-26	Sioux Rapids	Inspection of bridge at Sioux Rapids.
E. W. Blumenschien	October 1-2	Marion	Inspection of old steel spans.
E. F. Kelley	October 7	Algona	Inspection of old steel bridges in Kossuth county.
E. W. Blumenschien	October 8-9	Newton	Inspection of new span west of Reasnor.

General investigation of concrete bridge construction throughout the state.

This work undertaken by the Designing Department during the past year had for its object a complete detailed study of the behavior under service of the concrete structures built throughout the state prior to the going into effect of the present road law. These structures are much lighter in construction, especially in the foundations than the minimum requirements of the standard specifications of the Highway Commission. The investigation also included a cost comparison between these lighter structures constructed under the old system of highway bridge administration, and the heavier ones built under the new system of highway bridge administration.

The complete results are given in detail in three reports. Incident to the preparation of these reports was the preparation of one hundred and eleven sketches and tracings and of one hundred and eighteen photographs. The cost of salaries for this investigation was $920.40.

Experimental and research work.

The annual report of the Designing Department for 1913 contains a description of certain experimental work which was and is being done by this department in co-operation with the engineering experiment station of the Iowa State College.

The purpose of these tests is to determine the percentage of distribution of loads on different types of highway bridge floors. Although considerable data has been gathered more work will be necessary before any of the results are in shape for presentation. The total cost of the Designing Department incident to the carrying on of this work has amounted during the current year to $230.28.

Preparation of evidence in litigation involving bridge patents.

Section 1, of Chapter 4, of the Acts of the Thirty-fifth General Assembly makes it the duty of the Attorney General when directed by the Governor so to do, to appear for and on behalf of any county, city, town or other municipality, or for and on behalf of an officer thereof or contractor, in any action brought against the aforesaid which involves the validity of an alleged patent for any device used in bridge or road construction.

In compliance with the foregoing the State Department of Justice has appeared for the defendant in the case of Daniel B. Luten

vs. Marsh Engineering Company for alleged infringement of the Luten patents. The State Highway Commission has assisted the State Department of Justice in the preparation of the evidence, and has had charge of the technical work involved in the case.

During the past year the Designing Department has prepared reports concerning the state of the arts prior to the application for the patents in suit and rendered various other assistance in the case. The cost to this department during the current year has been, salaries $386.79 and traveling expenses $170.88.

Surveys and plans for state and county institution buildings and grounds.

During the current year the Designing Department has been called upon from time to time to assist in the making of surveys for improvements to the grounds of various state institutions, to prepare plans for such improvements and to prepare designs for improvements to buildings, sewerage and sewage disposal systems, etc.

One complete detail survey of the roads running into and around the grounds of the State Hospital for the Insane at Cherokee was completed this summer. This survey involved the preparation of some eight tracings and the expenditure of about six days' time in the field. One complete set of sewage disposal plans was prepared for the County Home in Wapello County, Iowa, and numerous minor surveys, plans and designs of structures have been prepared for the buildings and grounds of the Iowa State College.

The cost to the Designing Department during the current year for this work is as follows:

Salaries	$396.38
Expenses	21.26
Total	$417.64

Highway engineers' short course.

The work of the Designing Department incident to the Short Course for highway engineers held January 1, 1914, comprises the preparation of material for lectures to be delivered on steel and concrete bridge designing, the preparation of drawings from which to make lantern slides, and the supervision of the making of the lantern slides themselves. The total cost in salaries to this department for this work amounted to $96.06.

Traffic investigation.

During the year, in answer to requests for detailed information regarding congested traffic centers on the road systems of the State, several detailed studies of traffic conditions have been made. The cost to this department for such work has amounted during the current year to $115.57.

Miscellaneous drafting work.

This work includes the preparation of surveys, plats, plans and sketches in response to requests from various county and state officials, and has cost the Designing Department $158.98 in salaries during the current year. This list has included sketches for road surfacing, road implements, curb and gutter at State Center, and special road plats for Mills, Page and Harrison counties.

In addition to the above list more or less work has been done in preparation of standard designing data sheets and blank forms for the keeping of office and field records. These drawings consist of earth work tables, computation of stresses, waterway tables and road and bridge records.

Summary.

As stated previously the number of new activities engaged in by the Designing Department is characteristic of this year's work.

In 1913 the department was chiefly occupied in preparing specific plans for bridge work in the various counties. The estimated cost of the improvements contained in the 1913 plans prepared or submitted for approval was $1,033,980, the cost in the Designing Department only being $6,488 or .63 of one per cent. On a similar basis for 1914 the bridge plans prepared or approved are estimated to represent improvements costing $1,400,571, costing the Designing Department $8,653, or .62 of one per cent. A better quality of plans has been produced without an increase in the cost due to better organization. The other activities engaged in by the Designing Department have cost $5,186 in salaries of which the principal part has been expended in work on county road plans, dangerous railroad crossing plans and standard road and bridge plans.

SCHEDULE TWENTY-FIVE.

PERSONNEL AND SALARIES OF DESIGNING DEPARTMENT JULY 1913, TO JUNE 30, 1914.

Name	Salary	Position
C. B. McCullough	$2,200.00	Designing engineer.
E. F. Kelley	1,800.00	Asst. designing engineer.
L. H. Doughty	1,320.00	Designer.
E. W. Blumenschein	1,680.00	Structural engineer.
J. A. Paulson	1,320.00	Chief draftsman.
Neil Adams	$85 for 6 mos.	
	90 for 6 mos.	Draftsman.
I. E. Trottnow	85 for 6 mos.	
	90 for 6 mos.	Draftsman.
L. S. Gates	85 for 6 mos.	
	90 for 6 mos.	Draftsman.
Bert Anderson	80 per mo.	Draftsman.
H. W. Wilkinson	80 per mo.	Draftsman.
Hans Hanson	70 per mo.	Clerk.

PART TWO—SECTION THREE

FIELD DEPARTMENT, DECEMBER, 1913, TO NOVEMBER, 1914.

Engineer in charge, F. R. White.

During the past year the engineers of the Field Department have spent 1,594 days in the field against 935 days in 1913. This time is classified as follows:

	1913	1914
Explanation of road law	126	...
Examination of bridge sites	74	96
Attending bridge lettings	59	132
Inspection and supervision of bridge work	92	206
Examination of emergency work	21	28
Special assignments	239	345
Investigation of county road systems	137	69
Approval of grade lines	107	166
Inspection and supervision of road work	...	156
Investigation of complaints	24	63
Explanation of yearly report blanks	...	49
Railway crossing work	...	108
Unclassified	56	176
Total	935	1594

Refer to Schedules Thirty-two, Thirty-three and Thirty-four.

Explanation of the road law.

In 1913, the new road law was not well understood by local road officials, and the field engineers spent 126 full days and parts of many other days, simply explaining the law. This year a few explanations have been necessary, but not a single day is directly chargeable to such work. As the local officials have become more familiar with the law it has been more apparent that their opposition is fast disappearing, and in many counties where the field engineers were received at first with distrust and open hostility, they are now received with confidence and an appreciation of the work being done.

Examination of bridge sites.

(Refer to Schedule Twenty-Six.)

During 1914 the field engineers, working with the county engineers, have examined the sites and sent to our office notes for 180 new bridges, the estimated cost of which amounts to $475,-966.64. In this work the northern part of the State took advantage of the Commission's services much more readily than did the southern part. In the two northern districts the district engineers spent fifty-six days measuring bridge sites for new structures, while in the two southern districts only twenty-four days were spent on such work.

In 1913, many of the county engineers were not familiar with bridge work, and accordingly the district engineers assisted in many counties in taking notes for even the smallest culverts. The personnel of the county engineers has changed greatly in the past year. Those now in the office are more familiar with the work so that the small bridge and culvert work is handled almost exclusively by the county engineers. The average estimated cost of the bridges for which the district engineers have taken measurements this year is over $2,600 each.

Bridge lettings attended.

(Refer to Schedule Twenty-Seven.)

Under the provisions of the law, which requires all bridge work, the estimated cost of which exceeds $1,000, to be advertised and let at public lettings, there has been contracted since January 1, 1914, bridge work costing over $1,500,000. The Field Department has endeavored to assign an engineer to be in attendance at each letting, notification of which has been received by the Commission. During the year the district engineers were present at 115 lettings, at which bids were received for 1438 bridges, the total contract price of which was $1,338,035.73.

In a number of counties three, and even four lettings, have been held this year. This is an unjustified expense to the county, and adds materially to the overhead expense of the contractors. If each Board of Supervisors will properly outline their work, one, or at the most, two annual lettings in a county will be sufficient.

In the letting of bridge contracts, as in the examination of bridge sites, the northern part of the State made more use of the district engineers of the Commission than did the southern part. Classification of the field work shows that seventy-one days were

spent on bridge lettings by the district engineers in the two northern districts against thirty-one days spent on this work by the district engineers in the two southern districts.

Inspection and supervision of bridge work.

After the bridges have been let, the district engineers are often called upon to examine and pass upon the materials and methods of construction. In this respect the southern part of the State has taken a little more of the district engineers' time than has the northern part, as the records of the Commission show that ninety-four days were spent by the engineers in the two southern districts, on this work, against eighty-seven days spent by the engineers in the two northern districts.

Emergency work.

(Refer to Schedule Twenty-Eight.)

During 1913, the complaint was often heard that the new road law was holding up the bridge work. In order to avoid such a situation a provision was made in the law that when emergency conditions exist, emergency measures may be adopted which permit the work to be constructed in the most expeditious manner possible.

During the year of 1914, the State has been visited by a number of extremely hard rains. In the month of June the northern part of the State experienced some of the most severe floods and high waters ever known, while during the months of September and October there were very severe rains in other parts of the State which caused maximum floods. However, there have been only seventy-eight bridges certified by the Commission as emergency work. The total estimated cost of this emergency work is $77,483. The amount available in the bridge funds for the year 1914 is over $3,500,000, so that the emergency work was not more than 2.2 per cent of the funds raised for bridge work. This shows that real emergencies are few in number, and that where necessary work is properly outlined in advance there will seldom occur situations which require the adoption of emergency measures, or for which the regular provisions of the law are too tedious.

Special assignments.

In conducting the field work it became apparent soon after the law went into effect that special engineers would be required to properly supervise the construction of the large bridges. Accordingly special engineers were hired for this work as indicated in the report of the Field Department for 1913.

During 1914, the Commission has had one special engineer constantly employed on the inspection of such large structures as the Eldora viaduct, Eldora; Stewart Avenue bridge, Mason City, and the Lincoln Street bridge, Estherville.

The Eldora viaduct located across the Iowa river just east of Eldora is 960 feet long and 70 feet high. The contract was let on October 20, 1913, and the construction was completed in July, 1914. The total cost of the structure as indicated in the final estimate was $38,750.56.

The Stewart Avenue bridge at Mason City is located across Lime Creek on one of the most important roads entering that town from the northeast. For this location the Commission designed an ornamental concrete bridge consisting of two 55 foot arches. The contract was let for $12,900, and the Commission had an engineer present all the time during the construction period, extending from early in April to about the middle of July.

After the Stewart Avenue bridge was completed this engineer was assigned to the inspection of the Lincoln Street bridge at Estherville, which is now under construction. This is a concrete girder bridge consisting of five 42 foot girder spans with a 15 foot approach on each end. The contract price was $12,051. This work will be completed about December 1, 1914. On this bridge one-half the salary of the engineer is paid by the county.

Special investigations have been undertaken in Plymouth, Fremont and Taylor counties relative to bridge contracts and methods of allowing bills. These matters are discussed further in Part Five of this Report.

Since the construction season opened last spring the Commission has kept one, and part of the time, two men employed on special road work. The work handled by these men was as follows:

(1) Larchwood-Inwood road, Lyon county.
(2) Columbus Junction road, Louisa county.
(3) State roads.

The Larchwood-Inwood road as indicated in the 1913 report of the Field Department, was started with the idea of building a model dirt road in Lyon county, and the Highway Commission paid the salary and expenses of an engineer to make the survey and supervise the construction. Construction was started late in the fall of 1913, and about five miles were completed before winter.

In the spring of 1914, the work was resumed, and Mr. W. F. Beard, Engineer, was assigned to take charge as superintendent. The work was completed June 18, 1914.

In Louisa County, east of Columbus Junction, there is a rich truck gardening district in the low lands along the Iowa river. The soil is very sandy, which makes it impossible to maintain good roads for hauling the produce to market. On the county road through this community there is a great deal of heavy traffic. The road, however, being very sandy, often becomes almost impassable for a heavy load. Accordingly, it was proposed to cover this sand road with a permanent concrete surfacing. The work was put under the direction of the Highway Commission, and Mr. W. F. Beard placed in charge. The detailed costs of this work are given in Part Four of this Report

In June 1914, a resolution was passed by the Highway Commission agreeing to do the necessary engineering work on all roads through and adjacent to state property. Under this resolution surveys have been made for new roads and road improvements at the Cherokee State Hospital and at the Iowa State College. The total length of the roads surveyed is seven and two-thirds miles. This institution work is fully described under Part Seven of this Report.

Investigation of county road systems.

(Refer to Part Four.)

Up to December 1, 1913, the proposed county road systems in seventy-four counties had been examined in the field and there had been spent on this work by the district engineers, one hundred and thirty-seven days. Before February 1st the remaining twenty-five county systems were examined, and this work required sixty-nine days, making two hundred and six days spent by the engineers in examining the ninety-nine county systems in the State. In all of this work a commissioner and a district engineer have worked together. The official reports of the county engineers give a total of 104,082.1 miles of public highways outside of incorporated cities and towns, and ninety out of the ninety-nine counties report a mileage of streets within incorporated towns of 8,422.3 miles, making a total of 112,504.4 miles of public highway reported in the State. The law provides that not more than fifteen per cent of the highway may be classified as county roads. This would allow 16,877 miles of county roads in the state. The county systems as adopted by the Commission contain 15,767 miles for the whole state,

which is 1109 miles under the allowable percentage limit. For detailed statement by counties see schedule in Part Four of this Report.

Approval of grade lines.

(Refer to Schedule Twenty-Nine.)

In complying with that provision of the law requiring approval by the Commission of the plans for a permanent improvement of all roads, the Commission adopted the system of having a district engineer make a field examination of the road to approve the grade lines. In 1913, one hundred and seven days were spent on this work, while in 1914 one hundred and sixty-six days were spent, an increase of over fifty-five per cent. Even this increase in the amount of time spent by the district engineers on grade line approval does not represent the actual increase in the amount of permanent work done, as a great many miles of grade line were approved by the district engineers in 1913 for work which was not constructed until 1914. During the year of 1914 the grade line has been approved for 960.97 miles of road and the profiles have been officially approved for 445.45 miles of road. Most of this work has been constructed to the grade lines established, and one must be prejudiced indeed, if he cannot see the improvement in the finished work done under the present system, "according to an instrument," over the work done under the old system, "according to eye."

Inspection and supervision of road work.

This classification of field work does not appear in the 1913 report of the Field Department for the reason that the time of the district engineers was taken up largely with explaining the road law, attending bridge lettings, approving grade lines, etc., so that little or no time could be spent in the actual inspection of the work in the field. This year, however, one hundred and fifty-six days have been spent on this class of work.

Under the present system, road work has been done at prices never before realized. In Greene county the contract was let for grading their entire portion of the Lincoln Highway at a price of 19½c per cubic yard. The plans for this work require the moving of an average of approximately 5,000 cubic yards of earth per mile, making the completed cost of an average mile of earth road less than $1,000. In Hamilton county a contract was let for moving approximately 100,000 yards of earth at an average cost

of less than 19c per cubic yard. The lowest contract price for such work yet brought to our attention is that of Carroll county, where at a public letting for grading seven miles of road, a contract was secured at an average price of less than 17½c per cubic yard.

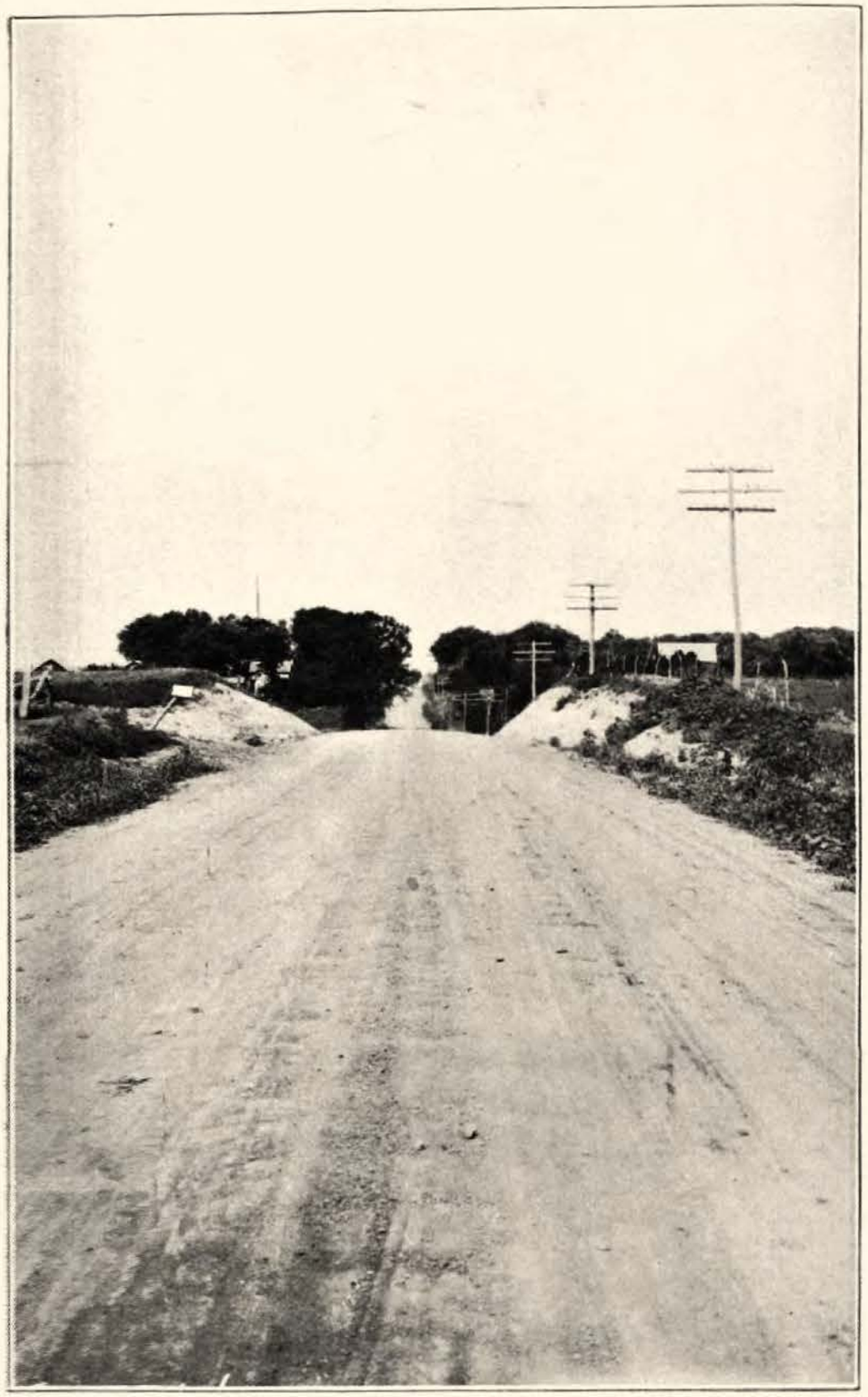
It is interesting to note that in the majority of cases the contract system of handling earth work has proved more advantageous to the county than the day labor system. In the average case the cost of day labor work has been 20c to 25c per cubic yard. In Marshall county for example, a steam shovel was bought and several miles of road put to grade with this machine. The average cost of such work varied from 20c to 25c per cubic yard. The last piece of work which the board had outlined for the season was grade reduction on a hill near Rhodes, involving the moving of about 12,000 yards of dirt. For this work a contract was secured at a price of 19c per cubic yard. Since this was less than the cost of the day labor work had been, the steam shovel was housed for the winter.

Investigation of complaints.

(Refer to Schedule Thirty.)

Soon after the road law became effective the Commission began to receive complaints from various parts of the State concerning the condition of certain roads. In investigating these complaints the policy was adopted of sending a district engineer to make a field examination, after which the matter was taken up with the proper authorities to have the roads satisfactorily repaired. In many cases little success was secured in this work last year, because of the fact that many road officials, and especially township officials, were at that time very antagonistic to the road law.

During the year of 1914 much better results have been secured. The district engineers have investigated eighty-three complaints, forty on the county road systems and forty-three on the township road systems. (See Schedule Thirty.) Many of the officials with whom the district engineers have thus been brought in contact have been especially fair, and indicated a willingness to do whatever was necessary to put the roads in a satisfactory condition. This cooperation, due to a better understanding of the law and a desire to work with the Commission, has resulted in a great deal of good being accomplished. Many complaints have been settled thus, satisfactorily, although in some cases the Commission has been able to secure no cooperation, and has been forced to use such authority as the law confers in requiring the road officials to perform their duties.



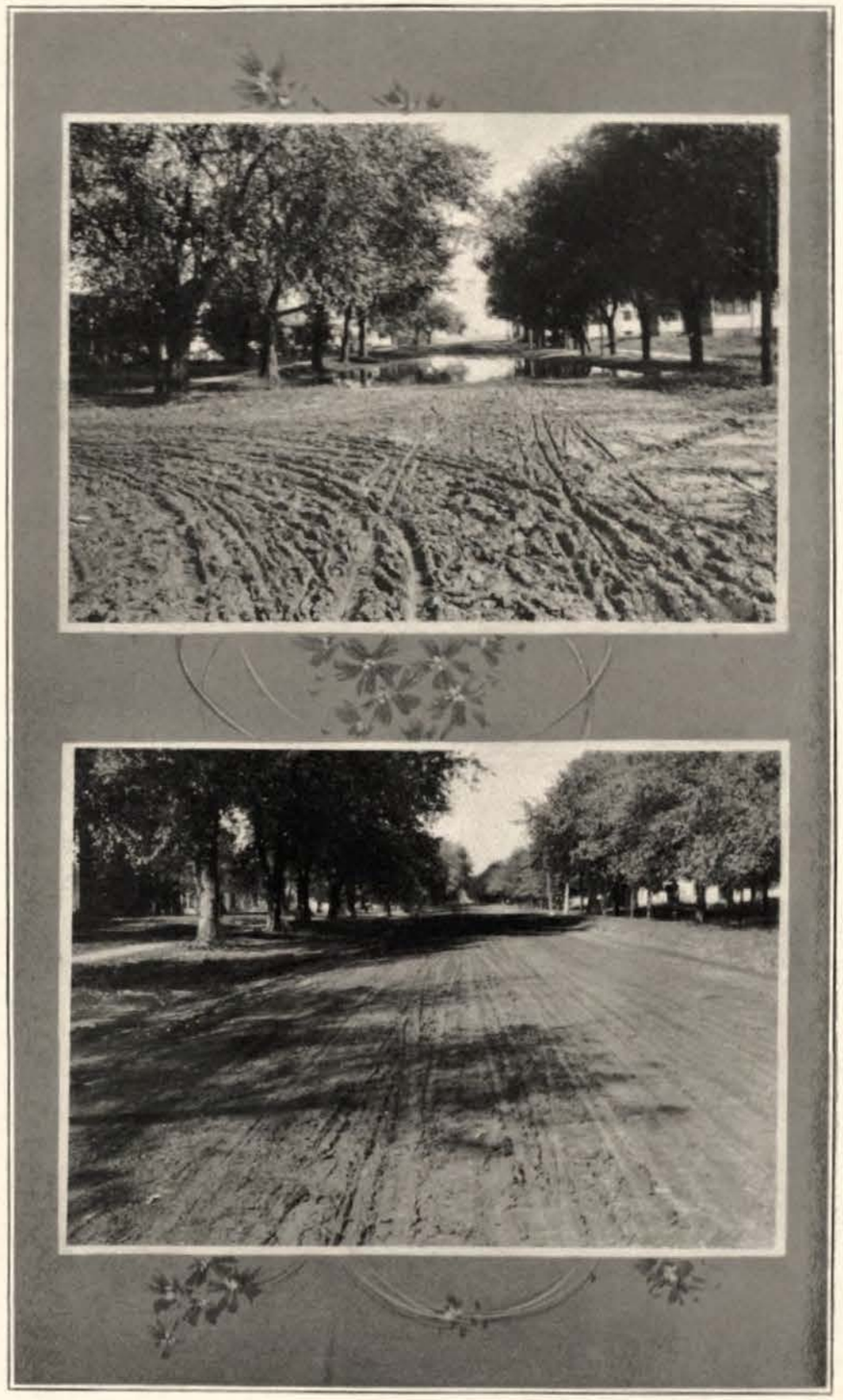
BOONE AND STORY POST ROAD—Stretch of Lincoln Highway east of Ames. View shows standard cross section for dirt roads. The roadway is twenty-four feet wide, the center twelve inches higher than the sides. The back slope is cut to an angle of one and one-half to one. This road crown gives sufficient drainage and is comfortable and safe for travel.



THE COLTHURST HILL—A beautiful wide stretch of roadway now sweeps through the huge pile of dirt which formerly blocked the way on the Great White Way in Washington County. The improvement cost $1,335.60.



DALLAS COUNTY GRAVEL ROAD—This stretch of gravel road is immediately north of Perry on the Des Moines, Fort Dodge, Spirit Lake and Sioux Falls highway.



OILING DIRT ROADS—These views were taken the same day on main traveled streets of Ames during the rainy spell in September, 1914. One street had been oiled, the other had not. Previous to the rainy period, the oiled street had carried the bulk of ten days' Chautauqua travel with little trouble from dust.



GREENE COUNTY GRAVEL ROAD—Greene county has more gravel road than any other county in the state. The first gravel was laid seventeen years ago. This view shows a gravel road in use fifteen years. One thin coat of gravel has been put on since the original course was laid.



CLAYTON COUNTY MACADAM ROAD—This mile of road west of Strawberry Point cost $11,500.00. It required approximately $7,000.00 on account of rock cuts to put the mile to grade, leaving the cost of the surface at $4,500.00.



BEAVER ROAD BRICK PAVEMENT—This is the longest stretch of brick country pavement in Iowa. There are approximately two miles of it leading from Des Moines toward the Hyperion club house northwest. It cost approximately $1,000 per foot in width, per mile.



COLUMBUS JUNCTION CONCRETE ROAD—Louisa County built 1.37 miles of concrete road on the Great White Way and the Blue Grass route just east of Columbus Junction during 1914. It was built with convict labor and cost $9,950.00 per mile.

Explanation of yearly report blanks.

The law provides that each county engineer shall make an annual report on blanks furnished by the Highway Commission. This report shall comprise a complete statement of the work accomplished on the county and township road systems during the year. Under this provision, blanks were prepared by the Commission and sent to the county engineers in 1913, but on account of the time of the district engineers being taken up with the approval of the county road systems, it was impossible for them to confer with the county engineers concerning these reports. The reports received last year indicated clearly that many county engineers did not thoroughly understand the Commission's requirements with reference to such report.

This year it was planned to have the district engineers visit each county in their districts and explain to the county engineers just how the annual report should be made. This work required forty-nine days time. Each county in the State, except three, was visited at least once. The reports received thus far are in much better shape, due no doubt, partly to the fact that the records are in better shape than ever before, and partly to the fact that the blanks were fully explained to the county engineers prior to the time when the report was made.

Railway crossing work.

(Refer also to Part Four.)

Before the days of the automobile an ordinary grade crossing of a railway was not considered a dangerous point in a highway, because with slow moving, horse-drawn vehicles, it was convenient to stop and listen for approaching trains where the view was obstructed. Since the advent of the automobile this has been changed, and today any grade crossing no matter how unobstructed the view may be, is a dangerous point in the highway. On crossings where the view is obstructed, a grade crossing is sure to be a death trap, where the careless or indifferent driver of an automobile is liable to be caught at any time.

Recognizing the gravity of the situation with reference to railway crossings, a conference was arranged in March between the State Railway Commission, the State Highway Commission and representatives of the various railway companies operating in the State, to facilitate the improvement of some of the most dangerous crossings. At this conference the Highway Commission agreed to

make surveys and prepare plans for as much of this work as possible. Under this arrangement, surveys have already been made for fifty-five crossings. The average cost of such field surveys is $16.40 per crossing.

The importance of this subject is such that a full discussion has been incorporated in Part Four of this Report, including a detailed statement of plans, surveys and conferences.

Detailed report of field engineers.

In Schedule Thirty-three will be found a statement of the trips made, and days spent in each county by the field engineers of the Commission, while Schedule Thirty-four is a detailed statement of the schedules of each of the field engineers.

Organization.

The organization of the Field Department as outlined in the report of 1913, was continued with only a slight modification until July 15, 1914. The five districts as at first outlined, were continued until that date, the only change in the organization being the transfer of Engineer Williams on March 9th from the southwest district to railway crossing work.

The personnel of the Field Department was changed somewhat during this period. Engineer Olson resigned to take effect on April 1st, and became County Engineer of Poweshiek County. L. M. Martin, County Engineer of Cass County was employed, and started work on March 22d as district engineer for the southwest district. J. S. Morrison was employed, and started work on May 4th as engineer in the southeast district.

In addition to the above changes in permanent employes, Mr. W. F. Beard was employed temporarily, and started to work May 21st on the Larchwood-Inwood road, Lyon County. Mr. A. L. Goldenstar was employed from June 20th until August 8th on special road surveys.

Field districts.

In order to increase the efficiency of the field engineering work, the Commission on July 15th decided to re-district the State, and to add one district engineer. This arrangement becomes effective January 1, 1915, and the districts by counties will be as follows:

DISTRICT NO. ONE.

Engineer, C. Coykendall; Headquarters, Ames.

Boone	Hamilton	Marshall
Calhoun	Hardin	Polk
Carroll	Humboldt	Story
Crawford	Jasper	Warren
Dallas	Madison	Webster
Greene		

DISTRICT NO. TWO.

Engineer, W. H. Root; Headquarters, Mason City.

Allamakee	Fayette	Mitchell
Bremer	Floyd	Winneshiek
Butler	Franklin	Winnebago
Cerro Gordo	Hancock	Worth
Chickasaw	Howard	Wright
Clayton	Kossuth	

DISTRICT NO. THREE.

Engineer, W. F. Beard; Headquarters, Ames.*

Buena Vista	Ida	Plymouth
Clay	Lyon	Pocahontas
Cherokee	Monona	Sac
Dickinson	O'Brien	Sioux
Emmet	Osceola	Woodbury
Harrison	Palo Alto	

DISTRICT NO. FOUR.

Engineer, L. M. Martin; Headquarters, Atlanta.

Adair	Fremont	Ringgold
Adams	Guthrie	Shelby
Audubon	Mills	Taylor
Cass	Montgomery	Union
Clarke	Page	
Decatur	Pottawattamie	

DISTRICT NO. FIVE.

Engineer, J. S. Morrison; Headquarters, Ottumwa.

Appanoose	Lee	Van Buren
Davis	Lucas	Wayne
Des Moines	Mahaska	Washington
Henry	Marion	Wapello
Jefferson	Monroe	
Keokuk	Poweshiek	

DISTRICT NO. SIX.

Engineer, W. E. Jones; Headquarters, Ames.*

Benton	Dubuque	Linn
Black Hawk	Grundy	Louisa
Buchanan	Iowa	Muscatine
Cedar	Jackson	Scott
Clinton	Johnson	Tama
Delaware	Jones	

*Temporary.

SCHEDULE THIRTY-ONE.

PERSONNEL AND SALARIES OF FIELD DEPARTMENT JULY, 1913, TO JUNE 30, 1914.

Name	Salary	Position
F. R. White	$2,400 per yr.	Field engineer.
C. Coykendall	1,500 per yr.	District engineer.
W. H. Root	1,500 per yr.	District engineer.
W. F. Jones	1,500 per yr.	District engineer.
E. Williams[1]	1,500 per yr.	District engineer.
C. E. Olson[2]	1,500 per yr.	District engineer.
L. M. Martin[3]	1,800 per yr.	District engineer.
J. S. Morrison[4]	1,500 per yr.	District engineer.
O. W. Crowley[5]	1,350 per yr.	Resident engineer.
W. F. Beard[6]	$125 per mo.	Assistant engineer.
A. L. Goldenstar[7]	100 per mo.	Assistant engineer.
F. O. Laing[8]	125 per mo.	Assistant engineer.
J. F. Booth[9]	125 per mo.	Assistant engineer.
C. A. Besser[10]	100 per mo.	Road superintendent.

[1]Transferred March 9, 1914, to railway crossing work.
[2]Resigned April 1, 1914.
[3]Began work March 22, 1914.
[4]Began work May 4, 1914.
[5]Began work October 13, 1913.
[6]Began work May 21, 1914.
[7]Began work June 19, 1913.
[8]August 30, 1913, to September 21, 1913.
[9]September 14, 1913, to November 30, 1913.
[10]August 28, 1913, to September 13, 1913.

SCHEDULE TWENTY-SIX.

FIELD NOTES—BRIDGES.

TAKEN BY FIELD DEPARTMENT.

County	Engineer	Total Number	Total Estimate of Cost
Adair		....	.....
Adams		....	.....
Allamakee		....	.....
Appanoose		....	.....
Audubon		....	.....
Benton	Coykendall	3	$ 10,415.56
Black Hawk		....	.....
Boone	Coykendall	1	5,776.90
Bremer		....	.....
Buchanan	Root	3	5,193.20
Buena Vista	Jones	11	15,815.07
Butler	Root	11	27,935.36
Calhoun	Jones	6	26,486.89
Carroll	Coykendall	2	11,703.00
Cass		....	.....
Cedar	Coykendall	7	3,146.80
Cerro Gordo	Root	3	21,961.25
Cherokee	Jones	1	2,140.15
Chickasaw	Root	17	27,578.40
Clarke		....	.....
Clay	Jones	8	16,633.37
Clayton	Root	3	15,005.58
Clinton	Coykendall	1	5,298.00
Crawford		....	.....
Dallas	Coykendall	1	7,857.25
Davis	Morrison	2	5,599.50
Decatur		....	.....
Delaware	Root	1	3,736.35

SCHEDULE TWENTY-SIX—Continued

County	Engineer	Total Number	Total Estimate of Cost
Des Moines		....	.....
Dickinson	Jones	2	2,991.25
Dubuque		....	.....
Emmet	Jones	1	2,371.24
Fayette	Root	3	10,559.60
Floyd	Root	2	32,706.19
Franklin	Root	11	21,992.35
Fremont		....	.....
Greene	White	1	8,082.07
Grundy		....	.....
Guthrie		....	.....
Hancock		....	.....
Harrison	White, Martin, Williams	9	15,203.62
Henry		....	.....
Howard	Root	6	9,677.49
Humboldt	Jones	2	2,983.36
Ida	Jones	1	1,662.15
Iowa		....	.....
Jackson	Coykendall	4	9,072.27
Jasper	White	1	2,619.62
Jefferson		....	.....
Jones	Coykendall	3	7,559.66
Keokuk		...	.....
Linn	Coykendall	9	12,855.13
Louisa		....	.....
Lucas	Martin	1	2,810.10
Lyon	White	3	12,343.16
Madison		....	.....
Mahaska	Morrison	1	1,221.00
Marion		....	.....
Marshall		....	.....
Mills		....	.....
Mitchell	Root	1	5,013.73
Monona	Jones	1	3,636.00
Monroe		....	.....
Montgomery		....	.....
Muscatine		....	.....
		Co. Line Bridge	
O'Brien		....	.....
Osceola		....	.....
Page		....	.....
Palo Alto	Coykendall	6	7,625.08
Plymouth		....	.....
Pocahontas		....	.....
Polk	White, Ames, Coykendall	13	45,389.03
Pottawattamie		....	.....
Poweshiek		....	.....
Ringgold		....	.....
Sac		....	.....
Scott		....	.....
Shelby		....	.....
Sioux	Jones	2	9,544.00
Story	White	2	7,902.43
Tama	Coykendall	1	2,147.30
Taylor		....	.....
Union		....	.....
Van Buren		....	.....
Wapello		....	.....
Warren		....	.....
Washington	White	1	3,488.63
Wayne		....	.....
Webster	Jones	1	3,802.00
Winnebago	Root	1	1,078.60
Winneshiek		....	.....
Woodbury		....	.....
Worth	Root	5	8,002.52
Wright	Root	5	9,344.43
Total		180	$475,066.64

SCHEDULE TWENTY-SEVEN.

BRIDGE LETTINGS ATTENDED.

County	Date	No. of Bridges	Amount
Adair	.....	....	.....
Adams	.....	....	.....
Allamakee	.....	....	.....
Appanoose	.....	....	.....
Audubon	March 2	21	$12,600.00
Benton	March 4	23	21,700.00
Black Hawk	June 10	17	10,000.00
Boone	August 21	1	5,338.00
Bremer	February 2	4	10,360.00
	May 4	1	2,495.00
Buchanan	.....	....	.....
Buena Vista	June 26	13	6,372.00
	August 14	11	13,846.00
Butler	May 12	12	17,079.00
	July 10	1	12,327.00
Calhoun	April 21	3	15,365.00
	August 4	3	7,542.20
Carroll	September 7	12	10,924.00
	September 28	1	7,472.40
Cass	.....	....	.....
Cedar	April 6	20	14,953.00
Cerro Gordo	Februry 16	14	19,000.00
	June 24	2	5,545.00
	March 23	1	12,900.00
Cherokee	April 5	17	15,168.50
Chickasaw	January 12	17	20,544.00
	July 2	....	.....
Clarke	.....	....	.....
Clay	March 26	18	16,511.00
	July 14	9	19,765.00
Clayton	March 24	60	45,701.00
Clinton	June 2	18	14,796.30
Crawford	March 18	18	13,810.00
	July 2	12	7,544.00
Dallas	.....	....	.....
Davis	July 13	13	5,892.50
	August 17	2	4,613.00
Decatur	May 4	2	3,360.00
Delaware	May 23	4	4,838.00
Des Moines	April 28	5	3,236.00
Dickinson	May 8	18	19,665.00
	September 4	10	11,086.00
Dubuque	July 28	6	5,949.00
	September 29	8	8,491.00
Emmet	May 26	1	12,051.00
	July 21	7	8,150.00
Fayette	June 23	9	17,992.00
Floyd	February 10	7	9.889.36
	June 3	4	3,621.00
	August 12	2	32,502.00
Franklin	June 25	9	12,222.00
Fremont	.....	....	.....
Greene	April 8	6	9,945.00
Grundy	April 13	13	6,650.00
	June 8	1	5,575.00
	August 24	3	6,500.00
Guthrie	April 20	32	7,017.00
Hamilton	March 20	16	12,480.00
	May 18	14	11,732.00
	August 25	9	12,398.00
Hancock	March 11	8	7,200.00
Hardin	.....	....	.....
Harrison	May 14	6	10,364.00
	September 25	5	7,185.00
Henry	March 2	7	1,900.00
Howard	April 8	5	7,246.00
	July 7	3	6,641.00
	August 5	3	3,105.00
Humboldt	August 28	5	2,447.74
Ida	February 26	34	25,368.00
Iowa	.....	....	.....

SCHEDULE TWENTY-SEVEN—Continued

County	Date	No. of Bridges	Amount
Jackson	December 18, 1913	28	14,167.00
Jasper	April 24	4	14,759.00
	May 21	3	5,900.00
Jefferson	.....	....	.....
Johnson	August 21	1	50,000.00
Jones	April 7	12	10,101.00
Keokuk	July 29	1	3,822.00
Kossuth	May 22	12	8,647.00
	August 5	4	3,918.63
Lee	June 8	2	2,844.00
Linn	April 9	20	13,568.00
Louisa	.....	....	.....
Lucas	August 17	2	7,615.00
Lyon	March 10	78	21,536.36
	July 7	3	11,822.00
Madison	.....	....	.....
Mahaska	September 30	1	3,486.00
Marion	March 10	92	56,628.86
	June 4	48	22,178.67
Marshall	March 4	2	5,880.00
	September 4	2	3,840.00
Mills	September 24	4	3,200.00
Mitchell	August 21	1	3,775.00
Monona	April 28	11	4,194.00
Monroe	.....	....	.....
Montgomery	.....	....	.....
Muscatine	.....	....	.....
O'Brien	April 8	18	11,708.05
Osceola	.....	....	.....
Page	October 28	2	6,350.00
Palo Alto	July 7	10	10,938.00
Plymouth	July 8	11	15,361.20
Pocahontas	June 23	9	15,200.00
	August 15	12	24,318.00
Polk	February 16	61	99,589.00
	October 12	4	7,214.00
Potawattamie	.....	....	.....
Poweshiek	.....	....	.....
Ringgold	.....	....	.....
Sac	.....	....	.....
Scott	.....	....	.....
Shelby	May 4	4	10,107.00
Sioux	April 7	29	17,770.00
	May 20	51	9,082.03
Story	March 28	70	22,050.00
	May 21	59	16,500.00
Tama	February 25	22	23,514.53
	June 12	2	2,859.00
	August 4	3	4,918.00
Taylor	.....	....	.....
Union	July 21	16	12,100.00
Van Buren	.....	....	.....
Wapello	.....	....	.....
Warren	.....	....	.....
Washington	June 22	1	3,767.00
Wayne	.....	....	.....
Webster	August 6	15	14,539.55
Winnebago	August 4	9	2,567.10
Winneshiek	March 16	6	8,000.75
Woodbury	March 10	31	12,026.00
	April 7	7	12,506.00
Worth	March 17	10	9,281.00
Wright	July 20	6	6,318.00
	August 10	25	20,509.00
Total	.....	1,430	$1,338,035.73

SCHEDULE TWENTY-EIGHT.

EMERGENCY BRIDGE WORK CERTIFIED BY COMMISSION.

County	Total Number New Bridges	Total Estimated Cost
Benton	3	$4,282.24
Black Hawk	1	1,959.00
Cedar	1	1,450.00
Clay	1	1,034.76
Clinton	1	2,515.00
Dallas	1	1,000.00
Davis	1	900.00
Dickinson	2	750.00
Emmet	1	2,371.24
Fayette	2	2,000.00
Franklin	3	4,222.00
Greene	1	1,059.00
Howard	1	450.00
Jones	1	400.00
Lee	1	1,790.00
Linn	4	4,227.00
Lyon	4	3,050.00
Madison	1	1,035.00
Mahaska	3	4,466.00
Monona	2	5,174.00
O'Brien	2	3,338.21
Page	5	3,000.00
Polk	20	15,349.27
Plymouth	4	2,000.00
Ringgold	4	1,990.60
Scott	1	607.24
Tama	1	588.00
Wapello	1	900.00
Warren	4	4,674.44
Webster	1	900.00
Total	78	$77,483.00

SCHEDULE TWENTY-NINE.

APPROVAL OF GRADE LINES AND PROFILES.

County	No. of Miles of Grade Lines Approved	No. of Miles of Profile Officially Approved
Adair	2	.....
Adams	1	1
Allamakee	1.5	1.5
Appanoose	1	.....
Audubon	2	.....
Benton	0.12	....
Black Hawk	7.5	.....
Boone	.....	23
Bremer	13	5
Buchanan	6	6
Buena Vista	21.5	20.5
Butler	9	.....
Calhoun	42.5	42.5
Carroll	17	.....
Cass	.....	.....
Cedar	4.5	3
Cerro Gordo	57	40.5
Cherokee	13.5	.....
Chickasaw	12	.....
Clarke	.....	.....
Clay	12	.....
Clayton	.....	.....
Clinton	2	.....
Crawford	19.1	11.2
Dallas	26	6
Davis	.....	.....
Decatur	2	2

SCHEDULE TWENTY-NINE—Continued

County	No. of Miles of Grade Lines Approved	No. of Miles of Profile Officially Approved
Delaware	5	.....
Des Moines	14.5	3
Dickinson	4	12
Dubuque	10	9
Emmet	13	10
Fayette	25	.....
Floyd	16.8	.....
Franklin	8	.....
Fremont	2	.....
Greene	26	51
Grundy	.....	3
Guthrie	.....	.....
Hamilton	29	34
Hancock	16	16
Hardin	15	.....
Harrison	3.5	3.5
Henry	3	1
Howard	5	4
Humboldt	10	.....
Ida	.....	.....
Iowa	23	.....
Jackson	.....	.....
Jasper	.....	.....
Jefferson	.....	.....
Johnson	65	.....
Jones	4	.....
Keokuk	5	2
Kossuth	.....	.....
Lee	3	3
Linn	8.5	.....
Louisa	10.6	14
Lucas	.....	.....
Lyon	.....	.....
Madison	1.5	1.5
Mahaska	2	2
Marion	1	5.75
Marshall	5	.....
Mills	3	2
Mitchell	.....	.....
Monona	9	.....
Monroe	5	1
Montgomery	6	.....
Muscatine	20.6	1
O'Brien	30	.....
Osceola	3.5	3.5
Page	.....	.....
Palo Alto	30.25	.....
Plymouth	.....	.....
Pocahontas	18	9
Polk	41	8
Pottawattamie	7.5	7.5
Poweshiek	5	.....
Ringgold	.....	.....
Sac	29	.....
Scott	5.5	2
Shelby	.....	.....
Sioux	5	.....
Story	20.5	20.5
Tama	2	8.5
Taylor	.....	.....
Union	.....	.....
Van Buren	.....	.....
Wapello	11	.....
Warren	2.5	1
Washington	10	.....
Wayne	.....	.....
Webster	33	24.5
Winnebago	22	20
Winneshiek	.....	.....
Woodbury	15	.....
Worth	20	.....
Wright	.....	.....
Total	960.97	445.45

SCHEDULE THIRTY.

COMPLAINTS INVESTIGATED.

County	Road System	Nature of Complaint
Adair	County	Relative to conditions of road from Casey to Canby.
	Township	General complaint on method of handling work by township superintendent.
Allamakee	County	Complaint regarding size of bridge as planned.
Appanoose	County	Poor bridges, dangerous to travel.
	Township	Poor and impassable roads and bridges.
	Township	Impassable roads and bridges, no work upon them.
	Township	Complaint regarding filling bridge approaches.
Benton	County	Relative to drainage conditions on Lincoln Highway near Tama county line.
	County	Relative to progress being made on new bridge south of Garrison.
Boone	Township	Relative to condition of bridge in Union township.
Calhoun	County	Expensive construction, deep side ditches.
	In city of Manson	Method of grading road near outskirts of town.
Carroll	Township	Relative to size, alignment, and location of temporary culvert.
Cass	County	General poor condition of Great White Way. Construction of wooden bridges.
	County	Same as above. Complaint by same man.
Cedar	County and Township	Relative to condition of roads north of town of West Branch.
Chickasaw	Township and County	That bad culverts were not being replaced.
		That the money was not being spent in the right place.
Clinton	County	Relative to condition of road from Charlotte to Clinton. (Twice.)
		Relative to waterway afforded by new bridge being built in Charlotte.
Dallas	County	Relative to condition of railway crossing White Pole Road southeast of Dexter.
	County	Relative to width of grade on Perry-Bouton Road.
Davis	County	Poor road and bridges.
	County	Poor road and bridges dangerous.
	Township	Bridge dangerous and impassable. Poor work on grading roads and approaches to bridges.
	County	Delayed work on county road bridges.
Delaware	Township	That the roads needed repair.
Des Moines	Township	A small culvert constructed with 16 ft. roadway.
Des Moines	City Street	To assist in paving and dragging at present time.
	Township	Requesting survey of road for grading.
Dubuque	County	That the roads were not properly maintained.
Emmet	Township	Wrong design and improper location of concrete culvert.
Fayette	Township	That the roads were not properly maintained.
	Township	That the road was impassable.
Floyd	Township	That the water was being diverted from its natural course.
Franklin	County	That the culverts were not being built of proper size.
Hamilton	Township	Relative to road known as Homer-Stratford Road.

Hancock	Township	That the roads needed repair.
Hardin	Township	Investigated status of township road known as "Honey Creek" Road to determine responsibility for improvement of same.
Howard	County	That the Ricevillle road should be tile drained.
Iowa	County	Shaping roadbed with ridge in center.
	County	Poor bridges and approaches.
Jackson	County	Relative to maintenance of roads in District No. 3.
	County	Relative to condition of Maquoketa-Iron Hill Road.
	Township	Relative to condition of road in Brandon Township.
Jasper	Township	Roads rough and not dragged when needed.
	County	Bad railroad crossing. Poor planking and approaches.
	Township	Road full of deep ditches, weeds, brush and trees.
Jefferson	County	Location of county road to be changed.
Jones	Township	Complaint of road in Washington Township.
Kossuth	County	Petitioners said more permanent work should have been done, also complained that road was left too rough.
	County	Complainant wanted road passing through old slough graded to standard cross section.
Linn	County	Relative to dragging on county system near Walker.
	County	Relative to condition of crossing from Marion-Springville County Road to Township Road by Torrence.
	Township	Relative to condition of mail route out of Walker.
	Township	Relative to condition of county line road between Fairfax Township Linn County and Florence Township Benton County.
	County	Relative to condition of Cedar Rapids-Mt. Vernon cutoff.
Madison	Township	Relative to condition of Truro-East Peru road and the bridges on same.
Marion	Township	Poor road, no work by the trustees. Poor bridges.
	Township	Poor road, no work by the trustees. Poor bridges.
	Township	Rough and narrow, two culverts placed.
	Township	Poor road, rough, petition asks for grading.
	Township	Sandy and narrow. Road to be relocated.
Monroe	Township	Poor road, ditch across and almost impassable in Gifford township.
	Township	Franklin township roads are in poor condition.
	County	Complaint about supervisor working on tractor engine.
	Township	Complaint of dragging roads in Hiteman by road supt.
	Township and County	Complaint about non-observance of weed law.
Polk	Township	Complaint by trustee of Bloomfield township concerning method of handling culvert and bridge repair work.
Pottawattamie	County	Lack of proper finishing of new work, and dragging.
	Township	Poor condition of mail route No. 6 west of Griswold.
	County	Relative to neglect of roads in Boomer township by supervisors.
Poweshiek	County	Complaint relative to condition of River to River road, ditches, etc.
	Township	Complaint about no work on township road near Malcom. Roads rough and not dragged.
Story	County	Concerning drainage conditions on county road south of Colo.
Warren	County	Relative to condition of Liberty Center-Lacona road.
	County	Complaint by land owner because wood bridge was built on county road.
	Township	Land owner living at end of stub road wanted trustees to cut down a big hill on said road.
	Township	Complaint concerning condition of road in Virginia township, also bridges on same road.

SCHEDULE THIRTY—Continued

County	Road System	Nature of Complaint	
		Trustees piled sod in road and stopped work, leaving road in bad condition.	
Webster	Township	That fences were encroaching on the road.	
Winneshiek	Township	That the road was impassable.	
	Township	That the road was not properly maintained.	
	County	Mail carrier complained that road needed dragging and grading; that at times it was absolutely impassable. Was unable to get relief from trustees.	
Woodbury	Township	That the roads were not dragged.	
		That the road was impassable.	
Worth	Township	County road system	40
Wright	Township	Township road system	43
Total number of complaints			

SCHEDULE THRITY-TWO.

CLASSIFICATION OF FIELD WORK BY DISTRICTS.

Dvision by Days Spent in Field	Districts				
	No. One	No. Two	No. Three	No. Four	No. Five
Examination of bridge sites	16	36	20	12	12
Attending bridge lettings	30	37	34	15	16
Inspection and supervision of bridge work	25	40	47	67	27
Investigation of complaints	21	13	7	7	15
Investigation of county roads	16	8	13	15	17
Examination of emergency work	12	2	10	2	2
Approval of grade lines	36	42	49	9	30
Special assignments	130	28	72	44	71
Unclassified	32	16	24	62	42
Explanation of 1914 yearly report blanks	9	13	10	9	8
Railroad crossing work	26	3	6	49	24
Inspection and supervision of road work	30	15	14	59	38
Total	383	253	306	350	302
Grand total	.....	.....	.....	.....	1,594

SCHEDULE THIRTY-THREE.

SHOWING NUMBER OF TRIPS AND DAYS SPENT IN EACH COUNTY.

County	No. of Trips	No. of Days	County	No. of Trips	No. of Days
Adair	5	5	Fremont	6	12
Adams	6	9	Greene	12	14
Allamakee	4	8	Grundy	9	10
Appanoose	6	9	Guthrie	13	22
Audubon	11	14	Hamilton	9	9
Benton	14	21	Hancock	8	8
Black Hawk	6	6	Hardin	19	162
Boone	7	7	Harrison	14	16
Bremer	6	6	Henry	7	10
Buchanan	7	9	Howard	6	7
Buena Vista	7	8	Humboldt	8	8
Butler	13	15	Ida	6	6
Calhoun	15	15	Iowa	5	9
Carroll	10	11	Jackson	7	10
Cass	17	20	Jasper	6	7
Cedar	8	12	Jefferson	5	8
Cerro Gordo	15	39	Johnson	4	8
Cherokee	9	19	Jones	6	8
Chickasaw	12	13	Keokuk	6	8
Clarke	11	17	Kossuth	7	7
Clay	12	18	Lee	8	14
Clayton	5	8	Linn	13	17
Clinton	11	16	Louisa	11	91
Crawford	8	11	Lucas	12	15
Dallas	7	8	Lyon	6	33
Davis	9	14	Madison	4	6
Decatur	7	12	Mahaska	11	15
Delaware	7	12	Marion	8	13
Des Moines	10	14	Marshall	8	8
Dickinson	11	14	Mills	11	15
Dubuque	12	36	Mitchell	5	6
Emmet	13	73	Monona	5	9
Fayette	6	7	Monroe	13	26
Floyd	10	10	Montgomery	4	5
Franklin	6	9	Muscatine	6	8

SEHEDULE THIRTY-THREE—Continued

County	No. of Trips	No. of Days	County	No. of Trips	No. of Days
O'Brien	6	8	Tama	17	21
Osceola	1	1	Taylor	3	3
Page	14	32	Union	11	17
Palo Alto	10	18	Van Buren	5	8
Plymouth	8	11	Wapello	5	8
Pocahontas	10	15	Warren	8	10
Polk	23	27	Washington	9	16
Pottawattamie	18	76	Wayne	11	16
Poweshiek	8	11	Webster	11	12
Ringgold	7	7	Winnebago	8	11
Sac	9	9	Winneshiek	8	9
Scott	7	12	Woodbury	5	14
Shelby	9	13	Worth	6	6
Sioux	10	17	Wright	16	21
Story	8	8			

SCHEDULE THIRTY-FOUR.

DETAILED TRIP REPORT OF FIELD ENGINEERS.
DEC. 1, 1913, to NOV. 1, 1914.

F. R. White, Engineer.

County	Date	Kind of Work
Guthrie	Dec. 3, 1913	Conference re condition in Guthrie County, Brushy Creek Bridge.
Hardin	Dec. 6, 1913	Inspecting footings on Eldora Viaduct.
Polk	Dec. 10-11, 1913	Taking measurements for new bridges.
Hardin	Dec. 30-31, 1913	Adjusting prices for extras on Eldora Viaduct.
Guthrie	Jan. 12, 1914	Conference with Commercial Club re Brushy Creek Bridge.
Cerro Gordo	Jan. 13, 1914	Re office for District Engineer.
Cerro Gordo	Jan. 16, 1914	Meeting County Board re blanks for day labor cost records.
	Jan. 22-23, 1914	Conference in Des Moines re Luten Patents.
Monroe	Jan. 28-29, 1914	Conference with U. S. engineer re river improvement at Eddyville.
Polk	Feb. 16-17, 1914	Bridge letting, sixty-one bridges.
Story	Feb. 18, 1914	Examination Skunk River Bridge S. E. of Cambridge.
Clay	Feb. 25-26, 1914	Getting measurements for bridge at Spencer.
Marshall	March 4, 1914	Bridge letting.
Emmet	March 5-6, 1914	Bridge letting, Lincoln St. Bridge.
Woodbury	March 10-11, 1914	Bridge letting, thirty-one bridges.
Worth	March 17, 1914	Bridge letting, ten bridges.
Harrison	March 18-19, 1914	Meeting with Board re general bridge and culvert work. Also road east of Mondamin.
Calhoun	March 25, 1914	Re dividing roads on line between Sac and Calhoun Counties.
Sac	March 26, 1914	Re dividing roads on line between Sac and Ida Counties.
Calhoun	April 6, 1914	Bridge letting.
Woodbury	April 7, 1914	Bridge letting.
Harrison	April 8, 1914	Meeting County Board re bridge work.
Clay	April 10-11, 1914	Meeting County Board re plan for Spencer Bridge.
Washington	April 15, 1914	Measurements for bridge south of Ainsworth.
Keokuk	April 16, 1914	Approved grade line on hill west of Richland.
Harrison	April 20, 1914	Meeting of County Board re payment for steel bridges bought in 1913.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Calhoun	April 21, 1914	Re contract for bridge across Raccoon River near Lake City.
Jasper	April 24, 1914	Bridge letting.
Des Moines	April 28, 1914	Bridge letting.
Shelby	May 3-4, 1914	Bridge letting.
Page	May 7-8, 1914	Surveying Horse Shoe Bayou, North of Shenandoah.
Harrison	May 14, 1914	Bridge letting.
Guthrie	May 17-18-19, 1914	Surveying bridge site in Sec. 13, Baker Twp., and meeting Board.
Kossuth	May 22, 1914	Bridge letting.
Page	May 25-28, 1914	Witness in law suit regarding removal of bridges on Horse Shoe Bayou.
Grundy	June 8, 1914	Bridge letting. Two 70 ft. spans. North of Reinbeck.
Johnson	June 10-11, 1914	Re design for Burlington St. Bridge in Iowa City.
Marshall	June 19, 1914	Approving grade lines on Lincoln Highway crossing.
Lyon	June 21-24, 1914	Re Klondike Bridge and Notes for Rock River Bridge.
Lyon	July 6-7, 1914	Bridge letting.
Dubuque	July 8-9-10, 1914	Re failure of wing wall on Gardner's Lane Bridge.
	July 16, 1914	Inspection of Polk, Dallas, Story and Boone County roads with Hamilton County Board of Supervisors.
Butler	July 20, 1914	Contract for Parkersburg Bridge.
Clarke	July 22-23-24, 1914	Re bridge work.
Union	July 21, 1914	Bridge letting.
Woodbury	July 30-31, 1914	Making surveys for Sioux River Bridge in Sioux City.
	Aug. 1, 1914	
Hardin	Aug. 3-4, 1914	Final settlement Eldora Viaduct.
	Aug. 12, 1914	Inspecting pavement Nevada.
	Aug. 18-19-20, 1914	Attending State Supervisors Convention.
Polk	Aug. 28, 1914	Re contract 110 ft. span in Franklin Twp.
	Aug. 29, 1914	Attending State Fair.
Polk	Sept. 1, 1914	Re 110 ft. span Franklin Twp.
Franklin	Sept. 3, 1914	Re size of Iowa River Bridge on county road N. E. of Dows.
Marshall	Sept. 4, 1914	Bridge letting.
Dubuque	Sept. 7-8, 1914	Inspecting footings on Gardner's Lane Bridge.
Dubuque	Sept. 9, 1914	Investigating gravel for Hawkeye Highway.
Adams	Sept. 14, 1914	To attend bridge letting. Railway tracks washed out.
Louisa	Sept. 22, 1914	Conference with Board re extending concrete road.
Louisa	Sept. 23, 1914	Re gravel supply for concrete road at Columbus Junction.
Fremont	Sept. 29-30, 1914	Investigating bridge work.
Fremont	Oct. 1-2, 1914	Investigating bridge work.
Wright	Oct. 6-7, 1914	Re contract for reinforcing steel in concrete work.
Plymouth	Oct. 13-14-15, 1914	Investigating bridge bills.
Jasper	Oct. 21, 1914	Re failure of retaining wall on bridge at Valeria.
	Oct. 28-31, 1914	Attending Northwestern Road Congress.

District No. 1.—C. Coykendall, Engineer.

Carroll	Dec. 5, 1913	Taking bridge measurements.
Crawford	Dec. 6, 1913	Approval of grades.
Linn	Dec. 9, 1913	County road approval.
Benton	Dec. 10, 1913	County road approval.
Cedar	Dec. 11, 1913	County road approval.
Benton	Dec. 12, 1913	County road approval.
Linn	Dec. 13, 1913	County road approval.
Grundy	Dec. 16, 1913	County road approval.
Benton	Dec. 17, 1913	County road approval.
Jackson	Dec. 18, 1913	Attending bridge letting.
Tama	Dec. 19, 1913	County road approval.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Grundy	Dec. 20, 1913	County road approval.
Palo Alto	Dec. 22, 1913	Bridge measurements.
Palo Alto	Dec. 23, 1913	Bridge measurements.
Palo Alto	Dec. 24, 1913	Bridge measurements.
Palo Alto	Dec. 26, 1913	Bridge measurements.
Palo Alto	Dec. 29, 1913	Bridge measurements.
Clinton	Dec. 30-31, 1913	Investigating bridge foundations.
Sioux	Jan. 6, 1914	Relative to bills for bridge work.
Marshall	Jan. 10, 1914	County road approval.
Tama	Jan. 12, 1914	County road connections with adjoining county roads.
Jones	Jan. 13, 1914	Emergency repair work.
Cedar	Jan. 14, 1914	Re settlement for defective bridge work.
Linn	Jan. 15, 1914	County road approval.
Polk	Jan. 16, 1914	Bridge measurement.
Plymouth	Jan. 19, 1914	Re settlement between county and Western Bridge & Con. Co.
Cedar	Jan. 21-22, 1914	Bridge measurements and investigations.
Polk	Jan. 29, 1914	Re plans for repairing bridge foundations.
Tama	Jan. 31, 1914	Re connecting Tama-Benton County roads.
Crawford	Feb. 4, 1914	Trustees' meeting.
Warren	Feb. 6, 1914	County road connections for Polk County.
Story	Feb. 10, 1914	County road connections.
Benton	Feb. 11, 1914	Re proposed county road.
Greene	Feb. 16, 1914	Road work letting.
Story	Feb. 18, 1914	Taking bridge measurements.
	Feb. 2, 1914	Checking official county road system against plates sent in by county engineer.
Greene	Feb. 23, 1914	Meeting re bridge work.
Tama	Feb. 24-25, 1914	Profile approval. Bridge letting.
Tama	Feb. 26, 1914	Re dangerous railway crossings.
Grundy	Feb. 27, 1914	Bridge measurements.
Hardin	Feb. 28, 1914	General investigation.
Benton	March 4, 1914	Bridge letting.
Linn	March 5, 1914	Taking bridge measurements.
Linn	March 6, 1914	Taking bridge measurements.
Hamilton	March 7, 1914	Engineering conditions.
Madison	March 10-11, 1914	Re 1914 work.
Dallas	March 13, 1914	Inspection road profile.
Dallas	March 14, 1914	Establishing grade lines.
Hamilton	March 16, 1914	Re engineering expenses.
Carroll	March 17, 1914	Re improvement Lincoln Highway.
Crawford	March 18, 1914	Bridge letting.
Marshall	March 19, 1914	Grades on Lincoln Highway.
Hamilton	March 20, 1914	Bridge letting.
Clinton	March 23, 1914	Re condition of Charlotte-Clinton road.
Clinton	March 24, 1914	General investigation re progress of work.
Jackson	March 25, 1914	Complaint of county roads.
Jones	March 26, 1914	Re plans and estimates for bridge work.
Story	March 28, 1914	Bridge letting.
Greene	March 30-31, 1914	Re force on road work.
	April 1, 1914	
Clinton	April 2, 1914	Inspecting macadam road.
Greene	April 3, 1914	Re force on road work.
Carroll	April 4, 1914	Road profile work.
Cedar	April 6, 1914	Bridge letting.
Jones	April 7, 1914	Bridge letting.
Jones-Linn	April 8, 1914	Bridge matters, both counties.
Linn	April 9, 1914	Bridge letting.
Clinton	April 10, 1914	Emergency work.
Polk-Dallas	April 13, 1914	Re grade on Polk-Dallas Co. line east of Granger.
Grundy	April 14, 1914	Bridge letting.
Boone	April 15, 1914	Bridge and road inspection.
Tama	April 16, 1914	Re grade lines.
Hamilton	April 17, 1914	Bridge and road improvement.
Dallas	April 18, 1914	Profile approval.
Clinton	April 20, 1914	Road work, general.
Boone	April 21, 1914	Road and bridge work.
Tama	April 22, 1914	Emergency work. Bridge measurements.
Greene	April 23, 1914	Investigation of grades.
Story	April 24, 1914	Inspection of profiles.
Cedar	April 25, 1914	Trustees' meetings.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Crawford	April 27-28, 1914	Re road profiles, grade lines.
Warren	April 29, 1914	Road and bridge work.
Polk	April 30, 1914	Re grades on road profiles.
Warren	May 2, 1914	Bridge investigation.
Greene	May 5, 1914	Investigation Lincoln Highway at Buttricks Creek.
Hamilton	May 7, 1914	Inspecting profiles.
Polk	May 8, 1914	Inspection of profiles.
Polk	May 9, 1914	Establishing grades.
Story	May 16, 1914	Meeting re bridge work.
Hamilton	May 18, 1914	Bridge letting.
Tama	May 19, 1914	Emergency bridge work.
Story	May 21, 1914	Bridge letting.
Polk	May 25, 1914	Profile investigation.
Boone	June 1, 1914	General investigation.
Greene	May 29, 1914	Profile investigation.
Benton	June 2, 1914	Emergency road and bridge work.
Benton	June 3, 1914	Profile investigation.
Linn	June 4, 1914	Investigation of complaint.
Linn	June 5, 1914	Investigation road work.
Cedar	June 6, 1914	Road and bridge work.
Greene	June 8, 1914	Road and bridge work.
Jones	June 9, 1914	Road and bridge work.
Jones	June 10, 1914	Road and bridge work.
Hardin	June 11, 1914	Profile approval.
Tama	June 12, 1914	Bridge letting.
Madison	June 15, 1914	Road and bridge work.
Madison	June 16, 1914	Road and bridge work.
Carroll	June 17, 1914	Inspection of road work.
Carroll	June 18, 1914	Taking bridge measurements.
Warren	June 19, 1914	Emergency bridge work.
Tama	June 20, 1914	Bridge and road work.
Greene	June 22, 1914	Profile investigation.
Linn	June 23, 1914	Road work investigation.
Clinton	June 24, 1914	Bridge letting.
Clinton	June 25, 1914	Emergency work.
Clinton	June 26, 1914	Road work and profiles.
Linn	June 27, 1914	Investigation of complaint.
Carroll	June 29, 1914	Re relocation of Lincoln Highway.
	June 30, 1914	Survey for Curb and Gutter in State Center.
Story	July 1, 1914	Investigation drainage complaint.
Crawford	July 2, 1914	Bridge letting.
Clinton	July 3, 1914	Re gravel pit near Dewitt.
Boone	July 6, 1914	Complaint re bridge.
Hamilton	July 7, 1914	Road work letting.
Cedar	July 8, 1914	Emergency proposition.
Cedar	July 9, 1914	General investigation.
Linn	July 10, 1914	Emergency and road work.
Linn	July 11, 1914	Investigation of complaints.
Hardin	July 13, 1914	Road profile approval.
Hardin	July 14, 1914	Profile approval. Investigation of Honey Creek work.
Crawford	July 15, 1914	Road and bridge work.
Crawford	July 16, 1914	Road and bridge work.
Greene	July 17, 1914	Road and bridge work. Profile approval.
Dallas	July 18, 1914	Road and bridge work.
Carroll	July 20, 1914	Investigating grade lines.
Clinton	July 21, 1914	Road and bridge work.
Clinton	July 22, 1914	Road and bridge work.
Jackson	July 23, 1914	Re county road complaint.
	July 24, 1914	Office work.
Hamilton	July 25, 1914	Inspection of profiles.
Polk	July 28, 1914	Investigating complaint.
Marshall	July 29, 1914	Inspection of profiles.
Polk	July 30, 1914	Investigation road and bridge work.
Tama	July 31, 1914	Road and bridge work.
Greene	Aug. 1, 1914	Road and bridge work.
Tama	Aug. 4, 1914	Bridge letting.
Benton	Aug. 5, 1914	General investigation.
Benton	Aug. 6, 1914	General investigation.
Grundy	Aug. 7, 1914	General investigation.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Grundy	Aug. 8, 1914	General investigation.
Benton	Aug. 12, 1914	Re Prairie Creek Crossing on Lincoln Highway.
Boone	Aug. 14, 1914	Re site for new bridge.
Greene	Aug. 15, 1914	Road and bridge work. Relocation of road.
Grundy	Aug. 17, 1914	Bridge letting.
Warren	Aug. 18, 1914	Road and bridge complaints.
Warren	Aug. 19, 1914	Road and bridge complaints.
Polk	Aug. 20, 1914	Bridge letting (Postponed).
Boone	Aug. 21, 1914	Bridge letting.
Boone		Inspection road profiles.
Dallas	Aug. 22, 1914	Investigating complaints.
Grundy	Aug. 24, 1914	Bridge letting.
Hamilton	Aug. 25, 1914	Bridge letting.
Carroll	Aug. 26, 1914	Taking bridge measurements.
	Aug. 27-28-29, 1914	Attending State Fair.
Benton	Aug. 31, 1914	Complaint re bridge work.
Clinton	Sept. 1, 1914	Complaint re waterway of bridge.
Jackson	Sept. 2, 1914	Complaint re township road.
Dubuque-Jackson	Sept. 3, 1914	Re county line bridge.
Linn	Sept. 4, 1914	Investigation of complaint.
Carroll	Sept. 7-8, 1914	Bridge letting and contract.
Crawford	Sept. 8, 1914	Inspection road profile.
Warren	Sept. 10, 1914	Re condition township road.
Warren	Sept. 11, 1914	Condition Liberty Center-Lacona road.
Hardin	Sept. 12, 1914	Re petition for new road.
Dallas	Sept. 14, 1914	Road profiles. Meeting Board re engineering matters.
Tama	Sept. 16, 1914	Road profile work.
Tama	Sept. 17, 1914	Profile work. Meeting Board.
Carroll	Sept. 18, 1914	Approval of grade line.
Kossuth	Sept. 19, 1914	Proposed change in type of bridge.
Benton	Sept. 21, 1914	Failure permanent bridges.
Cedar	Sept. 22, 1914	General investigation.
Cedar	Sept. 23, 1914	Re bridge construction.
Cedar	Sept. 24, 1914	Investigation road complaint.
Carroll	Sept. 28, 1914	Bridge letting.
Crawford	Oct. 8, 1914	Road and bridge work.
Crawford	Oct. 9, 1914	Road and bridge work.
Polk	Oct. 12, 1914	Bridge letting.
Jackson	Oct. 13, 1914	Investigation of 2 50 ft. spans at Shorthill Co.'s plant.
Warren	Oct. 14, 1914	Bridge and road work.
Warren	Oct. 15, 1914	Emergency work and complaint.
Madison	Oct. 16, 1914	Investigation of road complaint.
Benton	Oct. 17, 1914	Re drainage on Lincoln Highway.
Dallas	Oct. 19, 1914	Emergency work. Inspection grade lines.
Polk	Oct. 20, 1914	General investigation.
Madison	Oct. 21, 1914	Emergency work. General investigation.
Marshall	Oct. 22, 1914	General investigation. 1914 report blanks.
Hardin	Oct. 23, 1914	1914 report blanks. Inspection of county road.
Boone	Oct. 24, 1914	1914 report blanks. Inspection of work by leveler.
Linn	Oct. 26, 1914	1914 report blanks. Inspection county road profile.
Linn	Oct. 27, 1914	Re bridge propositions.
Jones	Oct. 27, 1914	1914 report blanks.
Jones	Oct. 28, 1914	Re condition of road.
Jackson	Oct. 29, 1914	1914 report blanks. Meeting re Shorthill contract.
Clinton	Oct. 30, 1914	1914 report blanks.
Warren	Oct. 31, 1914	Emergency bridge work.

District No. 2.—W. H. Root, Engineer.

Fayette	Dec. 1, 1913	County road approval.
Winneshiek	Dec. 2, 1913	Bridge inspection.
Clayton	Dec. 3-4, 1913	County road approval.
Dubuque	Dec. 5-6, 1913	County road approval.
Jackson	Dec. 10-11, 1913	Report on Jackson County bridges.
Dubuque	Dec. 15-16-17, 1913	Profile approval.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Clayton	Dec. 18, 1913	Notes for bridges.
Clinton	Dec. 22, 1913	Hart's Mill bridge inspection.
Floyd	Jan. 7, 1914	Bridge letting.
Chickasaw	Jan. 12-13, 1914	Bridge letting.
Wright	Jan. 15, 1914	County road approval.
Chickasaw	Jan. 22, 1914	Trustees' meeting.
Winnebago	Jan. 23, 1914	Notes for bridges.
Worth	Jan. 27, 1914	Notes for bridges.
Allamakee	Jan. 28-29, 1914	Profile approval.
Worth	Jan. 31, 1914	Trustees' meeting.
Bremer	Feb. 2, 1914	Bridge letting.
Black Hawk	Feb. 3, 1914	General inspection.
Delaware	Feb. 4, 1914	Bridge location.
Cerro Gordo	Feb. 16, 1914	Bridge letting.
Winneshiek	Feb. 17, 1914	Trustees' meeting.
Winnebago	Feb. 23-24, 1914	Survey for law suit against county engineer.
Hancock	Feb. 25, 1914	Investigation of bridge plans for 1914.
Winnebago	Feb. 26, 1914	Profile approval.
Hancock	Feb. 27, 1914	Profile approval.
Wright	March 2, 1914	Profile approval.
Howard	March 3, 1914	Notes for bridges.
Allamakee	March 4-5, 1914	Profile approval.
Cerro Gordo	March 6, 1914	Trustees' meeting.
Butler	March 7, 1914	General inspection work.
Mitchell	March 9, 1914	General inspection work.
Bremer	March 10, 1914	Profile approval and location of Cedar River bridge.
Hancock	March 11, 1914	Bridge letting.
Delaware	March 12-13-14, 1914	Bridge notes. Supts'. meeting.
Winneshiek	March 16-17, 1914	Bridge letting.
Buchanan	March 18, 1914	Re hiring county engineer.
Dubuque	March 19-20, 1914	General inspection work.
Winnebago	March 21-23, 1914	Re engineer's law suit.
Clayton	March 24-25, 1914	Bridge letting.
Wright	March 30-31, 1914	County road approval.
Buchanan	April 1, 1914	Grade approval.
Butler	April 2, 1914	Arrangements for letting.
Black Hawk	April 6, 1914	Lumber letting.
Delaware	April 7, 1914	Investigation bridge plans.
Howard	April 8, 1914	Bridge letting.
Chickasaw	April 9, 1914	Corrugated culvert letting.
Hancock	April 10, 1914	Investigation of letting.
Franklin	April 13-14-15, 1914	Notes for bridges.
Fayette	April 16, 1914	Notes for bridges.
Winneshiek	April 17, 1914	Re washout on township road.
Butler	April 20-21, 1914	Notes for bridges.
Floyd	April 22, 1914	Profile approval.
Black Hawk	April 23, 1914	Corrugated culvert letting.
Franklin	April 24, 1914	Investigation Mallory road settlement.
Wright	April 27, 1914	Notes for bridges.
Chickasaw	April 28, 1914	Investigation culvert plans.
Buchanan	April 29-30, 1914	Notes for bridges.
Bremer	May 4, 1914	Bridge letting.
Grundy	May 5, 1914	Machinery demonstration.
Winnebago	May 6, 1914	Road grading letting.
Wright	May 7-8, 1914	Notes for bridges.
Butler	May 11-12, 1914	Bridge letting.
Wright	May 13-14, 1914	Notes for bridges.
Butler	May 15, 1914	Notes for bridges.
Chickasaw	May 18, 1914	General work on bridge plan.
Delaware	May 19, 1914	Investigation of complaint against county engineer.
Butler	May 20, 1914	Investigation of road complaint.
Black Hawk	May 21, 1914	Adjustment of culvert contract.
Delaware	May 22, 1914	Investigation complaint against county engineer.
Delaware	May 23, 1914	Bridge letting.
Dubuque	May 27-28-29, 1914	Hawkeye Highway matters.
Howard	June 1-2, 1914	Notes for bridges.
Floyd	June 3, 1914	Bridge letting.
Wright	June 4-5, 1914	Investigation of complaint.
Butler	June 8, 1914	Profile approval.
Bremer	June 9, 1914	Profile approval.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Black Hawk	June 10, 1914	Bridge letting.
Buchanan	June 11, 1914	Investigation of complaint.
Franklin	June 12, 1914	Notes for bridges.
Chickasaw	June 15-16, 1914	Notes for bridges.
Hancock	June 17, 1914	Inspection of bridges.
Winneshiek	June 18, 1914	Re washout on road.
Floyd	June 19, 1914	Re washout on Marble Rock bridge.
Fayette	June 22-23, 1914	Bridge letting.
Butler	June 24, 1914	Soundings for Parkersburg bridge.
Franklin	June 25, 1914	Bridge letting.
Winnebago	June 26-27, 1914	Profile approval.
Butler	July 1, 1914	Inspection Flood Creek bridge abutments.
Chickasaw	July 2, 1914	Bridge letting.
Wright	July 3, 1914	Profile approval.
Howard	July 6, 1914	Notes for bridges.
Howard	July 7, 1914	Bridge letting.
Dubuque	July 8-9, 1914	General inspection trip.
Butler	July 10, 1914	Bridge letting.
Floyd	July 11, 1914	Marble Rock bridge notes.
Floyd	July 14, 1914	Marble Rock soundings.
Buchanan	July 15-16, 1914	Approval of grades.
Wright	July 20, 1914	Bridge letting.
Worth	July 21, 1914	Notes for bridges.
Mitchell	July 22-23, 1914	Notes for bridges.
Cerro Gordo	July 24, 1914	Bridge letting.
Chickasaw	July 27, 1914	Approval of grades.
Dubuque	July 28, 1914	Bridge letting.
Clayton	July 29-30, 1914	Bridge notes.
Floyd	July 31, 1914	Bridge pictures.
Hancock	Aug. 3, 1914	Bridge settlement.
Winnebago	Aug. 4, 1914	Bridge and road letting.
Howard	Aug. 5, 1914	Bridge letting.
Dubuque	Aug. 6-7, 1914	Approval of grades.
Wright	Aug. 10, 1914	Bridge letting.
Bremer	Aug. 11, 1914	Approval of grades.
Floyd	Aug. 12, 1914	Bridge letting.
Fayette	Aug. 13-14, 1914	Inspection of roads and grade approval.
Mitchell	Aug. 15, 1914	Investigation of road petition at St. Ansgar.
Cerro Gordo	Aug. 17, 1914	Approval of grades.
Wright	Aug. 18, 1914	Road relocation.
Winneshiek	Aug. 19-20, 1914	Road relocation.
Mitchell	Aug. 21, 1914	Bridge letting.
Cerro Gordo	Aug. 22, 1914	Approval of grades.
Hancock	Aug. 24, 1914	Investigation of complaint.
Chickasaw	Aug. 25, 1914	Inspection roads and bridges.
Worth	Sept. 3, 1914	Investigation of complaint.
Wright	Sept. 8, 1914	Investigation of complaint.
Chickasaw	Sept. 14, 1914	Investigation of complaint re culverts not built.
Wright	Sept. 15, 1914	Adjustment of contract.
Floyd	Sept. 16, 1914	Marble Rock bridge inspection.
Butler	Sept. 18-19, 1914	Parkersburg bridge inspection.
Delaware	Sept. 21-22, 1914	Bridge adjustment and road inspection.
Buchanan	Sept. 23, 1914	Bridge work.
Black Hawk	Sept. 24, 1914	Immediate necessity work.
Chickasaw	Sept. 28, 1914	Culvert adjustment.
Dubuque	Sept. 29, 1914	Bridge letting.
Allamakee	Sept. 30, 1914	General work.
Winneshiek	Oct. 1, 1914	County line bridge matters.
Franklin	Oct. 2-3, 1914	Bridge and culvert complaint.
Wright	Oct. 7, 1914	Bridge contract adjustment.
Fayette	Oct. 8, 1914	Emergency work and complaint.
Howard	Oct. 9, 1914	Investigation of complaint.
Bremer	Oct. 10, 1914	Bridge payment adjustment.
Allamakee	Oct. 12-13-14, 1914	Adjustment of Hartley bridge dispute.
Winneshiek	Oct. 15, 1914	County engineer's report.
Butler	Oct. 16, 1914	Parkersburg bridge inspection.
Floyd	Oct. 17, 1914	Marble Rock bridge inspection.
Buchanan	Oct. 19, 1914	County engineer's report.
Delaware	Oct. 20, 1914	County engineer's report.
Dubuque	Oct. 21, 1914	County engineer's report.
Fayette	Oct. 22, 1914	County engineer's report.
Mitchell	Oct. 23, 1914	County engineer's report.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Worth	Oct. 24, 1914	County engineer's report.
Howard	Oct. 26, 1914	County engineer's report.
Clayton	Oct. 27, 1914	County engineer's report.
Chickasaw	Oct. 28, 1914	County engineer's report.
Winnebago	Oct. 29, 1914	County engineer's report.
Wright	Oct. 30, 1914	County engineer's report.
Hancock	Oct. 31, 1914	County engineer's report.
District No. 3.—W. E. Jones, Engineer.		
Sioux	Dec. 2-3-4-5, 1913	Bridge investigation.
Pocahontas	Dec. 8, 1913	County road approval.
Palo Alto	Dec. 9, 1913	County road approval.
Humboldt	Dec. 10, 1913	County road approval.
Webster	Dec. 11, 1913	County road approval.
Shelby	Dec. 13-14, 1914	Re Panama Bridge abutments.
Calhoun	Dec. 19, 1913	Bridge measurements for 1914.
Webster-Pocahontas	Dec. 20, 1913	Approval county line road.
Clay	Jan. 27, 1914	County road approval.
Dickinson	Jan. 28, 1914	County road approval.
Emmet	Jan. 29, 1914	County road approval and bridge work.
Webster	Jan. 30, 1914	Bridge measurements.
Ida	Feb. 4, 1914	County road approval.
Sac	Feb. 6, 1914	County road approval.
Sac	Feb. 11, 1914	Trustees' meeting re road between Sac and Ida counties.
Sac	Feb. 12, 1914	County road approval.
Sac-Ida	Feb. 13, 1914	County line road approval.
Monona	Feb. 14, 1914	County road approval.
	Feb. 19, 1914	Checking maps at Des Moines.
Buena Vista	Feb. 20, 1914	Meeting re grade lines.
Cherokee	Feb. 21, 1914	Conference re estimates on bridges.
Ida	Feb. 23, 1914	Preparations for letting.
Ida	Feb. 25, 1914	Preparations for letting.
Ida	Feb. 26, 1914	Bridge letting.
Humboldt	Feb. 27, 1914	Conference with engineer.
Ida	March 1-2, 1914	Bridge measurements.
Sioux	March 3-4, 1914	Re Luten litigation.
Emmet	March 5, 1914	Bridge letting, Lincoln Street bridge.
Palo Alto	March 6, 1914	Conference with engineer.
Kossuth	March 7, 1914	Rumored bridge letting. Conferences re 1914 work.
Plymouth	March 9, 1914	Adjustment of price on steel with Western Bridge and Cons. Co.
Lyon	March 10, 1914	Bridge letting.
Buena Vista	March 11, 1914	Trustees' meeting.
Buena Vista	March 12, 1914	Profile approval.
Pocahontas	March 13-14, 1914	General visit with engineer.
Humboldt	March 16, 1914	Bridge measurements.
Emmet	March 17, 1914	Bridge letting, Lincoln Street Bridge.
Osceola	March 18, 1914	Investigation of letting.
Sioux	March 19, 1914	Bridge measurements.
Monona	March 20, 1914	Bridge measurements.
Monona	March 21, 1914	Visit with engineer.
Woodbury	March 24-25, 1914	Profile approval.
Clay	March 26, 1914	Bridge letting.
Dickinson	March 27-28, 1914	Investigation of grading cost.
Cherokee	March 29-30, 1914	Bridge inspection.
Pocahontas	March 31, 1914	Re 1914 work.
Pocahontas	April 1, 1914	General visit with engineer.
Pocahontas	April 2, 1914	Measurements for dangerous grade at Rolfe.
Webster	April 3, 1914	General visit to county.
Cherokee	April 5-6, 1914	Bridge letting.
Sioux	April 7, 1914	Bridge letting.
O'Brien	April 8, 1914	Bridge letting.
Webster	April 9, 1914	Profile approval.
Calhoun	April 14-15, 1914	Profile approval.
Pocahontas	April 16-17-18, 1914	Profile approval.
Webster	April 20-21, 1914	Profile approval.
Palo Alto	April 22-23 1914	Profile approval.
Lyon	April 24, 1914	Emergency work.
Sioux	April 25, 1914	Emergency work.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Humboldt	April 27, 1914	Profile approval.
Monona	April 28, 1914	Bridge letting.
Woodbury	April 29-30, 1914	Investigation of complaint.
Sioux	May 1-2, 1914	Re bridge contract.
Ida	May 4, 1914	Conference with engineer.
Plymouth	May 5, 1914	General visit to county.
Emmet	May 6, 1914	Estherville bridge plans.
Palo Alto	May 7, 1914	Meeting with Board.
Dickinson	May 8, 1914	Bridge letting.
Emmet	May 9, 1914	Road inspection.
O'Brien	May 12-13, 1914	Profile approval.
Clay	May 14-15, 1914	Profile approval.
Pocahontas	May 16, 1914	Profile approval and township grading.
Calhoun	May 18, 1914	Profile approval.
Dickinson	May 19, 1914	Road inspection.
Plymouth	May 20, 1914	Bridge letting.
Sioux	May 20, 1914	Bridge letting.
Cherokee	May 21-22-23, 1914	Road inspection and profile approval.
Calhoun	May 25, 1914	Profile approval.
Emmet	May 26, 1914	Final letting on Estherville Bridge.
Emmet	May 27, 1914	Bridge inspection.
Monona	May 28-29-30, 1914	Culvert inspection.
Sac	June 2, 1914	Profile approval.
Sac and Ida	June 3, 1914	Profile approval. Change in culvert plans.
Woodbury	June 4-5-6, 1914	Culvert location and profile approval.
Clay	June 8-9-10, 1914	Spencer Bridge plans and emergency work.
Emmet	June 11-12, 1914	Fixing grade lines.
Dickinson	June 13, 1914	Bridge washouts.
Webster	June 15, 1914	Bridge inspection.
Palo Alto	June 16-17, 1914	Inspection of washouts.
Dickinson	June 18-19 1914	Emergency work.
O'Brien	June 20, 1914	Emergency work.
Calhoun	June 22, 1914	Profile approval.
Pocahontas	June 23, 1914	Bridge letting.
Clay	June 24-25, 1914	Bridge measurements.
Buena Vista	June 26, 1914	Bridge letting.
Clay	June 27, 1914	Bridge measurements.
Humboldt Webster	June 30, 1914	Profile approval.
Calhoun	July 1, 1914	Profile approval.
Monona	July 2-3, 1914	Profile approval and emergency work.
Plymouth	July 6, 1914	Emergency culvert work.
Palo Alto	July 7, 1914	Bridge letting.
Plymouth	July 8-9, 1914	Bridge letting and emergency work.
Buena Vista	July 10, 1914	Profile approval.
Webster	July 11, 1914	Profile approval.
Clay	July 14, 1914	Bridge letting.
Emmet	July 15, 1914	Bridge measurements.
Palo Alto	July 16-17, 1914	Profile approval.
Humboldt	July 18, 1914	Plans for 45 ft. span over dredge ditch.
Kossuth	July 20, 1914	Culvert contract and complaint investigation.
Emmet	July 21, 1914	Bridge letting.
Webster	July 22, 1914	Re township grading.
Cherokee	July 23, 1914	Profile approval.
Plymouth	July 24, 1914	Complaint and Akron matter.
Sioux	July 25-26-27, 1914	Re bridge failure.
Buena Vista	July 29, 1914	Bridge measurements.
Sac	July 30, 1914	Profile approval.
	July 31, 1914	Sioux River bridge measurements at Sioux City.
	Aug. 1, 1914	Sioux River bridge measurements at Sioux City.
Humboldt	Aug. 3, 1914	Re bills for county work.
Calhoun	Aug. 4, 1914	Bridge letting.
Kossuth	Aug. 5, 1914	Bridge letting.
Webster	Aug. 6, 1914	Bridge letting.
Sioux	Aug. 7-8, 1914	Profile approval.
Dickinson	Aug. 9-10, 1914	Bridge inspection and profile approval.
Calhoun	Aug. 12, 1914	Profile approval.
Calhoun and Sac	Aug. 13, 1914	Adjustment of county line road.
Buena Vista	Aug. 14, 1914	Bridge letting.
Pocahontas	Aug. 15, 1914	Bridge letting.
Calhoun	Aug. 17, 1914	Re footings on Zanes Bridge.
Dickinson	Aug. 18-19, 1914	Profile approval.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Clay	Aug. 20, 1914	Profile approval.
Palo Alto	Aug. 21-22, 1914	Re settlement with Standard Bridge Co.
Calhoun	Aug. 24, 1914	Investigation of complaint.
	Aug. 25-26-27, 1914	State Fair Des Moines.
Humboldt	Aug. 28, 1914	Culvert letting.
	Aug. 29, 1914	State Fair Des Moines.
Pocahontas	Aug. 31, 1914	Gravel inspection.
Calhoun	Sept. 1, 1914	Investigation of complaint.
Webster	Sept. 2, 1914	Emergency work.
Sac	Sept. 3, 1914	Road inspection.
Dickinson	Sept. 4, 1914	Bridge letting.
Dickinson	Sept. 5-7, 1914	Railroad crossing survey.
O'Brien	Sept. 8, 1914	Profile approval.
Cherokee	Sept. 9, 1914	General visit.
Webster	Sept. 10, 1914	General visit.
Dubuque	Sept. 13 to 25 inclusive	Post road profiles.
Kossuth	Oct. 2, 1914	Adjustment on culvert charges.
Calhoun	Oct. 12, 1914	Profile approval.
Monona	Oct. 13, 1914	Emergency bridge work.
O'Brien	Oct. 14, 1914	Profile approval and bridge inspection.
Clay	Oct. 15-16, 1914	Profile approval and gravel inspection.
Kossuth	Oct. 19, 1914	Investigation of complaint.
Palo Alto	Oct. 20, 1914	Profile approval, railway crossing. Yearly report.
Emmet	Oct. 21, 1914	Profile approval.
Dickinson	Oct. 22, 1914	County engineer's report.
Emmet	Oct. 23, 1914	County engineer's report.
Emmet-Clay	Oct. 24, 1914	County engineer's report.
Lyon	Oct. 26, 1914	County engineer's report.
Sioux	Oct. 27, 1914	County engineer's report.
Plymouth	Oct. 28, 1914	County engineer's report.
Cherokee	Oct. 29, 1914	County engineer's report.
Buena Vista	Oct. 30, 1914	County engineer's report.
Pocahontas	Oct. 31, 1914	County engineer's report.

District No. 4.—*E. Williams, Engineer.

Mills	Dec. 1, 1913	Survey approval.
Audubon	Dec. 2, 1913	Connections with adjoining county road system.
Union	Dec. 3-4, 1913	Re overhead crossing at Afton.
Union	Dec. 5-6, 1913	Meeting re overhead crossing.
Harrison	Dec. 8, 1913	Re work on Trans-continental route.
Shelby	Dec. 9, 1913	Relocation of road near Harlan.
Guthrie	Dec. 10-11, 1913	County road approval.
Lucas	Dec. 12-13, 1913	County road approval.
Audubon	Dec. 15-16-17, 1913	Taking bridge measurements.
Wayne	Dec. 18-19, 1913	County road approval.
Cass	Dec. 20, 1913	Meeting with County Engineer Patsig at Des Moines.
Clarke	Jan. 14-15, 1914	Re hiring county engineer.
Lucas	Jan. 16, 1914	Re advertising culvert work.
Clarke	Jan. 17, 1914	Re hiring county engineer.
Monroe	Jan. 19-20, 1914	County road approval.
Appanoose	Jan. 21, 1914	County road approval.
Wayne	Jan. 22, 1914	Relocation of road.
Davis	Jan. 23, 1914	County road approval.
Davis	Jan. 24, 1914	County road approval.
Cass	Jan. 26-27, 1914	Work with new county engineer.
Union	Jan. 28, 1914	Consulting with county engineer.
Cass	Jan. 29-30-31, 1914	Grand jury work.
Adair	Feb. 2, 1914	Re concrete culverts for grand jury, Cass county.
Monroe	Feb. 4-5-6, 1914	County road approval.
Harrison	Feb. 10, 1914	General visit to county.
Pottawattamie	Feb. 11, 1914	Proposed relocation of road.
	Feb. 17-18, 1914	Checking maps at Des Moines.
Wayne	Feb. 19-20-21, 1914	Estimating cost of roads near Lineville.
Clarke	Feb. 22-23, 1914	Re hiring engineer and preparing for new work.
Decatur	Feb. 24, 1914	Grade approval.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Decatur	Feb. 23-26, 1914	Changes in Leon-Lamoni Road.
Ringgold	Feb. 27, 1914	General visit.
Audubon	March 2, 1914	Bridge letting.
Shelby	March 3, 1914	General visit.
Lucas	March 4, 1914	Meeting re road and bridge work.
Wayne	March 5-6, 1914	Working on road profiles re law suit for roads at Lineville.
Union	March 9-10, 1914	Re crossing near Afton.
Union	March 11, 1914	Re crossing at Creston.
Union	March 12, 1914	Surveying crossing at Afton Junction.
Pottawattamie	March 13, 1914	Re Macedonia crossing.
Harrison	March 14, 1914	Taking bridge measurements.
Pottawattamie	Mar. 16-17-18-19, 1914	Surveying and platting Macedonia crossing.
Page	March 20-21, 1914	Re C., B. & Q. crossing.
Page	March 23-24-25, 1914	Re Braddyville crossing.
Page	March 25, 1914	Re Norwich crossing.
Page	Mar. 26-27-28-29, 1914	Re Norwich and Bingham crossing.
Polk	March 31, 1914	Re Beaver Ave. crossing.
Union and Lucas	April 7, 1914	Meeting re railroad crossing.
Page	April 13-18, 1914	Surveying crossings.
Decatur	April 20-21, 1914	Meeting re elimination of crossings on Davis City-Lamoni road.
Union	April 22, 1914	Conference re Creston crossing.
Tama	April 23, 1914	Re Gladbrook crossing.
Union	April 24, 1914	Meeting re Afton crossing.
Tama	April 27, 1914	Surveying Gladbrook crossing.
Page	April 28, 1914	Meeting re Snake Creek crossing.
Polk	April 30, 1914	Getting notes for Beaver Ave. crossing.
Guthrie	May 1-2, 1914	Surveying crossing near Stuart.
Benton	May 4-5, 1914	Inspecting new road at crossing of C., R. I. & P.
Linn	May 6, 1914	Surveying Cedar Rapids-Center Point crossing.
Ringgold	May 7, 1914	Survey Diagonal crossing.
Page	May 8, 1914	Conference re Braddyville crossing.
Ringgold	May 9, 1914	Survey crossing at county road near Shannon City.
Benton	May 18-19-20-21, 1914	Making survey of C., R. I. & P. near Vinton and getting data for railroad right of way.
Tama	May 27-28, 1914	Survey for Traer crossing.
Benton	June 2-3, 1914	Conference re Vinton crossing.
Linn	June 4, 1914	Conference Cedar Rapids-Center Point crossing.
Polk	June 6, 1914	Meeting re Beaver Ave. crossing.
Polk	June 8, 1914	Surveying Beaver Ave. crossing.
Tama	June 11, 1914	Meeting re Gladbrook and Traer crossings.
Tama	June 12, 1914	Meeting re crossing near Gladstone.
Polk	June 17, 1914	Meeting re Beaver Ave. crossing.
Louisa	June 25-26-27, 1914	Surveying for relocation of township road re crossings.
Polk	June 29, 1914	Meeting Board re Beaver Ave. crossing.
Clarke	June 30, 1914	Surveying for Main Street Osceola crossing.
Polk	July 1, 1914	Meeting re Beaver Ave. crossing.
Clarke	July 2, 1914	Survey for crossing on Osceola-Lacelle Road.
Decatur	July 3, 1914	Survey for Goodman cut-off.
Cherokee	July 8-9-10-11-14-15-16-17-18, 1914	Making survey for new road at State Hospital grounds.
Polk	July 28, 1914	Surveying crossing near Mitchellville.
Poweshiek	July 30, 1914	Surveying crossing near Grinnell.
Poweshiek	July 31, 1914	Surveying for crossing at Brooklyn.
Washington	Aug. 13-14-15, 1914	Survey for Iowa Junction crossing.
Clarke	Aug. 17, 1914	Survey for crossing on Blue Grass road near Osceola.
Guthrie	Aug. 25-26, 1914	Meeting re C. R. I. & P. crossing on township road.

*Engineer Williams transferred to railroad crossing work on March 9, 1914.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Louisa	Sept. 2-3-4, 1914	Surveying for crossings on M. & St. L. and C., R. I. & P.
Monroe	Sept. 8-9-10, 1914	Survey crossing near Avery.
Monroe	Sept. 16-17-18, 1914	Surveys for crossings on M. & St. L., C., B. & Q., and Wabash Railways.
Marion	Sept. 19, 1914	Surveying for crossing near Knoxville.
Marion	Sept. 24, 1914	Surveying for crossing two miles west of Knoxville.
Marion	Sept. 25, 1914	Surveying for crossings at Hawkeye and Swan.
Woodbury	Oct. 1-2, 1914	Surveying for crossings near Sioux City and Lawton.
Polk	Oct. 6, 1914	Inspecting crossing near Mitchellville.
Jefferson	Oct. 9-10, 1914	Surveying crossing near Lockridge.
Gerro Gordo	Oct. 15-16-17, 1914	Surveying crossings near Rock Falls and Swaledale.
Mills	Oct. 20-21-22, 1914	Surveying for Malvern crossing.
Lucas	Oct. 23, 1914	Surveying for Russel crossing.
Mills	Oct. 27, 1914	Conference re Malvern crossing.
Mills	Oct. 28, 1914	Surveying for subway at Malvern crossing.

District No. 4.—L. M. Martin, Engineer.

Guthrie	March 22-23, 1914	Changes White Pole route.
Guthrie	March 24, 1914	Conference with board.
Shelby	March 25, 1914	Conference with board.
Audubon	March 26-27, 1914	General work with engineer.
Cass	April 3, 1914	Going over proposed work with county supervisors.
Guthrie	April 6-7, 1914	Meeting re bridge plans.
Pottawattamie	April 8, 1914	Meeting re season's work.
Adams	April 13, 1914	Bridge inspection.
Adams	April 14, 1914	Establishing grade lines.
Clarke	April 15, 1914	General work with engineer.
Lucas	April 16-17, 1914	General work with engineer.
Guthrie	April 19-20, 1914	Bridge letting.
Audubon	April 21, 1914	Letting on culvert pipe.
Cass	April 22, 1914	Proposed change in county road.
Pottawattamie	April 27, 1914	Road inspection.
Mills	April 28, 1914	General inspection trip.
Fremont	April 29-30, 1914	Getting bills for Horse Creek Bridge. Inspection
Montgomery	May 1, 1914	General work with engineer.
Decatur	May 3-4, 1914	Bridge letting.
Ringgold	May 5, 1914	Bridge letting.
Pottawattamie	May 6, 1914	Conference with board and Commissioner Holden.
Audubon	May 7, 1914	Road inspection.
Cass	May 8, 1914	Road inspection.
Cass	May 9, 1914	Bridge inspection.
Decatur	May 12, 1914	Inspecting footings.
Wayne	May 13-14, 1914	General work with engineer.
Ringgold	May 15, 1914	Re plan for 60 ft. bridge.
Audubon	May 18, 1914	Road inspection.
Montgomery	May 19, 1914	Road inspection.
Adams	May 20, 1914	Road inspection.
Wayne	May 21, 1914	County road hearing.
Union	May 22-23, 1914	Culvert inspection.
Cass	May 25, 1914	Re contract for wood bridge.
Pottawattamie	May 27-29, 1914	Re failure of concrete culvert pipe delivered by Wilson of Red Oak.
Pottawattamie	June 2, 1914	Road inspection.
Mills	June 3, 1914	Road inspection.
Fremont	June 4, 1914	General work with engineer.
Page	June 5, 1914	Road inspection.
Lucas	June 8, 1914	Road and bridge inspection.
Decatur	June 9, 1914	Road inspection.
Decatur	June 10, 1914	General work with engineer.
Adams	June 11-12, 1914	Grade approval.
Cass	June 15, 1914	Conference with board.
Pottawattamie	June 16, 1914	Inspection of bridge sites.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Harrison	June 17-18-19, 1914	Survey Lincoln Highway.
Pottawattamie	June 22, 1914	General work with engineer.
Fremont	June 23-24-25, 1914	Re prices for bridge work.
	June 26, 1914	Inspecting concrete pipe at Red Oak.
Cass	June 27, 1914	Bridge and culvert inspection.
Pottawattamie	June 29, 1914	Investigation road damage.
Cass	July 1, 1914	Conference with board and Mr. Holden.
Wayne	July 2, 1914	Hearing re county roads.
Pottawattamie	July 3, 1914	Re Macedonia crossing.
Cass	July 6, 1914	Re contract for wooden bridges.
Pottawattamie	July 7, 1914	Conference with board.
Mills	July 8-9, 1914	Conference re bridge work.
Taylor	July 10, 1914	Re plans for concrete abutments.
Pottawattamie	July 11, 1914	Inspecting road work.
	July 14, 1914	Inspecting Corn Belt road.
Shelby	July 15-16, 1914	Inspecting Panama bridge.
Union	July 7-17, 1914	Re bridge plans prepared by county engineer.
Adams	July 18, 1914	General work with engineer.
Audubon	July 20, 1914	Conference with board and Commissioner Holden.
Pottawattamie	July 21, 1914	Inspecting Gleason Ave.
Wayne	July 22, 1914	Inspecting road work.
Lucas	July 23, 1914	Inspecting site 40 ft. bridge.
Page	July 24, 1914	Re proposed county road.
Cass	July 25, 1914	General work with engineer.
Pottawattamie	July 27, 1914	Inspecting culverts.
Cass	July 29, 1914	Conference with board and Commissioner Holden.
Guthrie	July 30-31, 1914	Inspecting foundations for Brushy Creek bridge.
Lucas	Aug. 3, 1914	Bridge letting.
Wayne	Aug. 4, 1914	Re dragging county roads.
Ringgold	Aug. 5, 1914	Inspection concrete culvert.
Mills	Aug. 6, 1914	Re Emerson bridge plans.
Harrison	Aug. 7, 1914	Bridge notes.
Pottawattamie	Aug. 8, 1914	General work with engineer.
Cass	Aug. 10, 1914	Conference with board.
Guthrie	Aug. 11, 1914	Re Brushy Creek bridge.
Adair	Aug. 12, 1914	General work with engineer.
Wayne	Aug. 13, 1914	General work with engineer.
Union	Aug. 14-15, 1914	Inspection bad culverts.
Lucas	Aug. 17, 1914	Bridge letting.
Audubon	Aug. 18, 1914	General work with engineer.
Adams	Aug. 19-20, 1914	Road profiles.
Montgomery	Aug. 21, 1914	Re records in auditor's office.
Cass	Aug. 22, 1914	Complaint re White Pole road.
Harrison	Aug. 24, 1914	Re plans for work south of Woodbine.
Shelby	Aug. 25, 1914	Re repairs on Panama bridge.
Harrison	Aug. 26, 1914	Re profiles for road east of Mondamin.
Mills	Aug. 27, 1914	Re plans for Emerson bridge.
Fremont	Aug. 28, 1914	General work with engineer.
Pottawattamie	Aug. 29, 1914	Road inspection.
	Aug. 31, 1914	Attending State Fair at Des Moines.
	Sept. 1, 1914	Attending State Fair at Des Moines.
Page	Sept. 2, 1914	Culvert measurements.
Shelby	Sept. 3, 1914	Repairs on Panama bridge.
Audubon	Sept. 4, 1914	General work with engineer. Auditor's records.
Cass	Sept 5, 1914	Inspecting metal culverts.
Guthrie	Sept. 7-8, 1914	Brushy Creek bridge inspection.
Adair	Sept. 9, 1914	Investigation of complaint.
Page	Sept., 11-12, 1914	Re culverts in Shenandoah.
Mills	Sept. 14, 1914	Bridge letting. Emerson bridge.
Fremont	Sept. 15, 1914	Re approval bridge bills.
Page	Sept. 18-19, 1914	Conference with Supervisor Hussey.
Adair	Sept. 21, 1914	Road profile approval.
Clarke	Sept. 22-23, 1914	General work with engineer. Corrugated culverts.
Pottawattamie	Sept. 24, 1914	General work with engineer.
Harrison	Sept. 25, 1914	Bridge letting.
	Sept. 26, 1914	Road work.
Pottawattamie	Sept. 28, 1914	Investigation of complaint.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Montgomery	Sept. 29-30, 1914	Re records in auditor's office.
Mills	Oct. 1, 1914	Re plans for crooked culverts.
Adair	Oct. 2, 1914	Complaint by Mr. Lutz.
Harrison	Oct. 6-7, 1914	Road inspection with Commissioners Beard and Holden.
Clarke	Oct. 8, 1914	Re plans for culvert on Interstate Trail.
Lucas	Oct. 9-10, 1914	Re location of bridge.
Pottawattamie	Oct. 12, 1914	Investigation of accident.
Taylor	Oct. 13, 1914	Investigation of purchase of boiler pipe culverts.
Mills	Oct. 14, 1914	Re pile driving on Emerson bridge.
Page	Oct. 15, 1914	Inspection of complaint.
Shelby	Oct. 16-17, 1914	Re Panama bridge.
Adams	Oct. 20, 1914	County engineer's report.
Union	Oct. 21, 1914	County engineer's report. Inspection Cramwell bridge.
Clarke Decatur	Oct. 22, 1914	County engineer's report.
Wayne	Oct. 23, 1914	County engineer's report.
Cass	Oct. 24, 1914	Investigation of complaint on White Pole road.
Audubon	Oct. 26, 1914	County engineer's report.
Page	Oct. 28, 1914	Annual report, bridge letting.
Taylor	Oct. 29, 1914	Annual report.
Ringgold	Oct. 30, 1914	Annual report.
Lucas	Oct. 31, 1914	Annual report.

District No. 5—C. E. Olson, Engineer.

O'Brien	Dec. 8-9, 1913	Dispute over bridge location.
Scott	Dec. 11-14, 1913	County road approval.
Muscatine	Dec. 15, 1913	County road approval.
Louisa	Dec. 16, 1913	County road approval.
Des Moines	Dec. 17, 1913	County road approval.
Lee	Dec. 18, 1913	County road approval.
Muscatine	Dec. 19, 1913	County road approval.
Poweshiek	Dec. 20, 1913	County road approval.
Iowa	Jan. 11-12, 1914	Bridge work and meeting with board.
Scott	Jan. 13, 1914	Bridge inspection.
Jasper	Jan. 14, 1914	Inspection Reasoner bridge.
Poweshiek	Jan. 15, 1914	Re 1913 bridge contract.
Mahaska	Jan. 16, 1914	Re change in Great White Way.
Wapello	Jan. 18-19, 1914	County road approval.
Henry	Jan. 20, 1914	County road approval.
Jefferson	Jan. 21, 1914	County road approval.
Van Buren	Jan. 22-23, 1914	County road approval.
Mahaska	Jan. 24, 1914	County road approval.
Mahaska	Jan. 27-28, 1914	Trustees' meeting. General work.
Poweshiek	Feb. 5, 1914	Settlement for defective bridge work N. M. Stark.
Floyd	Feb. 9-10, 1914	Bridge letting.
Johnson	Feb. 11-12, 1914	County road approval.
	Feb. 18, 1914	Checking county maps.
Monroe	Feb. 25, 1914	General work.
Henry	Feb. 26, 1914	General work.
Des Moines	Feb. 27-28, 1914	General work.
Henry	March 2, 1914	General work.
Washington	March 3, 1914	General work.
Keokuk	March 4, 1914	General work.
Muscatine	March 5, 1914	General work.
Wapello	March 6-7, 1914	General work.
Marion	March 9-10, 1914	Bridge letting.
Jasper	March 11, 1914	General work.
Iowa	March 12, 1914	General work.
Jefferson	March 13, 1914	General work.
Appanoose	March 16-17, 1914	General work.
Van Buren	March 18-19, 1914	Trustees' meeting.
Iowa	March 20-21, 1914	Bridge measurements.
Washington	March 24-25-26, 1914	Profile. Bridge measurements.
Louisa	March 27-28, 1914	Inspection of complaint.

SCHEDULE THIRTY-FOUR—Continued.

District No. 5.—J. S. Morrison, Engineer.

County	Date	Kind of Work
	May 4, 1914.....	Conference with commission.
Marion.....	May 5-6, 1914.....	General inspection trip.
Poweshiek.....	May 7-8-9, 1914.....	General inspection trip.
	May 10, 1914.....	Conference with commission.
Iowa.....	May 11-12, 1914.....	Re washout at Marengo.
Louisa.....	May 13-14, 1914.....	Inspecting grades and profile.
Lee.....	May 15-16, 1914.....	Inspecting grade and profile.
Monroe.....	May 17-18-19, 1914..	Inspection road complaint.
Wapello	May 20, 1914.....	Inspection roads and bridges.
Davis.....	May 21, 1914.....	Complaint re culvert.
Jefferson.....	May 22-23, 1914.....	Re contested road.
	May 24-26, 1914.....	Conference with commission.
Poweshiek.....	May 27, 1914.....	Road and bridge inspection.
Mahaska.....	May 28-29-30, 1914 ..	Profile approval and making surveys.
Scott.....	June 1-2-3, 1914.....	Profile approval.
Marion.....	June 4, 1914.....	Bridge letting.
Monroe.....	June 5-6, 1914.....	General work.
Lee.....	June 7-8, 1914.....	Bridge letting.
Des Moines.....	June 11-12-13, 1914..	Profile approval.
Wapello.....	June 17-18, 1914.....	General.
Henry.....	June 14-15, 1914.....	Profile approval.
Keokuk.....	June 19-20, 1914.....	Road and bridge inspection.
Washington.....	June 22, 1914.....	Bridge letting.
Muscatine.....	June 23-24, 1914.....	Profile approval.
Jefferson.....	June 25, 1914.....	Re contested road.
Davis.....	June 26-27, 1914.....	Re dangerous bridges.
Jasper.....	June 29-30, 1914.....	Bridge letting.
Poweshiek.....	July 1, 1914.....	Conference with Railroad Commission re dangerous railway crossings.
Iowa.....	July 2-3, 1914.....	Profile approval.
Van Buren.....	July 6, 1914.....	General inspection.
Washington.....	July 7-8, 1914.....	General inspection.
Appanoose.....	July 9-10-11, 1914...	Road work on profiles.
Davis.....	July 13, 1914.....	Bridge letting.
Lee.....	July 14-15-16, 1914..	Bridge surveys.
Louisa.....	July 17, 1914.....	General road work.
Des Moines.....	July 18, 1914.....	General road work.
Monroe.....	July 20, 1914.....	Road and bridge inspection.
Mahaska.....	July 21, 1914.....	Re Bellefountaine bridge.
Johnson.....	July 22-23, 1914.....	Profile approval.
Davis.....	July 24-25, 1914.....	General bridge work.
Keokuk.....	July 27-28, 1914.....	Bridge letting and general work.
Washington.....	July 29-30, 1914.....	R. R. crossings and general work.
Monroe.....	July 31, 1914.....	Inspection of road and profile approval.
Monroe.....	Aug. 1, 1914.....	Inspection of road and profile approval.
Marion.....	Aug. 3-4, 1914.....	Profile approval.
Muscatine.....	Aug. 5-6, 1914.....	Profile approval.
Scott.....	Aug. 7-8, 1914.....	Inspection new bridges.
Mahaska.....	Aug. 10, 1914.....	Bridge survey near Rosehill.
Davis.....	Aug. 11-12, 1914.....	Bridge survey near Bloomfield.
Appanoose.....	Aug. 13, 1914.....	Profile and grade approval.
Lee.....	Aug. 14, 1914.....	General bridge work.
Davis.....	Aug. 17, 1914.....	Inspecting roads and bridges.
Des Moines.....	Aug. 18, 1914.....	Inspecting roads and bridges.
Poweshiek.....	Aug. 19, 1914.....	Profile and grade approval.
Johnson.....	Aug. 20-21, 1914.....	Profile and grade approval.
Mahaska.....	Aug. 22, 1914.....	Survey bridge near Rosehill.
Des Moines.....	Aug. 25-26, 1914.....	Road and bridge inspection.
Davis.....	Aug. 27-28, 1914.....	Road and bridge inspection.
	Aug. 29, 1914.....	Conference with Commission.
Monroe.....	Aug. 30, 1914.....	Inspection of complaint.
Scott.....	Aug. 31, 1914.....	Inspection bridges and concrete arch.
Wapello.....	Sept. 1, 1914.....	Survey for grading concrete road near Eddyville.
Wapello.....	Sept. 2-3, 1914.....	State Fair Exhibition.
Henry.....	Sept. 4-5, 1914.....	Re grading for Eddyville road.
Des Moines.....	Sept. 7, 1914.....	Proposed relocation of road.
Lee.....	Sept. 8, 1914.....	Inspection road and bridge work.
Van Buren.....	Sept. 9-10, 1914.....	Conference re bridge work.
Mahaska.....	Sept. 11, 1914.....	Road and bridge work.
	Sept. 12, 1914.....	Re road complaint.

SCHEDULE THIRTY-FOUR—Continued.

County	Date	Kind of Work
Henry.....	Sept. 14-15, 1914.....	Road surveys and inspection.
Louisa.....	Sept. 17, 1914.....	Profile approval.
Muscatine.....	Sept. 18, 1914.....	Profile approval.
	Sept. 19-20, 1914.....	Conference with commission.
Jasper.....	Sept. 21, 1914.....	Investigation of complaint.
Scott.....	Sept. 22-23, 1914.....	Emergency work.
Marion.....	Sept. 24, 1914.....	Investigation of complaint.
Monroe.....	Sept. 25, 1914.....	Investigation of complaint.
Appanoose.....	Sept. 26, 1914.....	Investigation of complaint.
Lee.....	Sept. 27-28, 1914.....	Conference re road work.
Des Moines.....	Sept. 29, 1914.....	Road and bridge investigation.
Mahaska.....	Sept. 30, 1914.....	Bridge letting.
Washington.....	Oct. 1-2, 1913.....	Survey for change in road.
Keokuk.....	Oct. 3, 1914.....	General inspection.
	Oct. 5-6, 1914.....	Conference with commission.
Louisa.....	Oct. 7-8-9-10, 1914..	Re-material for concrete road at Columbus Junction.
Davis.....	Oct. 13, 1914.....	Re road complaints.
Marion.....	Oct. 15, 1914.....	Re road complaints.
Monroe.....	Oct. 16, 1914.....	Profile approval.
Appanoose.....	Oct. 17, 1914.....	Investigation of complaint.
Van Buren.....	Oct. 19-20, 1914.....	General inspection.
Lee.....	Oct. 21, 1914.....	Conference and road work.
Des Moines.....	Oct. 22, 1914.....	Conference and road work.
Henry.....	Oct. 23-24, 1914.....	Annual report conference.
Keokuk.....	Oct. 26, 1914.....	Re South English bridge work.
Washington.....	Oct. 27, 1914.....	Conference with engineer.
Scott.....	Oct. 28, 1914.....	Conference with engineer.
Louisa.....	Oct. 29, 1914.....	Conference with engineer.
Jefferson.....	Oct. 30, 1914.....	Conference with engineer.
Wapello.....	Oct. 31, 1914.....	Re grading for Eddyville road.

O. W. Crowley, Engineer.

Hardin.....	Dec. 1-31, 1913.....	Inspecting Eldora viaduct.
Hardin.....	Jan. 1-31, 1914.....	Inspecting Eldora viaduct.
Hardin.....	Feb. 1-8, 1914.....	Inspecting Eldora viaduct.
Hardin.....	Feb. 19-28, 1914.....	Inspecting Eldora viaduct.
Hardin.....	March 1-31, 1914.....	Inspecting Eldora viaduct.
Hardin.....	April 1-4, 1914.....	Inspecting Eldora viaduct.
Cerro Gordo.....	April 13-14, 1914.....	Inspecting Stewart Avenue bridge.
Hardin.....	April 15, 1914.....	Inspecting Eldora viaduct.
Cerro Gordo.....	April 16-18, 1914.....	Inspecting Stewart Avenue bridge.
Hardin.....	April 21, 1914.....	Inspecting Eldora viaduct.
Cerro Gordo.....	April 22-29, 1914.....	Inspecting Stewart Avenue bridge.
Hardin.....	April 30, 1914.....	Inspecting Eldora viaduct.
Cerro Gordo.....	May 1-2, 1914.....	Inspecting Stewart Avenue bridge.
Hardin.....	May 3-6, 1914.....	Inspecting Eldora viaduct.
Cerro Gordo.....	May 7-13, 1914.....	Inspecting Stewart Avenue bridge.
Hardin.....	May 14, 1914.....	Inspecting Eldora viaduct.
Cerro Gordo.....	May 15-16, 1914.....	Inspecting Stewart Avenue bridge.
Hardin.....	May 18-31, 1914.....	Inspecting Eldora viaduct.
Cerro Gordo.....	June 1-5, 1914.....	Inspecting Stewart Avenue bridge.
Hardin.....	June 6-17, 1914.....	Inspecting Eldora viaduct.
Cerro Gordo.....	June 18-30, 1914.....	Inspecting Stewart Avenue bridge. Paid by county.
Cerro Gordo.....	July 1-21, 1914.....	Inspecting Stewart Avenue bridge.
Hardin.....	July 22, 1914.....	Inspecting Eldora viaduct.
Cerro Gordo.....	July 28-30, 1914.....	Inspecting Park bridge in Mason City.
Hardin.....	Aug. 3-4, 1914.....	Final settlement Eldora viaduct.
Emmet.....	Aug. 5-31, 1914.....	Inspecting Lincoln Street bridge. Paid half by county.
Emmet.....	Sept. 1-30, 1914.....	Inspecting Lincoln Street bridge. Paid half by county.
Emmet.....	Oct. 1-31, 1914.....	Inspecting Lincoln Street bridge. Paid half by county.

SCHEDULE THIRTY-FOUR—Continued.

W. F. Beard, Engineer.

County	Date	Kind of Work
Lyon	May 21-31, 1914	Engineer on Larchwood-Inwood road.
Lyon	June 1-18, 1914	Engineer on Larchwood-Inwood road.
Pottawattamie	June 19-30, 1914	Acting as county engineer.
Pottawattamie	July 1-31, 1914	Acting as county engineer.
Pottawattamie	Aug. 1-9, 1914	Acting as county engineer.
Louisa	Aug. 10-31, 1914	In charge of concrete road construction near Columbus Junction.
Louisa	Sept. 1-30, 1914	In charge of concrete road construction near Columbus Junction.
Louisa	Oct. 1-31, 1914	In charge of concrete road construction near Columbus Junction.

PART TWO—SECTION FOUR

EDUCATIONAL DEPARTMENT.

December 1913 to November 1914.

Engineer in Charge, J. S. Dodds.

Bulletin Editor, J. W. Eichinger.

In 1913 the educational work of the Highway Commission was barely started. This year the demands have been greater even than seemed probable at the time the department was established.

Meetings.

This department has furnished one hundred and fifty addresses or speakers in attendance at public gatherings as follows:

Meetings held by Commercial, Community or Booster Clubs	25
Short Courses of the Iowa State College Extension Department	8
Farmers' institutes	11
Trustees' meetings	64
Corn show	1
College classes at Ames	5
Consolidated school meetings	10
Conventions	10
Road demonstration	1
Chautauqua	1
Church service	1
State and county fairs	6
Good roads picnic	1
Supervisors' conventions	6
Total	150

At most of these meetings one or more speakers representing the Educational Department gave an address explaining the road work of the State under the new road law, and answering the questions of those who wished matters explained in detail.

The addresses given to the Farmers' Short Courses are evening lectures with lantern slide illustrations of the work being done now in the state, as compared with the work formerly done. The Farmers' Institutes are generally addressed in the afternoon, and the lantern slides usually used in these meetings.

The different organization meetings are of various kinds, and have for their purpose the distribution of correct information. At

the trustees' meetings a real service is performed by the speakers in clearing up misunderstanding relative to the duties of road officials. There has been a much better understanding of the work since these meetings have been carried on, and better results in the work have followed.

The meetings held in the consolidated schools were begun as an experiment, and will be continued as they are filling a real need in the school problem of the State. These meetings are helping the schools to become social centers, and they are enlisting new forces in the fight for a better system of highway administration. A glance at the typical program included will illustrate the character of these meetings.

TYPICAL PROGRAM.

GOOD ROADS DAY—CONSOLIDATED SCHOOLS.

AFTERNOON.

Recitations by classes on the essentials of proper road administration as embodied in the Iowa law.

References:

Iowa Highway Commission, June Service Bulletin.
Iowa Highway Commission, Monthly Service Bulletin.
U. S. Office of Public Roads Bulletins.
The Road Laws of Iowa, 1913 edition, Secretary of State.
History of Road Legislation in Iowa, I. S. C.
Publications of Association of Portland Cement Manufacturers.
Publications of Paving Brick Manufacturers' Association.

These and other references are being sent to each school.

Papers by pupils:

The Relation of the Highway to the Early Development of the United States.
The Development of Road Building in the United States.
The Relation of the Country Road to the Cost of Living.
The Relation of the Country Road to the Farm.
The Relation of the Country Road to Prosperity.
The Relation of the Country Road to Society.
The Relation of the Country Road to Education.

Apt Poems:

"What Caesar Did." P. 8, February Service Bulletin.
"If," Rudyard Kipling. P. 8, March Service Bulletin.
"The Song of the Road," Gordon Wilson. Being sent.
"Civil Engineers," George Fitch. P. 8, March Service Bulletin.

EVENING.

Picnic supper for everybody. Music.

Papers by students—five minutes or less to each:

Why Road Dragging Pays.

How to Drag the Road (including a system of patrol).
Relation of the Road to Consolidation.
Why Permanent Bridges are Cheaper in the End Than Temporary Structures.
What this School Can Do to Help Make Better Roads in this District.

The Road to Better Schools, an illustrated lecture by John S. Dodds, engineer in charge of the educational department of the Iowa Highway Commission.

Exhibit.

Exhibit of enlarged photographs showing road conditions, methods of improvements and results.

The programs are merely suggestive, and may be rearranged at the discretion of the various schools.

If your school closes for the summer before the date suggested by the Commission, new dates can be selected for the next school year.

The meetings with church organizations, classes and societies of the college at Ames take advantage of another opportunity to spread the gospel of better road work. The conventions, fairs and picnics attended are covered more fully in the description of the educational exhibits of this department.

A conservative estimate places the number of people reached at these meetings at 40,000. The attendance at these gatherings has been very satisfactory, and the interest in better roads has been intense. One pleasing feature of this work has been the evident desire of a large majority of the hearers to get at the real facts in the road administrative problem.

The experience of this year would warrant an effort to reach more of the Farmers' Short Courses in their evening meetings, and put on a trustees' road school in every county of the state. Extra effort must be made to convert the trustees to the faith of more modern methods of doing highway work. The consolidated school meetings have proven a success, and should be encouraged for the future. Much good educational work has been done at the fairs and conventions attended, and more of the commercial and booster clubs should be encouraged to call upon the Highway Commission for assistance in boosting for better roads.

SCHEDULE THIRTY-FIVE.

SUMMARY OF EDUCATIONAL MEETINGS HELD NOVEMBER, 1913, TO NOVEMBER, 1914.

Name	Position	Number of Meetings
A. Marston	Commissioner	Eighteen
J. W. Holden	Commissioner	Twenty-four
H. C. Beard	Commissioner	Six
Thos. H. MacDonald	Highway Engineer	Sixteen
J. S. Dodds	Educational Engineer	Fifty-five
A. L. Ames	Lecturer	Thirty-one
Total number of meetings		One hundred fifty

Publications.

The official publication of the Educational Department is the Monthly Service Bulletin, the first copy of which appeared in a two thousand copy issue in December 1913. The circulation constantly increased to meet the demands for it, until there were twelve thousand copies published in July,and twelve thousand each issue thereafter to date. Seventy-five thousand copies of this bulletin have been issued and mailed. The mailing list covers state, county and township officials, and all the newspapers of the state, as well as a large number of names by special request. The mailing of this service bulletin is done by the bulletin mailing department of the Iowa State College. This department is equipped with modern machinery, which mails large issues at a low cost.

A strong effort has been made to have this publication entered as second class mail matter. Because no subscription price is charged, and because no special provision has been made at Washington for this class of publication, the Highway Commission is compelled to pay the regular third class rate for mailing.

During the twelve month period just passed, the following publications have been issued.

Twelve issues Monthly Service Bulletin. All available copies distributed.

The Iowa Road Law, How it Was Made—Senator A. L. Ames, May, 1914, Supplement. A limited number of copies still available.

Community Life and Good Roads, October, 1914, Supplement, Prof. John E. Brindley. Published by request of the Federation of Women's Clubs. Now available for distribution.

In addition to the above there have been numerous articles prepared for the press, and particularly for the technical magazines.

Exhibits.

The Educational Department has prepared a very complete photographic exhibit of road and bridge construction views. These have been used in the Good Roads Day programs in ten consolidated schools, at the Butler county fair at Allison, at the Bankers' Convention at Clinton, at the Supervisors' Convention at Cedar Rapids, and at the Highway Commission headquarters at the Iowa State Fair. After the State Fair at Des Moines the exhibit was set up at the Northwestern Road Congress at Milwaukee. Here it attracted much comment, and effectively advertised the road work of the state. Iowa was formerly looked upon as a state with bad roads, and this exhibit at Milwaukee is only one of the many factors correcting this erroneous idea. This material will also be used for instruction purposes this winter.

School of Instruction for Highway Engineers.

The first annual School of Instruction for Highway Engineers was held at Ames, December 29, 1913 to January 7, 1914. The course of instruction was given by Prof. T. R. Agg, head of the course of highway engineering of the Iowa state college, and the engineers of the Highway Commission. A convention of county engineers was held as a part of the two weeks program.

PROGRAM.

MONDAY, DECEMBER TWENTY-NINTH.

Registration at office of Iowa Highway Commission.

7:30 p. m.—General meeting ..... Mr. MacDonald, Chairman
Short addresses of welcome—Dean Marston, H. C. Beard.

TUESDAY, DECEMBER THIRTIETH.

8:30 a. m.—Surveys and Preparation of Road Plans—Legal Requirements ..... Mr. Ames

1:30 p. m.—Surveys and Preparation of Bridge Plans—Legal Requirements ..... Mr. White

7:30 p. m.—Evening meeting ..... Mr. H. C. Beard, Chairman
Practical Operation of State Aid ..... Mr. A. R. Hirst, State Highway Engineer, Madison, Wis.

WEDNESDAY, DECEMBER THIRTY-FIRST.

8:30 a. m.—Choice of Type of Road and Principles of Design..... ..... Prof. T. R. Agg

1:30 p. m.—(a) Contracts ..... Mr. MacDonald
(b) Concrete Materials ..... Prof. T. R. Agg

7:30 p. m.—Evening meeting ..... Dean Marston, Chairman
Bonds for Road Improvement ..... D. W. Norris, Jr. Editor Times-Republican, Marshalltown, Iowa.

THURSDAY, JANUARY FIRST.

8:30 a. m.—Road Building Material and Methods of Testing .....
..... Prof. T. R. Agg
1:30 p. m.—Specifications for Highway Bridges ..... Mr. MacDonald
7:30 p. m.—New Year's Program ..... Prof. T. R. Agg, Chairman
1914—A New Year—
New Opportunities ..... Dr. R. A. Pearson
President of Iowa State College.
Concrete Road Building ..... Illustrated
Motion Pictures supplied by Universal Portland Cement Co.

FRIDAY, JANUARY SECOND.

8:30 a. m.—Estimates of Cost of Roads—
Relative Costs of Various Types of Roads and Pavements .....Prof. T. R. Agg
1:30 p. m.—Design of Concrete Highway Bridges ..... Mr. McCullough
7:30 p. m.—Evening meeting ..... H. C. Beard, Chairman
Asphalt and Its Uses in Road Building....Mr. John MacVicar
Illustrated by Motion Pictures supplied by the Barber Asphalt Paving Co.

SATURDAY, JANUARY THIRD.

8:30 a. m.—Specifications for Road and Pavement Construction ....
..... Prof. T. R. Agg
1:30 p. m.—Estimates of Costs of Highway Bridges ..... Mr. Ames
7:30 p. m.—Evening meeting—General meeting for all Short Course students to be held in assembly room, secnod floor Agricultural Hall ..... Dean C. F. Curtiss, Chairman
Music ..... The Trio
The New Era in Road Building in Iowa ..... Dean Marston, Chairman of Iowa Highway Commission.
Illustrated Lecture on Road and Bridge Construction ...
..... Thos. H. MacDonald, Engineer, Iowa Highway Commission.

MONDAY, JANUARY FIFTH.

8:30 a. m.—Cost Keeping and Accounting ..... Mr. Ames
1:30 p. m.—Design of Steel Highway Bridges ..... Mr. Kelley
7:30 p. m.—Evening meeting ..... H. C. Beard, Chairman
Comparative Study of the State Road Laws with Special Reference to Basic Principles of the Iowa Road Law
.....Professor Brindley, Iowa State College.
Gravel and Macadam Roads—Illustrated talk . Prof. T. R. Agg

TUESDAY, JANUARY SIXTH.

8:30 a. m.—Organization of Construction and Maintenance Forces and Equipment—
(a) Earth Roads ..... Mr. MacDonald
(b) Surfaced Roads ..... Prof. T. R. Agg

1:30 p. m.—Classification of Drain Tile ..... Dr. Beyer
Iowa State College.
Protective Coatings and Preservatives ..... Mr. Coye
7:30 p. m.—Evening meeting.....Mr. MacDonald, Chairman
Concrete Roads—Illustrated ..... Mr. A. N. Johnson
State Highway Engineer, Springfield, Ill.

WEDNESDAY, JANUARY SEVENTH.

8:30 a. m.—Modern Road Making Machinery—Illustrated—
(a) Earth Roads ..... Mr. MacDonald
(b) Surfaced Roads ..... Prof. T. R. Agg
1:30 p. m.—Building Culverts and Small Bridges by Day Labor ....
..... Mr. White
7:30 p. m.—Evening session ..... J. W. Holden, Chairman
Economics of Highway Improvement ..... Dr. L. I. Hewes, Office of Public Roads.
Building Brick Roads ..... Mr. Wm. P. Blair, Secretary N. P. B. M. A., Cleveland, Ohio.

One hundred fifteen engineers were in attendance during the week, seventy-seven of whom were county engineers.

In results the short course has proven itself worthy of a permanent place in Iowa plans for road betterment. Before the meetings each engineer was a separate unit working alone out in his county. After the course, all those who attended began to feel and act a part of one big organization.

Photographs.

No part of the work of the Educational Department could be carried on effectively without the use of photographs. About one thousand feet of motion picture film has been produced to illustrate actual road working conditions in the state. This film was put in circulation just before the close of the year, and will be shown in practically every town in the state. Up-to-date methods of doing highway work are now carried to every man in the state by this department on the screens of the moving picture houses. The Highway Commission is thus making use of the most modern methods in educational work.

Photographs of very bad roads, methods of improvement, and conditions after improvement are carried to the people by means of enlarged views in the exhibit of about one hundred 20x24 enlargements, by lantern slide views and by illustrations in the different publications.

A glance through the reports of the different departments of the Highway Commission will demonstrate the importance of the work of the photographic division of the Educational Department.

Two hundred and fifty progress views of important work have been taken as a source of information for future reference. These are developed as illustrations in the bulletins to carry their messages to other localities. They are also made into lantern slides and shown at road meetings to illustrate what has been done, and are reproduced as enlargements for the exhibits. In this way the people of Iowa have brought to their very doors the best information available on modern highway construction.

Relation of Highway Improvement to Rural Development.

In connection with the preparation of the publications the Educational Department is making a detailed study of the relation of highway improvement to rural development. Just now a close study is being made of the relations between the roads and improved rural schools, especially consolidated schools. The results of this study will be published in an early bulletin.

Engineers' Short Course.

Plans are now well matured for the second short course for highway engineers.

SCHEDULE THIRTY-SEVEN.

*PERSONNEL AND SALARIES OF EDUCATIONAL DEPARTMENT JULY, 1913, TO JUNE 30, 1914.

Name	Salary	Position
J. S. Dodds	$1,800	Educational Engineer
J. W. Eichinger	1,500	Bulletin Editor

SCHEDULE THIRTY-SIX.

ROAD MEETINGS BY COUNTIES.

SCHEDULE OF A. MARSTON FROM NOV. 1, 1913, TO NOV. 1, 1914.

Date	Town	County	Organization
Nov. 25, 1913	Forest City	Winnebago	Booster Club
Jan. 21, 1914	Manchester	Delaware	Farmers Institute
Jan. 22	Ottumwa	Wapello	Commercial Club
Jan. 27 and 28.	Oskaloosa	Mahaska	Commercial Club
Feb. 6	Cherokee	Cherokee	Trustees
Feb. 11	Buffalo Center	Winnebago	Short Course
Feb. 19	Hampton	Franklin	Trustees
Feb. 20	Storm Lake	Buena Vista	Supervisors
Mar. 4	Harlan	Shelby	Supervisors
Mar. 6	Eldora	Hardin	Trustees
Mar. 10	Clarinda	Page	Trustees
Mar. 11	Storm Lake	Buena Vista	Trustees
Mar. 24	Guthrie Center	Guthrie	Trustees
Mar. 25	Atlantic	Cass and Audubon.	Supervisors
Mar. 26	Harlan	Shelby	Supervisors
Mar. 27	Jefferson	Greene	Trustees
Aug. 18 and 20.	Cedar Rapids	Linn	Supervisors
Aug. 28	Des Moines	Polk	State Fair

*In addition to the regular employes in this department qualified lecturers are engaged at times, averaging about $10.00 per day. During the past year, Mr. A. N. Johnson, Mr. A. R. Hirst and Mr. A. L. Ames have given some lectures.

SCHEDULE OF J. W. HOLDEN, FROM NOV. 1, 1913, TO NOV. 1, 1914.

Date	Town	County	Organization
Feb. 4	Denison	Crawford	Trustees
Feb. 6	Bloomfield	Davis	Trustees
Feb. 10	Carroll	Carroll	Trustees
Feb. 11	Sac City	Sac	Trustees
Feb. 20	Storm Lake	Buena Vista	Supervisors
Feb. 21	Grand Junction	Greene	Trustees
Feb. 23	Jefferson	Greene	Commercial Club
Feb. 25	Carroll	Carroll	Trustees
Feb. 26	Onawa	Monona	Trustees
Mar. 4	Harlan	Shelby	Supervisors
Mar. 5	Logan	Harrison	Trustees
Mar. 10	Clarinda	Page	Trustees
Mar. 11	Storm Lake	Buena Vista	Trustees
Mar. 12	Boone	Boone	Trustees
Mar. 17	Carroll	Carroll	Commercial Club
Mar. 18	Missouri Valley	Harrison	Supervisors
Mar. 21	Indianola	Warren	Trustees
Mar. 23	Casey	Guthrie	Boosters and Supervisors
Mar. 24	Guthrie Center	Guthrie	Trustees
Mar. 25	Atlantic	Cass	Boosters and Supervisors
Mar. 26	Harlan	Shelby	Boosters and Supervisors
Mar. 27	Jefferson	Greene	Trustees
Aug. 18 and 20.	Cedar Rapids	Linn	Supervisors
Aug. 31-Sept. 2.	Des Moines	Polk	State Fair

SCHEDULE OF H. C. BEARD, FROM NOV. 1, 1913, TO NOV. 1, 1914.

Date	Town	County	Organization
Mar. 3, 1914	Des Moines	Polk	Trustees
Mar. 17	Corning	Adams	Trustees
Mar. 14	Albia	Monroe	Trustees
Aug. 24	Des Moines	Polk	State Fair
Oct. 23	Inconium	Appanoose	Road Meeting
Oct. 28	Milwaukee	Wisconsin	N. W. Road Congress

SCHEDULE OF T. H. MacDONALD, FROM DEC. 1, 1913, TO NOV. 1, 1914.

Date	Town	County	Organization
Nov. 22, 1913	Mason City	Cerro Gordo	Commercial Club
Dec. 18	Mt. Ayr	Ringgold	Booster Club
Jan. 13, 1914	Oskaloosa	Mahaska	Commercial Club
Feb. 23	Traer	Tama	City Council
Feb. 24	Adel	Dallas	Trustees
Feb. 25	Adair	Adair	Road Association
Feb. 6	Bloomfield	Davis	Trustees
Feb. 15-19	Chicago		Concrete Inst.
Mar. 6	Mason City	Cerro Gordo	Trustees
Mar. 3	Des Moines	Polk	Trustees
June 3	Clinton	Clinton	Bankers
July 7	Ames	Story	Summer School
Aug. 18-20	Cedar Rapids	Linn	Supervisors
Aug. 31-Sept. 2.	Des Moines	Polk	State Fair
Aug. 25	Ames	Story	Postmasters
Oct. 28	Milwaukee		N. W. Road Congress

SCHEDULE OF J. S. DODDS, FROM NOV. 1, 1913, TO NOV. 1, 1914.

Date	Town	County	Organization
Nov. 24-25, 1913	Forest City	Winnebago	Booster Club
Dec. 1	Central City	Linn	Community Club
Dec. 10	Derby	Lucas	Short Course
Dec. 11	Bloomfield	Davis	Short Course
Dec. 15	Lamoni	Decatur	Short Course
Dec. 19	Sidney	Fremont	Farmers' Institute
Jan. 1, 1914	Greenfield	Adair	Short Course
Jan. 9	Oskaloosa	Mahaska	Farmers' Institute
Jan. 20	Washta	Cherokee	Farmers' Institute
Jan. 23	Iowa City	Johnson	Farmers' Institute
Jan. 27	Spirit Lake	Dickinson	Trustees
Jan. 28	Odebolt	Sac	Farmers' Institute
Feb. 3	Mt. Ayr	Ringgold	Trustees
Feb. 5	Bradgate	Humboldt	Short Course
Feb. 6	Red Oak	Montgomery	Institute
Feb. 11	DeWitt	Clinton	Institute
Feb. 13	Webster City	Hamilton	Short Course
Feb. 19	Harcourt	Webster	Corn Show
Feb. 24	Peterson	Clay	Short Course
Feb. 25	Greene	Butler	Farmers' Institute
Feb. 26	Ames	Story	Curtis Club
Mar. 3	Waukon	Allamakee	Commercial Club
Mar. 5	Villisca	Montgomery	Commercial Club
Mar. 11	Storm Lake	Buena Vista	Trustees
Mar. 12	Nashua	Chickasaw	Commercial Club
Mar. 17	Maquoketa	Jackson	Trustees
Mar. 18	Clinton	Clinton	Trustees
Mar. 26	Sibley	Osceola	Trustees
Mar. 27	Dawson	Dallas	Community Club
Apr. 22	Clemens	Marshall	Consolidated School
Apr. 28	Ellsworth	Hamilton	Consolidated School
Apr. 30	Plymouth	Cerro Gordo	Consolidated School
May 1	Orchard	Mitchell	Consolidated School
May 7	Wyman	Louisa	Consolidated School
May 11	College Springs	Page	Consolidated School
May 12	Kirkman	Shelby	Consolidated School
May 25	Garfield Center	Clay	Consolidated School
May 27	Milford	Clay	Consolidated School
May 29	Dolliver	Emmet	Consolidated School
June 3-6	Clinton	Clinton	Bankers Convention
June 19	Arnolds Park	Dickinson	School Convention
July 1	Eddyville	Wapello	Supervisors
July 4	Olin	Jones	Chautauqua
July 8	Humboldt	Humboldt	Community Club
July 24	Lake City	Calhoun	Good Roads Day
Aug. 4-5	Dedham	Carroll	M. E. Church
Aug. 18-20	Cedar Rapids	Linn	Supervisors Convention
Aug. 26	Des Moines	Polk	State Fair
Sept. 5	Des Moines	Polk	State Fair
Sept. 15-16	Allison	Butler	County Fair
Sept. 23	Laudeville	Dubuque	Dairy Picnic
Sept. 24-29	Ames	Story	English Class
Oct. 28	Milwaukee		N. W. Road Congress

SCHEDULE OF SENATOR A. L. AMES, FROM DEC. 1, 1913, TO NOV. 1, 1914.

Date	Town	County	Organization
Dec. 18, 1913	Mt. Ayr	Ringgold	Booster Club
Jan. 26, 1914	Knoxville	Marion	Trustees
Jan. 27	Albia	Monroe	Trustees
Jan. 28	Oskaloosa	Mahaska	Trustees
Jan. 29	Montezuma	Poweshiek	Trustees
Jan. 30	Sigourney	Keokuk	Trustees
Jan. 31	Washington	Washington	Trustees
Feb. 4	Denison	Crawford	Trustees
Feb. 11	Sac City	Sac	Trustees
Feb. 17	Decorah	Winneshiek	Trustees
Feb. 20	Dubuque	Dubuque	Trustees
Feb. 24	Rock Rapids	Lyon	Trustees
Feb. 25	Carroll	Carroll	Trustees
Feb. 26	Onawa	Monona	Trustees
Feb. 28	Waterloo	Black Hawk	Trustees
Mar. 3	Waukon	Allamakee	Trustees and Commercial Club
Mar. 4	Charles City	Floyd	Trustees
Mar. 5	Osage	Mitchell	Tax Payers Convention
Mar. 6	Mason City	Cerro Gordo	Trustees
Mar. 9	Marion	Linn	Commercial Club
Mar. 10	Clarion	Wright	Trustees
Mar. 11	Rockwell City	Calhoun	Trustees
Mar. 12	Garner	Hancock	Trustees
Mar. 13	Waverly	Bremer	Trustees
Mar. 17	Corning	Adams	Trustees
Mar. 18	Creston	Union	Trustees
Mar. 19	Keosauqua	Van Buren	Trustees
Mar. 21	Indianola	Warren	Trustees
Mar. 25-26	Des Moines	Polk	Trustees
Mar. 28	Glenwood	Mills	Trustees
Apr. 3	Allison	Butler	Trustees

PART TWO—SECTION FIVE

OFFICE AND ACCOUNTING DEPARTMENT. DECEMBER, 1913, TO NOVEMBER, 1914.

In Charge: J. H. Ames, Assistant Highway Engineer; L. A. Wilkinson, Sr., Accountant.

The detailed outline of the work handled under this department is shown in the report for 1913.

Blank Forms.

In addition to the eighty blank forms which were prepared prior to December, 1913, the Office Department has issued a number of standard blank forms for county and office use. The following list is complete from December 1, 1913, to December 1, 1914, with the exception of forms No. 81 to No. 90 which form a part of the county engineers' reports for 1913 and 1914.

SCHEDULE SIXTEEN—A.

BLANKS PREPARED FOR UNIFORM ACCOUNTING AND RECORDS.

74-a Report of Township Clerk for Township Road System, 1914.
79-a Report of Township Road Superintendent to Clerk for 1914.
80 County Engineers' Report Blank.
81 County Engineers' Report Blank.
*82 Report on Dangerous Railroad Crossings.
83 County Engineers' Report Blank.
84 County Engineers' Report Blank.
85 County Engineers' Blank.
86 County Engineers' Blank.
87 County Engineers' Blank.
88 County Engineers' Blank.
89 County Engineers' Blank.
90 County Engineers' Blank.
*94 Job Record—Designing Room.
*95 Engineers' Report—Compilation Checking Sheet.
96 Receipt for Payroll.
97 Contract for Bridge Construction.
*98 Railroad Crossing Report Blank.
*99 Railroad Crossing Office Record.
100 Contract for Township Road Superintendent.
101 County Bridge Record.
102 County Road Record.
*106 Application Record.

*107 Statement of Expenditures.
*108 Road Profile Record.
*109 Inspection Record—Bridges.
*110 Repair Record—Bridges.
*111 Cost Data—Bridges Constructed.
*112—Cost Data—Bridges Constructed.
*113 Telegrams.
*114 Commission Payrolls.
*115 Trip Schedule Card.

Special attention is called to Forms No. 101 and 102 which were issued by the Commission for the use of the counties in keeping their road and bridge records. The Bridge Record blank provides for a complete description and location of the existing structures, with all information as to the date built. Provision is made for recording in detail all the information concerning the permanent bridges, including the contract data, tabulation of bids received, monthly estimates paid during construction, and engineer's statement of final cost. Space is also left in this form for recording the future repair costs. One sheet of the bridge record book is used for recording each bridge and culvert in the county. The book is made up in loose leaf form to provide for arrangement according to consecutive bridge numbers, it being so prepared that when the standard method of numbering the bridges is adopted, the sheets in the Bridge Record will correspond to the numbers of the bridges on the bridge map. It is contemplated that this record will be kept up to date and available at all times for public inspection.

The County Road Record (Form No. 102) makes provision for the entering up of one section of the county road system on each page. Space is provided for recording all information as to the name and location of the section of road and specific information as to former road records or surveys made. The remainder of the page is devoted to a record of the survey and plan approval, permanent grading and drainage, and permanent surfacing. The blank was made up with the principal idea of providing a complete record of the description, survey data, method of construction, type of construction and cost in a concise form for public inspection. This record, to be of the most value, should be kept up to date. Mention should also be made of the blank for the report of the township clerk and road superintendent issued this year. These blanks were made very simple to provide for a report on only the

*Indicates forms for use of Commissioners only.

items of greatest importance. Even with the required information reduced to the essentials, the returns are far from satisfactory.

Official Communications.

In addition to the foregoing list of blanks, the Commission has issued during the period from December 1, 1913 to December 1, 1914, the following list of Official Communications:

No. 17—Relative to annual reports, road maintenance road school, yearly conference and standard specifications.
No. 18—Relative to school of instruction.
No. 19—Relative to county road maps.
No. 20—Relative to blanks issued by Commission.
No. 21—List of standard plans, blank forms and official communications issued to date for county use.
No. 22—Relative to responsibility for dragging roads on county and township road systems and within the limits of incorporated cities and towns.
No. 23—General rules for county road plans.
No. 24—Relative to paint.
No. 25—Relative to approval of plans by Commission.

Contract Approval.

During the period from December 1, 1913 to November 1, 1914, the Commission approved contracts in the amount of $731,205.58. These contracts were sent in from sixty-one counties as shown by Schedule Thirty-eight, which gives complete information relative to each specific contract. During the period included in this report there has been an increase of $387,043.34 in contracts approved over the amount approved from April 9, 1913 to December 1, 1913. In each case where approval has been made the Commission has either designed the bridge or approved the design before approving the contract.

It has often been necessary to reject contracts during the past year, due to irregularities in letting the contracts, or excessively high prices. It is a noticeable fact, however, that the contracts which have been submitted for approval this year are much more complete in information than those submitted previously. A copy of each contract which is approved is retained in the office of the Commission for filing.

SCHEDULE THIRTY-EIGHT.

CONTRACTS SUBMITTED FOR APPROVAL DEC. 1, 1913, TO NOV. 1, 1914.

County	Contractor	Date Approved	Amount Approved	Remarks
Audubon	Lana Const. Co.	April 4, 1914	$12,477.00	
Benton	Iowa Bridge Co.	March 21, 1914	11,908.00	
Benton	D. M. Bridge & Iron Works	April 29, 1914	1,620.00	
Boone	Marsh Eng. Co.	Nov. 1, 1914	5,771.00	
Buena Vista	W. A. Barnes	July 20, 1914	5,105.00	
Buena Vista	Nels Jenson	July 20, 1914	1,474.00	
Buena Vista	Marsh Eng. Co.	Aug. 20, 1914	4,643.00	
Butler	Miller-Hey Const. Co.	.....	3,759.00	Not approved. Relet July 27, 1914
Butler	D. M. Bridge & Iron Works	May 27, 1914	3,527.00	
Butler	Thor Const. Co.	July 29, 1914	12,327.00	
Butler	H. S. Burton	May 27, 1914	2,079.00	
Calhoun	Clinton Bridge Wks.	June 24, 1914	3,095.00	
Calhoun	Iowa Bridge Co.	May 1, 1914	12,270.00	
Calhoun	Iowa Bridge Co.	Sept. 10, 1914	4,346.00	
Carroll	Marsh Eng. Co.	Oct. 2, 1914	7,472.00	
Carroll	Standard Bridge Co.	Sept. 16, 1914	3,344.00	
Cedar	Paul N. Kingsley	April 17, 1914	4,702.00	
Cerro Gordo	N. M. Stark & Co.	March 24, 1914	12,775.00	
Cerro Gordo	Wm. Henkle	Feb. 16, 1914	19,000.00	
Cherokee	Ward & Weighton	May 27, 1914	8,560.00	No work over $2,000.00
Chickasaw	D. M. Bridge & Iron Works	.....	.....	No work over $2,000.00
Chickasaw	Frank J. Miller	Jan. 29, 1914	7,034.00	
Chickasaw	Chambers & Dobson	.....	.....	$5.50 per cu. yd. County to furnish material.
Clarke	Geo. Le Houquet	.....	.....	Not approved
Clay	D. M. Bridge & Iron Works	April 8, 1914	3,295.00	
Clayton	.....	Dec. 11, 1913	1,900.00	
Clayton	A. C. Boyle	April 6, 1914	2,670.00	
Clayton	Paul N. Kingsley	April 6, 1914	3,856.00	
Clayton	Paul N. Kingsley	April 6, 1914	4,941.00	
Clayton	Paul N. Kingsley	April 6, 1914	5,110.00	
Clayton	C. E. Walker	Sept. 16, 1914	2,000.00	Subject to approval of plans
Clayton	Paul N. Kingsley	Sept. 16, 1914	14,573.00	Subject to approval of plans
Clinton	John Anderson & Son	July 9, 1914	2,515.00	
Clinton	Marsh Eng. Co.	July 9, 1914	5,078.00	
Crawford	Lana Const. Co.	April 10, 1914	4,130.00	
Crawford	Iowa Bridge Co.	Oct. 21, 1914	4,212.00	

SCHEDULE THIRTY-EIGHT—CONTINUED.

County	Contractor	Date Approved	Amount Approved	Remarks
Davis	Ottumwa Supply & Const. Co.	Sept. 17, 1914	4,613.00	
Davis	Ottumwa Supply & Const. Co.	.....	.....	
Delaware	Thor Const. Co.	June 9, 1914	3,206.00	Not recommended for approval
Dickinson	Milford Cement Tile Factory	.....	.....	
Dickinson	Iowa Bridge Co.	June 23, 1914	11,994.00	Not approved. No work over $2,000.00
Dickinson	Federal Bridge Co.	Sept. 15, 1914	5,586.00	
Dubuque	J. J. Leonard	Aug. 17, 1914	2,950.00	
Dubuque	Herkes & Hantelman	July 28, 1914	2,290.00	
Dubuque	John Anderson & Son	Oct. 31, 1914	2,992.00	
Emmet	N. M .Stark & Co.	July 9, 1914	12,051.00	Subject to approval of plans
Emmet	N. M .Stark & Co.	Aug. 22, 1914	2,353.00	
Fayette	Federal Bridge Co.	July 2, 1914	3,687.00	
Fayette	N. M. Stark	July 20, 1914	6,234.00	
Fayette	N. M. Stark	July 29, 1914	5,956.00	
Fayette	Paul N. Kingsley	July 9, 1914	8,358.00	
Floyd	Miller-Hey Constr. Co.	Oct. 2, 1914	1,748.00	
Floyd	Middleton-Hoglund	March 4, 1914	10,750.00	
Floyd	Miller-Hey Constr. Co.	Aug. 22, 1914	7,880.00	
Floyd	Gould Const. Co.	Aug. 22, 1914	23,150.00	
Franklin	Des Moines Eng. Co.	July 2, 1914	12,222.00	
Grundy	D. M. Bridge & Iron Works	June 15, 1914	5,575.00	
Grundy	Miller-Hey Constr. Co.	Sept. 16, 1914	6,500.00	
Guthrie	Lana Const. Co.	April 11, 1914	.....	
Greene	Koss Const. Co.	April 8, 1914	9,945.00	Approved at $3.37 per lb.
Hamilton	Ward & Weighton	Aug. 29, 1914	3,535.00	
Harrison	Faris-Abramson Co.	Oct. 10, 1914	4,295.00	
Harrison	Ill. Steel Bridge Co.	Oct. 10, 1914	2,890.00	
Harrison	Faris-Abramson Co.	May 22, 1914	10,364.00	
Howard	N. M. Stark & Co.	April 17, 1914	2,375.00	
Howard	Iowa Bridge Co.	July 9, 1914	3,490.00	
Humboldt	A. H. Austin	.....	.....	Returned for revised plans
Humboldt	Iowa Bridge Co.	July 3, 1914	10,805.00	
Ida	Iowa Bridge Co.	March 20, 1914	25,368.00	
Jackson	John Anderson & Son	.....	2,197.00	Contract rejected Aug. 31, 1914
Jackson	Wm. Teters	.....	.....	Returned unapproved
Jackson	John Anderson & Son	.....	.....	Returned unapproved
Jackson	J. H. France & Co.	.....	.....	Returned unapproved
Johnson	Wm. Horrabin	Sept. 26, 1914	50,000.00	
Jones	Flaherty & Penney	.....	.....	Contract rejected.
Keokuk	Waterloo Const. Co.	Aug. 8, 1914	3,822.00	
Kossuth	Marsh Eng. Co.	June 3, 1914	8,647.00	
Kossuth	Marsh Eng. Co.	Aug. 26, 1914	1,977.00	
Kossuth	Phelps & Bertrand	Aug. 26, 1914	1,941.63	
Lee	Federal Bridge Co.	March 13, 1914	1,387.00	
Lee	Clinton Bridge Works	Aug. 22, 1914	747.00	
Lee	Clinton Bridge Works	Aug. 22, 1914	2,844.00	
Louisa	Waterloo Const. Co.	Aug. 8, 1914	2,199.00	
Lucas	Federal Bridge Co.	Aug. 31, 1914	4,795.00	
Lucas	Iowa Bridge Co.	Aug. 31, 1914	2,820.00	
Lyon	T. J. Coakley	April 27, 1914	6,180.00	
Lyon	Ripley-Baumgartner	April 27, 1914	4,406.00	
Lyon	John Olson	April 27, 1914	10,950.00	
Lyon	John Olson	July 13, 1914	9,500.00	
Mahaska	Iowa Bridge Co.	Oct. 9, 1914	3,486.00	
Marion	Federal Bridge Co.	April 8, 1914	17,305.14	
Marshall	Capital City Constr. Co.	July 29, 1914	1,460.00	
Marshall	Thor Const. Co.	April 27, 1914	5,880.00	
Mills	Iowa Bridge Co.	.....	.....	No work over $2,000.00
Mills	Red Oak Bridge & Iron Works	Oct. 10, 1914	2,179.00	
Mitchell	N. M. Stark & Co.	Aug. 29, 1914	3,775.00	
Plymouth	Iowa Bridge Co.	Aug. 22, 1914	5,009.00	
Pocahontas	Iowa Bridge Co.	Aug. 26, 1914	24,318.00	
Pocahontas	D. M. Bridge & Iron Works	July 9, 1914	15,200.00	
Polk	N. M. Stark & Co.	March 2, 1914	30,874.00	
Polk	D. M. Bridge & Iron Works	Oct. 3, 1914	3,877.00	
Pottawattamie	Lana Const. Co.	.....	.....	No approval noted. Contract returned
Poweshiek	Iowa Bridge Co.	July 29, 1914	5,465.00	
Scott	Marsh Eng. Co.	May 5, 1914	11,790.00	
Scott	Clinton Bridge Works	May 5, 1914	4,340.00	
Sioux	Ward & Weighton	June 24, 1914	9,600.00	
Tama	Waterloo Const. Co.	Aug. 13, 1914	4,320.00	
Tama	Iowa Bridge Co.	March 20, 1914	4,320.00	
Tama	Missouri Const. & Ballast Co.	March 19, 1914	14,556.56	
Union	Iowa Bridge Co.	Sept. 12, 1914	2,480.00	
Van Buren	Ill. Steel Bridge Co.	June 2, 1914	.....	Approved at $1.75 per lb.
Washington	Iowa Bridge Co.	July 2, 1914	3,767.00	
Washington	Iowa Bridge Co.	Sept. 12, 1914	1,750.00	
Webster	D. M. Bridge & Iron Works	Aug. 20, 1914	5,925.00	
Winneshiek	J. P. Heinen	April 8, 1914	3,456.25	
Winneshiek	Chambers & Dobson	April 8, 1914	4,544.00	
Woodbury	Clinton Bridge Works	May 21, 1914	2,346.00	
Woodbury	Federal Bridge Co.	May 27, 1914	597.00	
Woodbury	Ottumwa Supply & Const. Co.	May 27, 1914	2,960.00	
Woodbury	Iowa Bridge Co.	March 20, 1914	8,214.00	
Worth	Forest City Const. Co.	April 4, 1914	4,225.00	
Total	.....	.....	$737,161.58	
Contracts not approved	.....	.....	5,956.00	
Total amount approved	.....	.....	$731,205.58	

Accounting Work on State Roads.

Upon the appointment of a Supervisor of State Roads in June, 1914, the Commission undertook the accounting work in reference to the work done on the roads. Blank forms for statements of accounts, payrolls, etc., were made out and approved and printed by the Board of Control of State Institutions. A voucher check system was adopted for payment of all accounts incurred on state road work, which required the certificate of the Supervisor of State Roads. The bills and payrolls are handled by the Accounting Department of the Highway Commission in addition to the regular accounts of the Commission.

County Engineers' Reports.

The complete set of blanks for the county engineers' reports was sent out by the Commission in triplicate previous to October 15th. A letter accompanying the report requested that they be filled out and returned not later than November 15th. That this request was very generally complied with by the county engineers is shown by the fact that out of ninety-nine counties, eighty-seven reports were received prior to December 1st. The data from these reports are now being compiled, and will be available for publication in this Report.

It is very gratifying to note the completeness of the reports in general this year. In almost every case the information asked for has been supplied in the form as requested by the Highway Commission, and in many cases the county engineers have taken great care to prepare supplementary and explanatory statements to make the report clear. No state, has ever received as complete information concerning the highway work of the state as is contained in these reports.

SCHEDULE THIRTY-NINE.

PERSONNEL AND SALARIES OF OFFICE AND ACCOUNTING DEPARTMENT JULY 1, 1913, TO JUNE 30, 1914.

Name	Salary	Position
L. A. Wilkinson	$2,000.00	Accountant
Annie Laurie Bowen	840.00	Clerk
Janet Jacobsen	900.00	Stenographer
Anne Vanderlinden	900.00	File Clerk
Ethel Seamands	840.00	Stenographer
Leona Pequignot	840.00	Stenographer
Thora Tallman	540.00	Stenographer

PART THREE

HIGHWAY LEGISLATION.

PART THREE

Highway Legislation.

SECTION ONE

AMENDMENTS AND ADDITIONS TO THE IOWA ROAD LAW RECOMMENDED BY THE COUNTY SUPERVISORS AND ENGINEERS.

The highway legislation passed by the Thirty-fifth General Assembly was planned to form the foundation on which would be builded a sane, practical structure of highway administration for Iowa. It was not expected at that time that a perfect measure would be written in its every detail, but the two years' use has proven it to be in many respects a model piece of legislation. Its strongly written, vital principles are not obscured by minor details and indefinite language and in the past two years not a single controversy under its provisions has reached the courts.

It was clearly anticipated by the members of the General Assembly, and particularly by the highways committees of both House and Senate, that the measure as placed on the statutes, would be perfected in succeeding years by the addition of the amendments, dictated by experience, to be necessary.

Due consideration should be given the views of those who must work with, and under, the various provisions of the road laws. On this account the Commission has included, in so far as they have been formulated, the recommendations of the County Supervisors and County Engineers as to the amendments or additions to the present statutes which these officials think desirable.

Resolutions Passed by Supervisors' Convention.

The State Association of County Supervisors which met at Cedar Rapids, August 19 to 21, 1914, passed the following resolutions relative to the road laws:

(1) That we approve the general working features of the new road law, particularly those providing for a uniform standard of bridge and road construction, and we commend the State Highway Commission for the work it is doing and the assistance it is giving.

(2) That this body condemns the law requiring a resolution of necessity as a needless expenditure of public funds, and requests the legislature of Iowa promptly to repeal the same.

(3) That the board of supervisors be given a simple, speedy and adequate method for condemning private land when necessary for the straightening and widening of roads, above statutory width, and cutting off dangerous corners of all highways.

(4) That where the property owners whose lands abut upon the county and township road systems fail or neglect to cut the weeds, brush and timber as required by law, the board of supervisors and township trustees be given the authority to cut same after giving ten days' notice in writing to the owners, and assess the cost of same to said abutting property owners.

(5) That the board of supervisors be authorized to cause the destruction of trees upon private property when said trees are damaging drain tile or injuring drainage ditches, and to assess the cost of removing the same to the owner upon whose property said trees are growing.

(6) That the board of supervisors be given authority to establish a drainage district where needed to drain the county road system, and to include in such district all private property benefited and drained by the drains upon said county road system, and benefit assessments be levied as by law provided for county drainage district.

(7) That the law relating to benefit commissioners of ditches be amended so as not to bar parties interested in like improvements from serving on such commission.

(8) We recommend that the law in regard to poll taxes be changed to $2.00 if paid before July 1st of each year, or $3.00 if paid thereafter, to be paid in cash.

Signed, C. A. ANDERSON,
Chairman, Webster Co.

Resolutions Committee.

The members of the Resolution Committee who formulated the above report which was unanimous, were:

No. 1	S. F. Wilson	Louisa
No. 2	John Kneble	Johnson
No. 3	W. D. Strayer	Black Hawk
No. 4	S. G. Wyman	Fayette
No. 5	J. K. Hale	Jones
No. 6	H. L. Snakenburg	Keokuk
No. 7	Jas. B. Uhl	Polk
No. 8	Eli Wilts	Taylor
No. 9	A. Biggs	Cass
No. 10	C. A. Anderson	Webster
No. 11	Peter Swenson	O'Brien

Note—In addition to the above, resolutions were passed relative to widows' pensions, distribution of county poor fund and land titles.

Recommendations of County Engineers.

On the 1914 blanks sent out by the Commission for the reports of county engineers, the following request was made: "Give recommendations as to legislative changes or desirable changes in the present road laws."

The response to this inquiry has been general on the part of the county engineers. At the time of writing this report the returns are available from eighty-three counties. More than forty recommendations or suggestions have been made as to changes or additions in the present legislation. Many of these suggestions are relative to minor details, and it is a noteworthy fact that very little dissatisfaction is expressed with any of the major principles of the road legislation passed by the Thirty-fifth General Assembly, with the single exception of the resolution of necessity. It is also worthy of mention that certain suggestions have been made by a sufficient number of engineers to entitle them to serious consideration. The more important are as follows:

First. Resolution of Necessity.

Thirty engineers have made suggestions relative to the resolution of necessity and the different ideas expressed, show considerable divergence of opinion. There is one suggestion to repeal this requirement, while others would raise the three hundred dollar limit to a higher figure. The maximum amount stated is twenty-five hundred dollars. On the other hand there is one suggestion that all work contemplated be included under resolutions of necessity and, further, that a resolution of necessity, for work costing an amount equal to 75 per cent of the available bridge fund for the year be passed by January first. The majority of those reporting favor a limit of about one thousand dollars as the minimum cost of a bridge which shall require a resolution of necessity.

Second. Time of Making Engineer's Report.

Thirty-six engineers have requested that the time of making the annual report to the board of supervisors be changed from November first to a later date. The majority of the requests are for a date following January first, as all the county books are balanced at that time. It will be noted in this year's reports from the county engineers that it is necessary to estimate many of the balances.

Third. Condemnation of Land for Road and Bridge Purposes.

Twenty-one engineers request some method by which the board of supervisors or the Highway Commission may condemn land for road or bridge purposes. The present method provided is much too long to serve the needs that arise frequently after construction has been begun. Such a measure should provide for land to widen, re-

locate or straighten roads, and the right to go upon private property to change or straighten the course of streams above or below bridges or along roadways. Such a measure should be fairly drawn to compensate the property owner for any damages resulting.

As a corollary to this request, authority should be given the board of supervisors to provide temporary roadways on private property during the construction of new bridges where the established width is not sufficient to provide for such a crossing within the right of way.

Fourth. Filling Over Bridges and Culverts on Township Roads.

Twenty engineers ask that the responsibility for filling over culverts and the approaches to bridges should be clearly defined between the county and the township on the township roads. That the township should do this filling is urged by the larger number, but there are a number of suggestions by which the cost could be divided between the township and the county for this work.

Fifth. Township Road Work.

Twelve engineers recommend that the board of supervisors should supervise or handle entirely all township road work. In addition to this suggestion seven engineers recommend that either the township or the property owners be required to furnish the culverts at the entrance of farm property in the roadway ditches.

Sixth. Trees, Brush and Hedges on the Highways.

Nine engineers urge better regulations relative to the removal of trees, brush, hedges and such growths along or upon the public roads. These recommendations include the trees or hedges on private property which cause damage to the roadways. Particular mention is made of willow hedges, the roots of which fill up tile drains and have in a number of instances completely destroyed the value of such tile. The recommendation is also made that brush be included with weeds under the weed law which requires this work to be done by the property owner on the road adjoining his land. It should be noted in this connection that the weed law does not provide jurisdiction for the county supervisors on the county roads, but does provide that the township trustees shall have jurisdiction over weed growths on all the roads, thus extending the jurisdiction of the trustees to the road sides of the county roads.

Seventh. Extension of County Roads Inside of Corporation Limits.

Four engineers suggest that the county road systems be extended inside the corporation lines to the market centers, or to meet the pavement of cities, and that the county road building tax of two mills be collected from the property within the incorporated towns. The improvement of these roads would be carried forward under the county board of supervisors in the smaller towns and under the city government in the larger cities in both cases subject to the general supervision of the Highway Commission. For this same purpose is the suggestion to permit the supervisors to anticipate their funds by issuing bonds for such improvements. Three counties wish this power and two request a clear definition of the duties of the county relative to the building and maintenance of bridges and culverts within incorporations.

Eighth. Road Dragging Contracts.

Complaint is made by a number of engineers that it is difficult to enforce dragging contracts. The obligations of such contracts seem to be regarded lightly when the holders have other work to do and some adequate method is desired to provide for such work.

Ninth. Public Safety.

Of this general character there is a recommendation that the responsibility for grading and planking railroad crossings be made more specific. Also that the use of high power head lights on motor cars be forbidden.

Tenth. Permanent Road Work.

The recommendation is made that the motor vehicle fund be kept for the sole purpose of permanent road work.

Eleventh. Drainage Districts for County Roads.

Attention is called to the apparent conflict between the road law and the drainage laws relative to the payment of twenty-five per cent of benefit assessments against township roads by the county.

In addition to the above, there are many suggestions relative to details of administration and minor matters that do not require additional legislation for their correction.

Heretofore it has been very difficult to find two opinions which agreed as to necessary legislation or additions to existing road laws. It will be noted that practically all of the recommendations made by the engineers, representing eighty-three of the counties, after two years' road work can be grouped into a comparatively small class of subjects and out of the entire list of suggestions there is not a single one that calls for a revision of any vital principle of the road law.

PART THREE—SECTION TWO

AMENDMENTS AND ADDITIONS TO THE PRESENT HIGHWAY LEGISLATION RECOMMENDED BY THE STATE HIGHWAY COMMISSION.

In its two years' of operation, the highway legislation passed by the Thirty-fifth General Assembly has in a large way proven to be an efficient administrative instrument. Few weak places have appeared that may be corrected by legislative action, but there are some amendments and some additional measures that are highly desirable. It should be remembered that the past two years cover the period during which the most misunderstandings would unavoidably occur. Notwithstanding this fact the recommendations of the Commission are in general accord with those of the county supervisors, and the county engineers in so far as these have been expressed by any considerable number. In addition to the specific recommendations which follow relative to the existing statutes, the Commission has suggested a number of legislative policies for which the demand is now felt. These have reference to the future development of the work of road improvement in the state, and are in harmony with the general trend of highway legislation in the United States. The present Iowa road law has been fashioned to meet the needs of an agricultural state such as ours in carrying out new and broader policies in road building, and in such legislation the essential differences that exist between Iowa and the states of the East must be recognized.

The detailed recommendations relative to the present road law are first considered.

First. Resolution of Necessity.

After full consideration the Commission is of the opinion that the essential features of publicity relative to contemplated bridges or culverts will be served if the present limit of three hundred dollars be raised to one thousand dollars before a resolution of necessity is required. The reason for placing the limit at one thousand dollars is found in the fact that structures costing above one thousand dollars must be publicly advertised and bids taken. The resolution of necessity may be passed and published at the same time bids are requested if it is necessary on account of time required. Thus no delay would ensue and the trustees and public would have full information concerning contemplated structures, costing one

thousand dollars or more. It is believed that this amount will meet the criticism voiced by the supervisors at their convention, as no culverts or day labor work will be held up on this account.

Second. Authority to Condemn Land for Road Purposes.

Unquestionably some method should be provided by which the board of supervisors or the highway commission would have the authority to take land needed for road or bridge purposes, as requested in the resolutions asked by the supervisors' convention. This authority should include the land necessary to widen and straighten or relocate roads, to avoid obstructions, bad turns, or stream encroachments, and to open new roads.

Third. Drainage Districts for Draining County Roads.

There is no clear provision by which the board of supervisors may establish drainage districts when such are necessary to drain county roads. For township roads, the board of trustees has the power to petition the county board to establish drainage districts, but this power has not been extended to include county roads. This provision should be added and the provision which has required the board of supervisors to pay twenty-five per cent of the cost of drainage districts on township roads should be repealed, as it has caused some confusion for the past two years. This recommendation is in accord with resolution No. 6, adopted by the supervisors' association.

Fourth. Road Poll Tax.

The Highway Commission is of the opinion that all poll tax collected in labor is more or less difficult to handle, and its full value is not obtained. Such a tax should either be repealed or paid in cash.

Fifth. Date of Making Engineer's Report.

The Commission is of the opinion that so long as the engineer's report is called for November 1st considerable inconvenience and inaccuracy will result. It is not possible to close up such report until the year's business is closed on January 1st. To make the changes necessary to place all the books of the county on the basis of a November 1st report would not be practicable nor good business. The county business year dates from January 1st to December 31st, and the Commission would recommend that the engineer's report be filed January 10th. This would place these reports on a much better business basis.

Sixth. Extension of County Road System.

The poorest roads existing on the main travelled thoroughfares in the state today are those just within the corporation limits of practically all towns and cities, not excepting those of the first class. Many of the smaller towns have extended their corporation lines coincident with school districts limits. Whatever the reason, there are small towns all over the state whose corporation limits extend more than a mile in each direction from the business centers.

This condition is not confined to the small corporations alone, although it is accented in the towns that do not have the funds, the equipment, or the organization to do road work economically or well. Where these conditions exist the only solution of this matter lies in placing the work in the hands of the county organization under the general supervision of the Highway Commission.

The Commission, after full consideration of the objections that will be raised, recommends that the county road systems be extended into and through the smaller towns, and that these systems be extended to meet the paved streets of the larger cities. To meet the cost of this improvement it is recommended that a road building tax be extended over city property to be used under the same general plan as is provided for the improvement of county roads outside of the corporation lines.

Seventh. Trees, Brush and Weeds on Roads.

The Highway Commission recommends legislation to give the county and township officials the power over the weeds and brush and timber growing along the highways requested in the resolution Number Four passed by the Supervisors' Association.

Eighth. Alteration of County Road Systems.

The law establishing the county road system made no provision by which alterations may be made, even though it is shown that certain relocations or changes are desirable from every view point. The Commission is of the opinion that the integrity of the whole system should be preserved, but that certain minor changes may be made after a detailed study of the situation, including definite information as to the amount of traffic, the cost of construction and such other information as may be secured. This authority, if granted the Commission, should be safeguarded in every respect thought desirable by the General Assembly.

Ninth. Permanent Work on Township Road System.

It has been thoroughly demonstrated during the past two years that the county unit can be used to better advantage in road building than the township unit. A more efficient organization with better equipment is possible. The Commission would therefore recommend that it be made possible for the township trustees to contract with the county for the permanent work which they wish to do in their individual townships and to use the equipment owned by the county without cost, other than the actual operating expenses.

Tenth. Road Improvement Districts.

Formerly there was on the statute books a provision under which road districts could be established for building surfaced roads. This legislation was repealed by the statute which required the two-mill road building fund to be levied. The road district plan has, therefore, been inoperative since that time. There are now a number of districts in the state which wish to build permanent roads. The demand for such districts is developing, especially in districts surrounding the larger towns and cities, where the traffic conditions are such that it is impossible to maintain a reasonably good earth, or gravel road within reasonable cost limits. Traffic conditions are changing so rapidly that road surfaces which held up under the traffic of a few years ago go to pieces now very quickly. There are notorious examples all over the state of such roads, which cannot be maintained under present conditions, and which cannot be improved without further legislation. The right to establish such districts should be given the communities which desire to develop a system of surfaced roads. Such a law must be carefully and wisely drawn in order to insure a distribution of cost in proportion as benefits are received. In general, it is believed that three benefits. should be recognized: First, the benefit to the county or state; second, the benefit to the district; and, third, the benefit to the property lying adjacent to such improvement. It is true that this principle of assessment against adjoining property has not been employed in the majority of the states which have built state aid roads. Only two states which are now building state aid roads employ the method of assessment against adjoining property to pay any part of the cost.

In this state, however, the Commission believes that a plan for building permanent roads similar to the method under which all the drainage systems have been constructed will prove equitable, if the benefits to the state and to the district are recognized as well

as the benefits to private property. It is not the belief of the Commission that any extended mileage of improved roads will be built at present, but there are districts in which a real demand exists and such districts should be given an opportunity to carry out the improvements which they desire.

This plan would also offer the solution of the improvement of roads within incorporation lines, but located in the outlying districts where the property is not sufficiently valuable to pay the entire cost of paving improvements. It is not equitable to place the same charges against this property for road improvement, as against property in the business and well built up residential districts. There are a large number of such problems in this state and they are constantly growing worse. There is no solution offered in existing legislation. City and county officials are practically powerless to improve such roads. This is a condition that must be recognized and an adequate remedy provided. The highways leading into every large city in the state must be permanently improved before a satisfactory roadway can be provided. Southwest Ninth Street in Des Moines, the Army Post Road, is a notorious example of such highways. In this case, the city has paved to the city limits, but the territory lying adjacent at the Army Post is served by a roadway that at all times of the year is a poor highway but at times becomes a disgrace to any civilized community. In Sioux City there are long stretches of road within the city limits that must be paved in order to carry the traffic, but the adjoining property cannot be assessed to bear the full cost. In other districts there are roads within and without corporations whose only practical permanent improvement must be by a hard surface.

Another example is the concrete road laid over sand which is known as the Columbus Junction-Fredonia concrete road, just completed this year under the supervision of the Highway Commission. In order to finance this road, the citizens and farmers from miles around contributed and the banks were obliged to carry county warrants for at least a year to pay for part of this improvement. The point is this, the only permanent improvements that have been made, have had an individual method of financing which could not be used on any extensive scale.

In Cerro Gordo County a mile of concrete road was built between Mason City and Clear Lake in 1913. Numerous efforts have been made to extend a like improvement in different directions from Mason City without success, on account of there being no

method by which any extended improvement of this nature can be financed. Under our present system of financing road improvement by direct taxation, those districts which demand something better than an earth road or a gravel surfaced road, will not be able to proceed with their improvement. There is no reason to fear the adoption of such a plan, for the district method should be entirely optional in character, and the counties and districts which do not desire such improvements, would not in any way be forced to participate.

This is the obvious weakness of our present road legislation, the fact that there is no provision by which heavy traffic roads that exist in the state, can be paved in communities which are willing to pay the cost of such improvements.

Dangerous Railroad Crossing Legislation.

In another chapter has been listed the number of railroad crossings on the public highways and the work that has already been started by the Commission. The subject is included here to call attention to the fact that there is no legislation sufficiently broad to cover the rapid elimination of such crossings. With the information that has been obtained relative to the number and cost of improvement of the average crossing, a plan of cooperation between the public and the railroad corporations can be formulated by which the cost would be shared on an equitable basis. Chapter 162, Acts of the Thirty-fifth General Assembly delegates to the Railroad Commission certain powers relative to the establishment and division of costs of crossing improvements. No provision is made, however, for the necessary surveys and plans. No authority is given the boards of supervisors, city councils or any other body to levy taxes or to appropriate funds for the portion of the expense to be shared by the public. The Board of Railroad Commissioners and the Highway Commission have worked in cooperation on a number of the cases presented, but a more definite working scheme is seriously needed, if any considerable number of dangerous crossings are to be improved each year.

Patrol System for Road Maintenance.

With the greater use of the highways and the more efficient methods of road building, has come the necessity for an adequate, consistent method of road maintenance. For heavily traveled roads having earth, gravel, macadam or similar surfaces, nothing less than continuous maintenance will preserve the integrity of the

surface or conserve the original investment. Nothing less than continuous up-keep will answer the demands of the traveling public. This fact should be considered most seriously. There is no single activity within the state that has developed as rapidly as the daily use of our streets and highways. The number of miles traveled each day or the roads five years ago is insignificant compared to each day's total mileage now. The new conditions require new methods that are adequate. The method that holds the most promise, in the judgment of the Commission, is a patrol system similar to the plan that has already been tried with good success in Clayton and one or two other counties. The experience of the past is not yet sufficient to guarantee the success of a mandatory patrol system, but it is sufficient to justify the Commission in recommending that a limited number of miles in each county be placed under a mandatory patrol system. This mileage might be placed at ten to fifteen, or the amount that one man could reasonably be expected to maintain continuously. On the basis of the experience thus obtained could be builded, two years hence, a system of road patrol suited to the needs of the state and within the possibilities of the funds available to maintain.

Highways on Division Lines.

During the two years, the Commission has been frequently asked to make divisions of line roads. There are many instances in which the responsibility is not clearly fixed and which will result in a neglect of the roads in question. Almost universally the roads, culverts and bridges on township, county and municipal boundary lines are in wretched condition because of divided responsibility.

For this reason the Commission requests the authority to make final division of township, county, state or corporation line roads, and to fix the responsibility for the construction and maintenance of such roads.

Purchase of Road Machinery.

During the past year a number of protests have been filed with the Commission by manufacturers involving the methods employed in purchasing road machinery. On the other hand, a number of complaints have been received from public officials relative to some of the methods used in selling such machinery.

In the opinion of the Commission many unnecessarily expensive selling methods have been employed, which in the final analysis must be borne by the public.

Of these methods, perhaps the most expensive, and at the same time least productive, is the county competitive demonstrations. Such demonstrations without definite rules stir up unlimited criticism.

A contest conducted under definite rules, in which the scoring of the various machines is by experienced and impartial judges would perhaps be productive of some tangible results. Such contests have been held annually at Winnipeg, Canada, for tractors, and it is the opinion of competent judges that much has thus been gained in the improved design of these engines.

A single annual competition of this kind would suffice for the whole state, and road implements of other kinds could also be shown.

The desirability of such contests may be questioned, but certainly if they are to be held, their conduct should be under definite rules, and the management of qualified and impartial judges, to the end that the public may get the value of any real information resulting.

It is the opinion of the Commission that all road machinery of any character should be purchased under general rules and regulations, such as will insure an open competitive market, and provide the counties or townships with definite detailed specifications of any machinery or tools to be purchased.

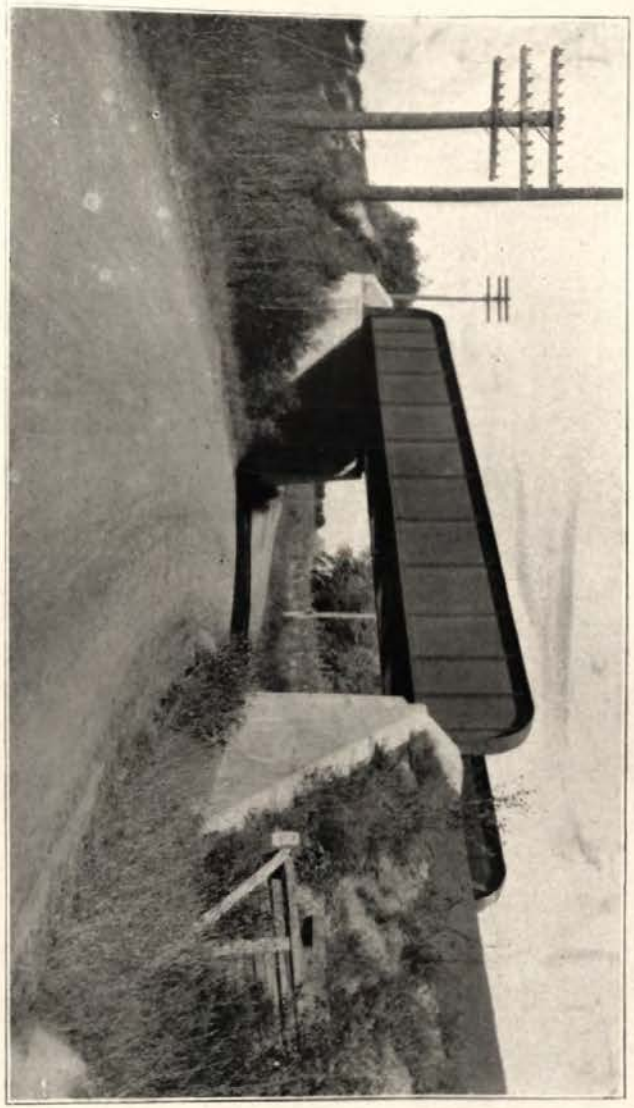
Such specifications should also set forth definitely the guarantees of the manufacturers as to performance, cost of repairs and maintenance.

The Commission requests that authority be given it to formulate general rules and regulations relative to the purchase of all road machinery, including the preparation of a set of uniform bidding blanks, which will insure full information to the counties desiring to purchase such machinery.

Contracts for Road Work.

Certain classes of road work can be most advantageously let by publicly advertised bids to the lowest responsible bidder. This is particularly true of heavy grading work. In some instances contract work for moving dirt has cost the counties less than one-half that of day labor. The Commission recommends that the requirements relative to bridge and culvert contracts be extended to cover road work, with such modifications as may seem desirable.

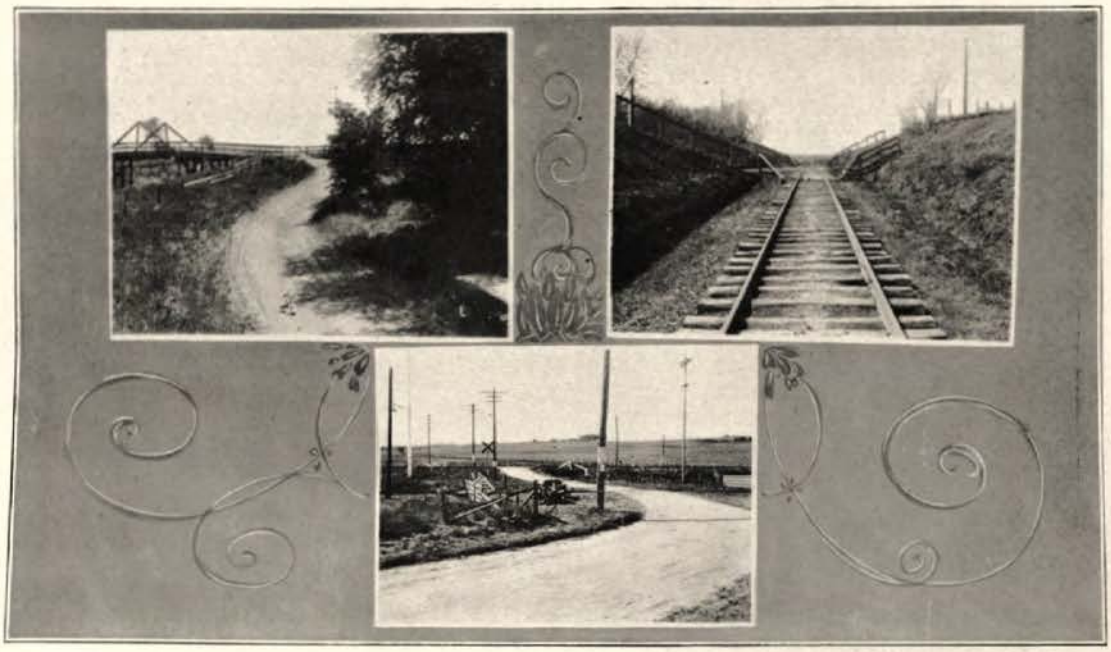
In conclusion, it may be stated that the system of highway administration inaugurated by the new Road Law has proven successful. The plan is flexible, and provides for the improvement of the roads, in the various counties, according to the funds that are available and suited to the needs of the community. The one fact that stands out most prominently of all is this, during the year 1914, a greater percentage of the money collected for the improvement of roads and bridges was used for permanent improvements of good quality than was used during any one year previous, and more remains to compensate for the money expended than from any other year's work. This fact, together with the additional assurance that permanent results will accrue in an increasing ratio, is the greatest justification for the establishment of the present system.



ONTARIO UNDERGRADE CROSSING—An under crossing on the C. & N. W. in Story County constructed on a skew to prevent objectionable sharp turns in the approaches. A steel through plate girder provides maximum clearance.



NEWHALL UNDERGRADE CROSSING—An undergrade crossing that provides ample horizontal and vertical clearance. View of approaching vehicles is not obstructed in any way.



GROUP OF NOTORIOUSLY DANGEROUS CROSSINGS—Sharp turn at end of Creston Overhead Crossing—Uhl's crossing near Mitchellville—Snake Creek Crossing, Page County.



BOW STRING TRUSS BRIDGE—This type of bridge formerly very common in Iowa is rapidly being replaced by permanent structures. This bridge was located on Stewart Avenue, Mason City.



CONCRETE CULVERT FAILURE—This culvert was built in Morgan Township, Franklin County, by a contractor with no plans and no supervision. No reinforcing metal was used and the concrete was of poor quality. The wing walls on both ends are falling to pieces and the roof of the culvert is caving in.



NO EXPANSION PROVIDED—Both ends of the Bellefountain Steel Bridge in Mahaska County were built solidly into concrete abutments. Important members of the steel structure buckled to such an extent that the collapse of the bridge was feared. It spans the Des Moines river and is one of the big bridges of the state. It was built under the old system.



OLD STYLE BRIDGE SUPPORT—Insecure support provided under old system of bridge building in Iowa. The replacement of this structure with a modern Pony Truss steel bridge with concrete floor and abutments gave an opportunity to get a view of the condition of the piling support under the old structure.



CONCRETE BRIDGE FAILURE—This bridge went down in the June floods of 1914 because no piling had been placed under the footings. The water undermined the foundations, allowing the abutments and the wing walls, still intact and unbroken, to tip forward as shown. One of the hardest fights the Commission has had has been to secure compliance with its demand for secure foundations for bridges.

PART FOUR

Special Chapters on Important Phases of Highway Improvement in Iowa.

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Special Chapter on Important Phases of Highway Improvement in Iowa.

At the present stage of development of highway improvement in this state, there are certain subjects of first importance. A number of these subjects are here presented in detail, with the actual costs and results obtained.

SECTION ONE

Dangerous Railroad Crossings.

There are 8,676 railroad crossings in this state on the county and township road systems. This number is exclusive of those existing within the limits of incorporated cities and towns. Of this total number there are 1,533 on the county road system and 7,143 on the township road system. The schedule given below will show the distribution of these crossings in respect to the railroads and road systems.

The data for this schedule were obtained from a corrected map of the state which has recently been prepared under the direction of the Commission.

SCHEDULE FORTY.

DISTRIBUTION OF CROSSINGS IN REFERENCE TO RAILROADS AND ROAD SYSTEMS.

Name of Railroad	No. of County Road Crossings	No. of Twp. Road Crossings	Total No. of Crossings
C., R. I. & P.	349	1,526	1,875
C., M. & St. P.	251	1,277	1,478
C. & N. W.	208	1,183	1,391
C., B. & Q.	272	915	1,187
C. G. W.	123	633	756
M. & St. L.	111	582	693
I. C.	95	442	537
Wabash	41	142	183
Ft. D., D. M. & S.	15	93	108
Misc. Small Railways	68	400	468
Total	1,533	7,143	8,676

The distribution of these crossings by counties is shown in Schedule Forty-one. On account of the greater proportion of traffic carried, the crossings on the county road system should, in general, receive first attention.

SCHEDULE FORTY-ONE.

County	Road System		Total
	County	Township	
Adair	8	31	39
Adams	6	15	21
Allamakee	2	40	42
Appanoose	31	108	139
Audubon	11	26	37
Benton	17	60	77
Black Hawk	20	87	107
Boone	12	85	97
Bremer	18	69	87
Buchanan	16	57	73
Buena Vista	13	70	83
Butler	13	75	88
Calhoun	23	141	164
Carroll	22	94	116
Cass	15	56	71
Cedar	18	60	78
Cerro Gordo	22	106	128
Cherokee	12	35	47
Chickasaw	6	51	57
Clarke	11	25	36
Clay	14	93	107
Clayton	17	46	63
Clinton	31	77	108
Crawford	19	102	121
Dallas	19	67	86
Davis	19	39	58
Decatur	18	77	95
Delaware	13	74	87
Des Moines	5	60	65
Dickinson	8	40	48
Dubuque	12	62	74
Emmet	13	53	66
Fayette	15	108	123
Floyd	12	69	81
Franklin	13	99	112
Fremont	10	51	61
Greene	6	47	53
Grundy	6	54	60
Guthrie	7	43	50
Hamilton	11	53	64
Hancock	9	85	94
Hardin	21	102	123
Harrison	11	64	75
Henry	15	49	64
Howard	4	33	37
Humboldt	10	54	64
Ida	9	28	37
Iowa	15	22	37
Jackson	16	48	64
Jasper	22	110	132
Jefferson	17	68	85
Johnson	12	62	74
Jones	12	64	76
Keokuk	39	112	151
Kossuth	20	97	117
Lee	23	81	104
Linn	23	123	146
Louisa	14	68	82
Lucas	6	31	37
Lyon	12	80	92
Madison	14	48	62
Mahaska	20	126	146

SCHEDULE FORTY-SIX—Continued.

County	Road System		Total
	County	Township	
Marion	16	89	105
Marshall	24	102	126
Mills	13	78	91
Mitchell	9	66	75
Monona	16	71	87
Monroe	19	58	77
Montgomery	8	34	42
Muscatine	21	85	106
O'Brien	13	82	95
Osceola	11	57	68
Page	24	79	103
Palo Alto	10	55	65
Plymouth	15	58	73
Pocahontas	10	84	94
Polk	23	142	165
Pottawattamie	21	94	115
Poweshiek	13	85	98
Ringgold	20	62	82
Sac	11	98	109
Scott	22	88	110
Shelby	14	74	88
Sioux	23	133	156
Story	15	101	116
Tama	16	98	114
Taylor	14	57	71
Union	22	55	77
Van Buren	17	59	76
Wapello	20	74	94
Warren	25	98	123
Washington	26	121	147
Wayne	26	79	105
Webster	19	151	170
Winnebago	8	50	58
Winneshiek	24	53	77
Woodbury	11	68	79
Worth	14	48	62
Wright	12	97	109
Total	1,533	7,143	8,676

No definite information is available as to the precentage of overhead or undergrade crossings in the state, but this percentage is undoubtedly very small. In 1913 the Commission forwarded blanks to each supervisor and county engineer in the state asking that a list of the most dangerous crossings be sent to this office. Already over 500 have been sent in from fifty-three counties. On this basis it would appear that there is an average of nine dangerous crossings in each county. Practically the only crossings reported as dangerous were the grade, or undergrade crossings, having obstructed views. As a matter of fact, every grade crossing is a danger point on the highway, and many of the overhead crossings have become structurally unsafe for heavy motor or traction engine traffic.

A few years ago when practically all of the traffic on the public highway was horse drawn and slow moving traffic, it was not

so essential that grade crossings be eliminated. With the increase in the number of motor vehicles, the grade crossing has become the greatest element of danger to the traveling public that exists on our highways. Sixteen people lost their lives on grade crossings in Iowa during the month of August, 1914. Attention is directed to the fact that during this month of the year traction engines and threshing outfits are most common on the highways, and this year in August, nine serious accidents resulted from traction engines going through bad bridges, but in no case was a life lost. The state during the past year has spent over 3$,500,000 for replacing and repairing bad bridges, yet not one cent was appropriated directly for railroad crossing work.

Of the three types of crossings, grade, overhead, and undergrade, the grade crossing is by far the most dangerous. A typical example of this type is illustrated by the Snake Creek crossing in Page County. This crossing was one of the first to be taken up by the Commission. Another very dangerous crossing is known as Uhl's crossing near Mitchellville in Polk County. A party of six persons en route to the State Fair were struck by an interurban car at ten o'clock on the morning of September 2d. Two members of the party were killed and the others narrowly escaped death. It would be possible to show a long list of views illustrating dangerous grade crossings in this state, for they exist in every county, and are directly or indirectly the cause of more deaths on the highways than all other dangers combined.

The overhead crossing presents another source of danger unless substantially constructed and so located as to prevent sharp, steep approaches at the ends. Many of the wooden overhead crossings have served their period of usefulness, and should be replaced at once with construction capable of carrying safely, traction engine traffic. During the past year the Commission has been called upon for assistance in securing the improvement of five overhead crossings, and in four cases it was necessary to relocate the road in order to avoid bad turns in approaching the bridge. As an example of the dangerous condition of an approach to a bridge of this type, attention is called to the view of an approach to the Afton Junction crossing in Union County. Temporary improvements have been made to reduce the danger at this crossing, and an agreement reached whereby the new

bridge will be realigned, straight with the road to avoid the dangerous turns at either end. The above illustration is typical of what will be necessary on a large percentage of the overhead crossings now being used before they will be safe for public traffic. Many of the approaches to overhead bridges have steep grades which are detrimental to heavy hauling, and are dangerous to approaching vehicles.

The most serious danger existing at the undergrade crossing is that due to obstructed views at the approaches and constricted openings. Dangerous approaches with obstructed views in the case of undergrade crossings are often caused by locating the crossing off the direct line of the road in order to secure the necessary verticle clearance. In a large percentage of the dangerous undergrade crossings examined, the placing of the bents supporting the superstructure at an angle with the road has caused a narrowing of the available roadway, or an obstruction to the view to such an extent as to make the opening very dangerous to traffic. During the past year the Commission has received requests for assistance in improving six crossings of this nature. A view of a typical crossing of this character is shown on the Wabash Railroad in Polk County, southeast of Des Moines. Contrast this view with the one of the permanent type of undergrade crossing constructed by the C., M. & St. P. Railroad on many of the highway crossings on their main line. A crossing of this type provides ample width of roadway for passing vehicles and a clear view of the approach on either side.

The type of undergrade crossings built by the C. & N.-W. Railroad on their main line is illustrated by the one on the Lincoln Highway west of Ames, in Story County. In such construction the question of sub-drainage is often a serious one, and it frequently becomes necessary to provide catch basins to provide for surface drainage. Some of the crossings of this type which are now in use will require a drainage system before the roadway through the crossing can be properly maintained.

On account of the magnitude of the proposition of railroad crossing improvement and the necessity of co-operation with the Railroad Commission and the railroad companies, a meeting was held in the office of the Railroad Commission on March 31, 1914. At this meeting representatives from ten railroads and members of both the Railroad and Highway Commissions were present

to discuss means of co-operating in this work. A thorough discussion of the problems involved in railroad crossing improvement resulted, and methods of presenting individual crossing improvements were taken up.

Each crossing presents a specific problem and requires special study to secure the best results. Standard plans and methods of construction can be worked out and utilized to some extent, but it has been found necessary to make an examination and field study of the crossing in each specific instance in order to obtain the most satisfactory results. After a request has been received by the Commission for assistance in securing the improvement of a particular crossing, an engineer is assigned to make a field examination of the site and to secure sufficient field notes to work out a detailed plan and estimate of the improvement. This survey is usually made by an engineer employed by the Commission who is assigned to this special work and who works in co-operation with the county engineer. A detailed statement of the crossings surveyed and inspected by the Commission is included in Schedule Forty-two. After completing the field notes the detailed plans and estimates of cost are worked out by the Highway Commission in accordance with the standards adopted. Upon completion of the plans, a conference of the parties interested is called. These conferences are usually held at the site of the crossing at which time, a representative of the Commission is present to explain the plans and estimates of cost which have been prepared. Any modifications or changes in plans are then made and a proposition involving the distribution of cost is submitted. If possible, an agreement is reached at this time as to the final adjustment of cost and responsibility for construction work. In case it is impossible to reach such an agreement, after all means of settlement have failed, the proposition is then appealed to the Railroad Commission for final decision.

During the past year the Commission has completed the field surveys for the improvement of fifty-one crossings. The detailed plans and estimates of cost have been prepared for thirty-one of these locations which involve an estimated expenditure of $137,880 for their improvement. The detailed information in reference to the plans and estimates prepared will be found under Schedule Forty-two. The distribution of the railroad

crossing work taken up by the Commission during the period from March 10 to November 1, 1914, is best obtained by a study of the outline map on file, which gives the location of the work by counties. A brief synopsis of the work accomplished on each of the eighty-three crossings which have been entered for immediate attention by the Commission is found under Schedule Forty-four. Under this schedule an attempt has been made to condense the information as far as possible to give the present status of each crossing project.

The Commission has assisted in securing the construction of eight crossings in accordance with plans as prepared; three other crossing improvements are now in the course of construction and the final adjustment of six others has been secured. In two cases it was necessary to improve the crossings temporarily while awaiting action on the final adjustment.

SCHEDULE FORTY-TWO.

RAILROAD CROSSINGS SURVEYED AND INSPECTED MARCH 10-NOV. 1, 1914.

Crossing Number	County	Township	Section	Railroad	Old Crossing	Proposed Crossings
1	Decatur	New Buda	3	C., B. & Q.	2 Grade	Elimination of crossing by relocating road
2	Pottawattamie	Macedonia	14	C., B. & Q.	Grade	Elimination of crossing by relocating road
3	Union	Union	34-35	C. G. W.	Overhead	Overhead relocated
4	Page	Nodaway	29-32	C., B. & Q.	Grade	Grade improved by grading
5	Union	Highland	9	C., B. & Q.	Overhead	Overhead on straightened road
6	Page	Buchanan	Braddyville	C., B. & Q.	Grade	Grade improved by grading
7	Tama	Spring Creek	Gladbrook	C. & N. W.	Grade	Subway
8	Benton	Monroe	13-14	C., R. I. & P.	None	Undergrade
9	Linn	Monroe	33	W. C. F. & N., and I. C.	Grade	Overhead
10	Polk	Webster	18	I.-U.	Grade	Overhead
11	Guthrie	Penn	35	C., R. I. & P.	Grade	Subway
12	Page	Grant	35-36	Wabash	Grade	Grade on relocated road
13	Ringgold	Washington	6	C., B. & Q.	Grade	Grade on relocation of road
14	Page	Tarkio	Norwich	C., B. & Q.	Grade	Grade on straight road
15	Ringgold	Jefferson	25-26	C., B. & Q.	Grade	Grade—widen at corners
16	Page	Nodaway	33	C., B. & Q.	Overhead	Overhead on straight road
17	Page	Colfax	23-26	I. & S. W.	Grade	Overhead on straight road
18	Page	Lincoln	29-30	Wabash	Grade	Grade improved by grading
19	Union	Jones	20	C., B. & Q.	Grade	Subway
20	Tama	Clark	17-18	C., R. I. & P.	Grade	Subway
21	Tama	Otter Creek	27	C., M. & St. P.	Overhead	Overhead on straightened road
22	Clarke	Osceola	Osceola	C., B. & Q.	Grade	Subway
23	Clarke	Osceola	31-6	C., B. & Q.	Grade	Subway
25	Polk	Beaver	2-11	C., R. I. & P., and I.-U.	Grade	Subway
31	Decatur	Center	10	C., B. & Q.	Grade	Eliminate one crossing by relocation and improve present subway
34	Poweshiek	Chester	32-33	M. & St. L.	Subway	Subway on straightened road
35	Poweshiek	Bear Creek	Brooklyn	C., R. I. & P.	Grade	No change recommended
37	Woodbury	Woodbury	4-9	C., M. & St. P.	Grade	Subway
40	Kossuth	Cresco	12	C. & N. W.	Grade	Overhead
46	Woodbury					
50	Clarke	Osceola	22-15	C., B. & Q.	Grade	Subway
51	Washington	Iowa	10	C., R. I. & P.	5 Grade	Eliminated crossings by relocating road and improved by grading

54	Guthrie	Menlo	29-30	C., R. I. & P.	Grade	Subway
55	Louisa	Wapello	25	M. & St. L.	Grade	Subway
56	Louisa	Morning	31	C., R. I. & P.	Grade	Grade improved
57	Monroe	Mantau	6-7	C., B. & Q.	Grade	Eliminate crossing by relocation of road
58	Marion	Knoxville	2	C., B. & Q.	Grade	Subway
62	Monroe	Mantau	6	C., B. & Q.	Grade	Grade improved
63	Monroe	Bluff and Union	31-36	C., B. & Q., and Wabash	Grade	Relocate road to eliminate crossings
64	Monroe	Union	23	C., B. & Q., and Wabash	Grade	Relocate road to eliminate crossings
65	Monroe	Troy	1	M. & St. L.	Grade	Grade improved
66	Marion	Knoxville	2	C., B. & Q.	Grade	Relocate road to eliminate crossing
67	Marion	Knoxville	10	C., B. & Q.	Subway	Rearrangements of subway trestle
68	Marion	Swan	Swan	C., B. & Q.	Grade	Grade widened and improved
69	Woodbury	Banner	28-33	C. & N. W.	Grade	Subway
70	Woodbury	Union	Correctionville	I. C.	Grade	Grade improved
71	Woodbury	Union and Rock	Correctionville	C. & N. W.	Grade	Grade improved
72	Woodbury	Sioux and Oto	36-31	C., M. & St. P.	Grade	Grade improved or subway
73	Jefferson	Lockridge	36	C., B. & Q.	Subway	Subway approach improved by relocation
75	Mills	Center and Silver Creek	24-19	C., B. & Q.	3 Subways	Subways approach improved by relocation
77	Cerro Gordo	Falls	21	C., R. I. & P.	Grade	Relocation and subway
78	Cerro Gordo	Lime Creek	3-10	M. & St. L., and C. G. W.	Grade	Grade improved
79	Cerro Gordo	Pleasant Valley	15-16	C. G. W.	Grade	Grade improved
80	Lucas	Benton	1-2	C., B. & Q.	Grade	Subway
81	Lucas	Union	19	C., B. & Q.	Grade	Grade improved

SCHEDULE FORTY-THREE.

PLANS AND ESTIMATES OF COST PREPARED BY COMMISSION FOR RAILROAD CROSSING IMPROVEMENT,

MARCH 10-NOVEMBER 1, 1914.

Crossing Number	County	Present Crossing	Proposed Crossing	Estimated Cost
1	Decatur	Grade	Eliminated	$3,525.00
2	Pottawattamie	Grade	Eliminated	4,587.00
3	Union	Overhead	Overhead	1,875.00
4	Page	Grade	Grade	878.00
5	Union	Overhead	Overhead	7,227.00
6	Page	Grade	Grade	943.00
7	Tama	Grade	Subway	1,818.00
8	Benton	None	Undergrade	5,500.00
9	Linn	Grade	Overhead	1,215.00
10	Polk	Grade	Overhead	7,363.00
12	Page	Grade	Grade	3,900.00
13	Ringgold	Grade	.....	4,500.00
14	Page	Grade	Grade	6,710.00
17	Page	Grade	Overhead	1,173.00
18	Page	Grade	Grade	.....
19	Union	Grade	Subway	1,890.00
20	Tama	Grade	Subway	1,915.00
22	Clarke	Grade	Subway	.....
23	Clarke	Grade	Subway	6,326.00
25	Polk	Grade	Subway	5,381.00
31	Decatur	Grade	None	10,710.00
34	Poweshiek	Undergrade	Subway	2,917.00
35	Poweshiek	Grade	.....	10,558.00
50	Clarke	Grade	Subway	735.00
51	Washington	Grade	None	8,767.00
55	Louisa	Grade	Subway	.....
56	Louisa	Grade	Grade	13,444.00
57	Monroe	Grade	None	.....
62	Monroe	Grade	Grade	3,484.00
63	Monroe	4 Grade	None	.....
75	Mills	3 Subways, 1 new.	3 Subways	.....
				20,547.00

Total estimated value of improvements, thus far projected.....$137,888.00

SCHEDULE FORTY-FOUR.

SYNOPSIS OF DANGEROUS RAILROAD CROSSING WORK.

DETAILED STATEMENT OF WORK DONE ON EACH CROSSING BY IOWA HIGHWAY COMMISSION.

NO. 1—DECATUR COUNTY.

Date of request to Commission. March 30, 1914.
Location .....1½ miles S. W. Davis City, New Buda Twp., Sec. 3, T. 67, R. 26 W.
Local name.....Griffith cut-off.
Road system.....County.
Railroad .....C., B. & Q. R. R., Cainsville Branch.
Survey made .....By county engineer.
Present crossing.....Grade.
Proposed crossing.....Relocation of road.
Conference .....Davis City, April 21, 1914.

Present:
W. A. Card, Supt. C., B. & Q. R. R.
H. C. Beard, Highway Commissioner.
Frank G. Mallette, County Engineer.
Estimate of final cost.....$3,525.00
Final adjustment:
It was agreed that two grade crossings on Davis City-Lamoni Road should be eliminated by a relocation of the road according to plans prepared by the Highway Commission. The railroad agreed to expend $620.00 toward the improvement. This work is now completed and the new road open for traffic.

NO. 2—POTTAWATTAMIE COUNTY.

Date of request to Commission. January 10, 1914, Supervisor Harding.
Location .....½ mile N. of town of Macedonia, Sec. 14, Macedonia Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made.....February 11, 1914.
Present crossing .....Grade.
Proposed crossing.....Relocation of highway. Plans and estimates prepared by Highway Commission.
Conference .....
Present:
N. C. Allen, Supt. C., B. & Q. R. R.
H. C. Beard, Highway Commissioner.
Mr. Willoughby Dye.
Final adjustment:
Agreement: Proposition submitted to railroad company, to use a portion of their right of way to relocate the present road and to pay $125 toward the improvement. The county to purchase the additional right of way and do the remainder of the grading work. No definite agreement has been reached with the county at the present time.

NO. 3—UNION COUNTY.

Date of request to Commission. April, 1914.
Location .....1½ miles S. W. Shepard, Sections 34-35, Union Twp.
Local name.....Shepard Crossing.
Road system.....Township.
Railroad .....C. G. W. R. R.
Survey made.....March 10, 1914. Plans and estimates prepared by the Highway Commission.
Present crossing .....Overhead.
Proposed crossing.....Relocation of present crossing overhead.
Conference .....April 24, 1914, at Des Moines.
Present:
Supt. Shoemaker, C. G. W. R. R.
Engineer Wallard, C. G. W. R. R.
H. C. Beard, Highway Commissioner.
E. Williams, Engineer, Highway Commission.
Estimate of cost of plans as prepared by Commission.....$1,875.00
At this conference railroad officials agreed to submit plans and proposition to higher officials.
Final adjustment:
Railroad company built bridge in accordance with plan of Highway Commission and township trustees made fill for approaches.

NO. 4—PAGE COUNTY.

Date of request to Commission. March 26, 1914.
Location .....Secs. 29-32, Nodaway Twp.
Local name.....Snake Creek Crossing.
Road system.....County.

Railroad .....C., B. & Q. R. R.
Survey made.....March 21, 1914. Plans and estimates prepared by the Highway Commission.
Present crossing .....Grade.
Proposed crossing.....Grade.
Conference .....April 28, 1914, Yorktown.
Present:
H. W. Hamm, Supt. C., B. & Q. R. R.
H. C. Beard, Highway Commissioner.
E. Williams, Engineer, Highway Commission.
Estimate of cost.....$878.00
Final adjustment:
At the conference it was agreed that the work should be done according to plans as prepared by Commission. The railroad was to pay two-thirds of the cost and the county one-third. The improvement contemplated the leveling of the banks at either side of the crossing to obtain a better view of approaching trains. No actual work has been done on this crossing pending an agreement from the property owners to avoid obstructing the view by buildings or shrubbery upon their premises.

NO. 5—UNION COUNTY.

Date of request to Commission. March 2, 1914.
Location .....2½ miles E. of Creston, Sec. 9, Highland Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made.....March 11, 1914.
Present crossing .....Overhead.
Proposed crossing.....Overhead. Relocated to avoid bad turn at approaches.
Conference .....April 20, 1914.
Present:
J. P. Cummings, Supt. C., B. & Q. R. R.
H. C. Beard, Highway Commissioner.
Clint Henry, Chairman Board of Supervisors.
Estimate of cost on plans as prepared by Commission.....$7,227.00
At this conference it was decided to secure a traffic census which was later taken during the week of June 21st to June 27th.
Final adjustment:
Resolution was passed by the board of supervisors of Union county placing the adjustment in the hands of the Railroad Commission. Later at a hearing held November 7, 1914, before the Railroad Commission at which time all parties interested were present, it was agreed that temporary repairs should be made at the present crossing by placing a balustrade around the curve at the east end of the bridge and building wings on either end of the present bridge. It was also agreed that the Railroad Company should replace the present structure by a new one at the site as shown on the plans prepared by the Commission at the expiration of the life of the present structure, which shall not exceed six years.

NO. 6—PAGE COUNTY.

Date of request to Commission.
Location .....In town of Braddyville, Sec. 30, Buchanan Twp.
Local name.....Braddyville, Main Street.
Road system.....County, at corporation line of town of Braddyville.
Railroad .....C., B. & Q. R. R. K. & W. Branch.
Survey made.....March 24, 1914.
Present crossing .....Grade.
Proposed crossing.....Grade. Improved by leveling slope on banks to obtain better view.
Conference .....May 8, 1914, Braddyville, Iowa.
Present:
C. A. Card, Supt. C., B. & Q. R. R.
Engineer Peck, C., B. & Q. R. R.

Board of Supervisors, Page county.
Town Council of Braddyville.
H. C. Beard, Highway Commissioner.
E. Williams, Engineer, Highway Commission.
At this conference two propositions were submitted by the Commission in accordance with detailed plans and estimates previously prepared.
Final adjustment:
Proposition No. 2 was finally accepted by all parties interested which contemplated the improvement of the present grade crossing at an estimated cost of $943. This cost was equally divided between the railroad company, board of supervisors and town council of Braddyville. A report from the County Engineer shows the improvement completed in accordance with plans prepared.

NO. 7—TAMA COUNTY.

Date of request to Commission. April 7, 1914.
Location .....In Gladbrook.
Road system.....County.
Survey made.....April 27, 1914.
Present crossing .....Grade.
Proposed crossing.....Undergrade.
Conference .....June 11, 1914.
Present:
J. C. Davis, Attorney, C. & N. W. R. R.
H. C. Beard, Highway Commissioner.
E. Williams, Engineer, Highway Commission.
Senator A. L. Ames.
Mayor of Gladbrook.
Members of Board of Supervisors.
Final adjustment:
An agreement was reached whereby a temporary undergrade crossing was to be constructed by the C. & N. W. R. R., and Tama county and town of Gladbrook are each to donate $250 toward its cost. This subway has been completed and traffic is now using it.

NO. 8—BENTON COUNTY.

Date of request to Commission. May 4, 1914.
Location .....9 miles W. of Vinton, Secs. 13-14, Monroe Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., R. I. & P. R. R.
Survey made .....May 19, 1914.
Present crossing.....None.
Proposed crossing.....Undergrade or grade.
Conference .....June 3, 1914, Vinton, Iowa.
Present:
Attorney Johnson and Engineer Rossiter representing C., R. I. & P. R. R.
Board of Supervisors, Benton county.
H. C. Beard, Highway Commissioner.
E. Williams, Engineer, Highway Commission.
Two propositions were submitted by Commission upon plans as prepared at an estimated cost of $1,215 for the grade crossing and $7,363 for the undergrade crossing.
Final adjustment:
No agreement was reached and the matter has been appealed to the Railroad Commision. The C., R. I. & P. R. R. refused to make a grade crossing in accordance with the plans as prepared by the Commission and refused to pay the amount asked for the undergrade crossing. A hearing will soon be held before the Railroad Commission to secure an adjustment.

NO. 9—LINN COUNTY.

Date of request to Commission. May 2, 1914.
Location .....Sec. 33, Monroe Twp. on Cedar Rapids-Center Point Highway.
Local name.....Unknown.
Road system.....County.
Railroad .....Ill. Cent. & W. C. F. & N. R. R.
Survey made .....May 6, 1914.
Present crossing.....Grade.
Proposed crossing.....Overhead.
Conference .....June 4, 1914, Marion.
Present:
J. F. Coates, Assistant Engineer, I. C. R. R.
Mr. Morgan, Assistant Engineer, I. C. R. R.
President Cass, W. C. F. & N. R. R.
Members of Board of Supervisors.
J. F. Parsons, County Engineer.
H. C. Beard, Highway Commissioner.
E. Williams, Engineer, Highway Commission.

At this conference two plans and propositions were presented by the Commission representatives which were discussed fully by those present. The Board of Supervisors have agreed to pay $500 toward the cost of building the approaches to the overhead bridge, the remainder of the cost of building the bridge and approaches to be borne by the two railroad companies interested.

Final adjustment:
No definite arrangement has been reacher to date.

NO. 10—POLK COUNTY.

Date of request to Commission. April 1, 1914.
Location .....¾ mile N. of Des Moines, Hyperion Club Road, Sec. 18, Webster Twp.
Local name.....Beaver Avenue Crossing.
Road system.....County.
Railroad .....D. M. I. R. R. Co. (Beaver Val. Div.)
Survey made .....Preliminary survey by County Engineer. Final survey by Commission April 30, 1914.
Present crossing.....Grade.
Proposed crossing.....Overhead.
Conference .....June 17, 1914, Des Moines, Iowa.
Present:
J. R. Sterling, Chief Engineer, Interurban R. R.
Board of Supervisors, Polk county.
H. C. Beard, Highway Commissioner.
E. Williams, Engineer, Highway Commission.

Later conferences were held on June 29th and August 4th, at which time the plans and estimates as prepared by the Commission were discussed. The estimate of cost of this improvment is $6,710.

Final adjustment:
No definite agreement has been reached awaiting the purchase of the right of way by the county. This right of way has now been secured and a final adjustment can now be made. Protection signal bells have been installed by the railway company.

NO. 11—GUTHRIE COUNTY.

Date of request to Commission. April, 1914.
Location .....2½ miles E. of Stuart, S. line Sec. 36, Penn Twp.
Local name.....Stuart Crossing.
Road system.....Township.
Railroad .....C., R. I. & P. R. R.
Survey made .....May 1, 1914.
Present crossing.....Grade.

Proposed crossing.....Undergrade on relocated road.
Conference .....
A preliminary estimate of cost of $6,000 has been prepared but no conference has been arranged to date.

NO. 12—PAGE COUNTY.

Date of request to Commission. March, 1914.
Location .....In town of Bingham, bet. Secs. 35-36, Grant Twp.
Local name.....Bingham Crossing.
Road system.....County.
Railroad .....Wabash R. R.
Survey made .....March 26, 1914.
Present crossing.....Grade.
Proposed crossing.....Relocation of road.
Conference .....
No conference held on this crossing. Plans and estimate of cost have been prepared by the Commission. Cost estimate on Commission plans.....$1,175.00

NO. 13—RINGGOLD COUNTY.

Date of request to Commission. April 11, 1914.
Location .....Center line Sec. 6, Washington Twp. In town of Diagonal.
Local name.....Diagonal Crossing.
Road system.....In corporate limits, town of Diagonal.
Railroad .....C., B. & Q. R. R.
Survey made .....May 7, 1914.
Present crossing.....Grade.
Proposed crossing.....Improvement of grade crossing.
Conference .....April 29, 1914, Diagonal.
Present:
H. W. Hamm, Division Superintendent, C., B. & Q. R. R.
H. C. Beard, Highway Commissioner.
E. Williams, Engineer, Highway Commission.

Decided at the conference held that by a slight relocation of the road a great deal of the danger could be eliminated.

Final adjustment:
Since the town of Diagonal is unable to contribute to the improvement on account of lack of funds the matter has been postponed until 1915.

NO. 14—PAGE COUNTY.

Date of request to Commission. March, 1914.
Location .....Secs. 29-32, Tarkio Twp. In town of Norwich.
Local name.....Norwich.
Road system.....County.
Railroad .....C., B. & Q. R. R. K. & W. Branch.
Survey made .....March 25, 1914.
Present crossing.....Grade.
Proposed crossing.....Grade on relocated road.
Conference .....
No conference has been arranged for this crossing although the plans and estimates have been prepared. The estimate of cost on this improvement from plans as prepared for a relocation is.....$1,890.00

NO. 15—RINGGOLD COUNTY.

Date of request to Commission. March, 1914.
Location .....4 miles S. of Shannon City, Secs. 25-26, Jefferson Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made .....May 9, 1914.

Present crossing.....Grade.
Proposed crossing.....No plans prepared.
Conference .....
No conference held.

NO. 16—PAGE COUNTY.

Date of request to Commission. April 21, 1914.
Location .....2½ miles S. E. Clarinda, Sec. 33, Nodaway Twp.
Local name.....Herron.
Road system.....County.
Railroad .....C., B. & Q. R. R. K. & W. Branch.
Survey made .....March 20, 1914.
Present crossing.....Overhead bridge.
Proposed crossing.....Overhead bridge on relocated road.
Conference .....March 25, 1914. At site of crossing.
Present:
H. W. Hamm, Superintendent, C., B. & Q. R. R.
Board of Supervisors of Page county.
H. C. Beard, Highway Commissioner.
Final adjustment:
This crossing adjusted at the site at the time the conference was held on March 25, 1914. Superintendent Hamm agreed to rebuild the overhead bridge on the center line of the highway at the new location. Construction work has been completed at this time.

NO. 17—PAGE COUNTY.

Date of request to Commission. March, 1914.
Location .....Near Blanchard, Secs. 23-26, Colfax Twp.
Local name.....Arnold.
Road system.....County.
Railroad .....I. & S. W. R. R.
Survey made .....April 17, 1914.
Present crossing.....Grade.
Proposed crossing.....Overhead on relocated road.
Conference .....
No conference has been arranged on this crossing. Plans have been prepared and the improvement estimated at a total cost of $1,915.

NO. 18—PAGE COUNTY.

Date of request to Commission. April 16, 1914.
Location .....Near Blanchard, Secs. 29-30, Lincoln Twp.
Local name.....Christensen.
Railroad .....Wabash R. R.
Survey made .....April 16, 1914.
Road system.....County.
Present crossing.....Grade.
Proposed crossing.....Grade.
Conference .....
Plans are in course of preparation for the improvement of this crossing at this time.

NO. 19—UNION COUNTY.

Date of request to Commission. April 21, 1914.
Location .....Near Afton Junction, center line Sec. 20, Jones Twp.
Local name.....Unknown.
Road system.....Township.
Railroad .....C., B. & Q. R. R.
Survey made .....May 12, 1914.
Present crossing.....Grade.
Proposed crossing.....Undergrade.
Conference .....

NO. 20—TAMA COUNTY.

Date of request to Commission. May 26, 1914.
Location .....4 miles E. of Traer, Secs. 17-18, Clark Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., R. I. & P. R. R.
Survey made .....May 28, 1914.
Present crossing.....Grade.
Proposed crossing.....Undergrade.
Conference .....June 14, 1914.
Present:
C. W. Jones, General Manager, C., R. I. & P. R. R.
Engineer Rossiter, C., R. I. & P. R. R.
Board of Supervisors, Tama county.
H. C. Beard, Highway Commissioner.
E. Williams, Engineer, Highway Commission.
Plans and estimates were prepared by the Commission and presented at the time of the hearing. The estimates of cost on the plan, as accepted, was $2,170.
Final adjustment:
It was finally agreed between the parties represented that the C., R. I. & P. R. R. was to construct a temporary bridge which is to be maintained during its life and replaced by a permanent structure. The county is to do the grading work necessary outside the limits of the right of way and care for the sub-drainage of the road and pay $500 toward the cost of the improvement.

NO. 21—TAMA COUNTY.

Date of request to Commission.
Location .....Near Gladstone, Sec. 27, Otter Creek Twp.
Local name.....Gladstone.
Road system.....County.
Railroad .....C., M. & St. P. R. R.
Survey made .....No survey made.
Present crossing.....Overhead.
Proposed crossing.....Overhead with relocation.
Conference .....June 12, 1914.
Present:
E. L. Sinclair, Assistant District Engineer, C., M. & St. P. R. R.
Board of Supervisors, Tama county.
E. Williams, Engineer, Highway Commission.
Conference was held at the site of the crossing on date given above.
Final adjustment:
It was agreed by the C., M. & St. P. R. R. that the new overhead highway bridge should be located so that the center line of the bridge should intersect the center line of the east bound track by making an angle of forty-seven degrees. This relocation was accepted by the Board of Supervisors and Commission representative.

NO. 22—CLARKE COUNTY.

Date of request to Commission. May 15, 1914.
Location .....S. Main St., Osceola, Interstate Trail.
Local name.....S. Main Street.
Road system.....Inside corporation limits of Osceola.
Railroad .....C., B. & Q. R. R. Cainsville Branch.
Survey made .....June 30, 1914.
Present crossing.....Grade.
Proposed crossing.....Undergrade.
Conference .....October 2, 1914, Osceola.
Present:
J. P. Cummings, Division Superintendent, C., B. & Q. R. R.
M. C. Foster, Chairman, Board of Supervisors.
John Hyland, County Engineer.

F. P. Barnhill, Mayor, Osceola.
Members of City Council.
Members of Commercial Club.
J. H. Ames, Assistant Highway Engineer.

At the conference held the plans and estimates as prepared by the Commission were presented and discussed. The matter of raising the necessary money (estimated cost $10,700) to carry out the improvement was taken up. It was finally agreed that the City Council, Commercial Club, and other interested parties would formulate an agreement and submit it to the railroad company for their consideration.

Final adjustment:

No agreement has been reached awaiting the submission of a proposition from local interested parties.

NO. 23—CLARKE COUNTY.

Date of request to Commission. July 2, 1914.
Location .....3 miles S. of Osceola, S. line Sec. 31, Green Bay Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made .....July 2, 1914.
Present crossing.....Grade.
Proposed crossing.....Undergrade.
Conference .....

The matter of arrangements for a conference in reference to this crossing are now pending. Plans and estimates of cost have been prepared by the Commission.

NO. 24—CLARKE COUNTY.

Location.....Near Woodbine.

A survey will be made of this crossing in the immediate future.

NO. 25—POLK COUNTY.

Date of request to Commission. July 27, 1914.
Location .....¼ mile W. of Mitchellville, Secs. 2-11, Beaver Twp.
Local name.....Uhl Crossing.
Road system.....County.
Railroad .....C., R. I. & P., and D. M. I. R. R.
Survey made .....July 28, 1914.
Present crossing.....Grade.
Proposed crossing.....Undergrade or relocation of road.
Conference .....September 22, 1914, Des Moines.
Present:

C. W. Jones, General Manager, C., R. I. & P. R. R.
F. W. Sargent, Attorney, C., R. I. & P. R. R.
W. H. Peterson, Engineer, C., R. I. & P. R. R.
J. R. Sterling, Chief Engineer, D. M. I. R. R.
Attorney Parrish, D. M. I. R. R.
Board of Supervisors, Polk county.
H. C. Curtis, County Engineer.
H. C. Beard, Highway Commissioner.
J. H. Ames, Assistant Highway Engineer.

Plans and estimates for the improvement of this crossing were presented and explained at this time. The estimate of cost for a temporary undergrade crossing at this location is $10,558. A later meeting was arranged for November 2nd to allow time for further consideration on the part of the railroads interested.

Conference .....November 2, 1914, Des Moines.
Present:

Same representatives as above.

At this conference, alternate plans were submitted by each of the railroads interested and these plans were fully discussed. It was finally agreed that a field examination should be made of the three propositions and the date of November 4th was agreed upon.

Conference .....November 4, 1914. At site of crossing.
Present:

Engineer Sterling, D. M. I. R. R.
Engineer Peterson, C., R. I. & P. R. R.
H. C. Curtis, County Engineer.
J. H. Ames, Assistant Highway Engineer.

After a careful field examination it was agreed that further surveys should be made. An agreement was reached that the two railroad companies should jointly improve the crossing temporarily by grading and removing obstructions to the view. Final adjustment of the permanent improvement of the crossing was deferred until more information could be secured.

NO. 26—POLK COUNTY.

The surveys for the improvement of this crossing will be taken up by the Commission at an early date.

NO. 27—LOUISA COUNTY.

Date of request to Commission. June 15, 1914.
Location .....Secs. 2-11, Grand View Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., R. I. & P. R. R., M. & St. L. R. R.
Survey made .....June 26, 1914.
Present crossing.....Grade.
Proposed crossing.....Plans not completed.
Conference .....

No conference has been held awaiting the preparation of plans now in the course of completion.

NO. 28—IDA COUNTY.

Date of request to Commission. July 10, 1914.
Location .....Secs. 25-26, Griggs Twp.
Local name.....Holstein.
Road system.....County.
Railroad .....C. & N. W. R. R.
Survey made .....Surveyed by R. R. Co. and submitted for approval.
Present crossing.....Grade.
Proposed crossing.....Overhead.
Conference .....None held.
Final adjustment:

The railroad company submitted plans for an overhead crossing which were approved by the Commission. This improvement is now in the course of construction. The cost is being borne entirely by the railroad company.

NO. 29—SAC COUNTY.

Date of request to Commission.
Location .....Secs. 28-29, Eden Twp., 2½ miles E. of Schaller.
Local name.....Hoover.
Road system.....County.
Railroad .....C. & N. W.
Survey made .....By railroad company and plans submitted.
Present crossing.....Grade.
Proposed crossing.....Overhead.
Conference .....None held.
Final adjustment:

The railroad company has constructed the overhead crossing according to plans prepared by them and have borne the entire expense.

NO. 30—DECATUR COUNTY.

Date of request to Commission. July 13, 1914.
Location .....1½ miles W. of Grand River on Richland Grand River Twp. line.
Local name.....Bullard.
Road system.....Township.
Railroad .....C., B. & Q. R. R.
Survey made .....
Present crossing.....Grade.
Proposed crossing.....Undergrade.
Conference .....August 4, 1914. Site of crossing.

Present:
H. W. Hamm, Superintendent, C., B. & Q. R. R.
Board of Supervisors, Decatur county.
Trustees, Richland township.
Frank Mallette, County Engineer.
H. C. Beard, Highway Commissioner.

At a conference held on August 4th, in reference to the construction of an undergrade crossing at this point, a proposition was submitted to the railroad company upon which the estimate of distribution of cost would be: C., B. & Q. R. R., $1,364; county and township, $674.

Final adjustment:
No final adjustment has been made as an agreement was not reached with the township trustees on this proposition. As soon as their acceptance is secured, construction work will be started at once.

NO. 31—DECATUR COUNTY.

Date of request to Commission.
Location .....4 miles N. of Leon, Sec. 10, Center Twp.
Local name.....Goodman Cut Off.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made .....July 3, 1914.
Present crossing.....Grade.
Proposed crossing.....Relocation of road to eliminate crossing.
Conference .....September 26, 1914, Leon.

Present:
W. A. Card, Superintendent, C., B. & Q. R. R.
James Harvey, President, Commercial Club.
Mr. Seward, Engineer, C., B. & Q. R. R.
Frank Mallette, County Engineer.
Members of Board of Supervisors, Decatur county.
H. C. Beard, Highway Commissioner.

At the conference, which was held on September 26th, the plans and estimates as prepared by the Commission were taken up and fully discussed. No definite agreement was reached at this time but a proposition was made by the railroad company to pay one-half the cost of relocating the road and the county to pay the other one-half.

Final adjustment:
The proposition as stated at the conference was accepted by the railroad company on October 12th. No notification of acceptance has been received from the county and township.

NO. 32—DAVIS COUNTY.

This crossing is located on the line between Sections 25 and 30, Cleveland township, on corporation limits of Bloomfield. No surveys have been made or conference held in regard to this crossing.

NO. 33—BENTON COUNTY.

Date of request to Commission. April 23, 1914.
Location .....In town of Urbana, Secs. 27-34, Polk Twp.
Local name.....Urbana.
Road system.....County and Township.
Railroad .....W. C. F. & N. R. R.
Survey made .....June, 1913, by railroad company.
Present crossing.....Grade.
Proposed crossing.....Relocation of road eliminating one crossing.
Conference .....None held.

Final adjustment:
Correspondence has been taken up with property owners affected in an effort to secure concessions on the additional right of way necessary for the improvement.

NO. 34—POWESHIEK COUNTY.

Date of request to Commission.
Location .....1½ miles N. of Grinnell, Secs. 32-33.
Local name.....Unknown.
Road system.....County.
Railroad .....M. & St. L. R. R.
Survey made .....July 30, 1914.
Present crossing.....Undergrade.
Proposed crossing.....Undergrade on relocation of present road.
Conference .....September 24, 1914, Grinnell.

Present:
R. G. Kenley, Chief Engineer, M. & St. L. R. R.
H. C. Beard, Highway Commissioner.
J. H. Ames, Assistant Highway Engineer.
Members of Board of Supervisors.
C. E. Olson, County Engineer.
Members of Commercial Club.
Number of interested citizens.

At a meeting held in Grinnell in reference to this crossing at which time the plans and estimates for this improvement as prepared by the Commission were fully discussed, the cost of the improvement was estimated at.....$8,027.00

Final adjustment:
The railroad company to construct an undergrade crossing in accordance with the plans prepared by the Commission. The county to pay $3,000 toward the cost of the improvements. Construction work on the crossing to be started in 1915.

NO. 35—POWESHEK COUNTY.

Date of request to Commission. June 30, 1914.
Location .....In town of Brooklyn, Sec. 23, Bear Creek Twp.
Local name.....East Crossing Brooklyn.
Road system.....In corporation limits of Brooklyn.
Railroad .....C., R. I. & P. R. R.
Survey made .....July 31, 1914.
Present crossing.....Grade.
Proposed crossing.....No recommendations.
Conference .....

The matter of the improvement of this crossing has been postponed indefinitely on account of the large expenditure of money necessary to make a satisfactory crossing at the point and the lack of funds on the part of the town of Brooklyn. On account of the fact that the crossing is located within the city limits of Brooklyn, it is impossible for the county to appropriate funds for the improvement.

NO. 36—SAC COUNTY.

Date of request to Commission. May 7, 1914.
Location .....Just west of town of Ulmer, Secs. 7-8, Sac Twp.
Local name.....Ulmer.

Road system.....County.
Railroad .....Illinois Central.
Survey made .....By railroad company.
Present crossing.....Grade.
Proposed crossing.....Grade.
Conference .....

No meetings have been held in reference to the improvement. Correspondence with the railroad company has secured some concessions on their part, but a definite agreement as to the burden of expense for this work has not been reached.

NO. 37—WOODBURY COUNTY.

Date of request to Commission. September 28, 1914.
Location .....¼ mile S. E. Sioux City, between Sec. 4 and 9, Woodbury Twp.
Local name.....Linley.
Road system.....Township.
Railroad .....C., M. & St. P. R. R.
Survey made .....September 29, 1914.
Present crossing.....Grade.
Proposed crossing.....Undergrade.
Conference .....

No arrangements for a conference on this crossing have been made, awaiting the completion of the plans and estimates. The plans are now being worked out and will be complete at an early date.

NO. 38—LINN COUNTY.

A request for the improvement of a crossing in Linn county known as the "Ryan" Crossing has been made to the Commission. Surveys and plans for the improvement of this crossing will be made as soon as possible.

NO. 39—WINNEBAGO COUNTY.

A request has been made to the Commission for assistance in eliminating a crossing on the C., R. I. & P. R. R., in Forest City. No surveys or plans have been made to date.

NO. 40—KOSSUTH COUNTY.

Date of request to Commission. July 10, 1914.
Location .....1 mile S. of Algona, Sec. 12, Livingston Twp.
Local name.....Davidson.
Road system.....Township.
Railroad .....C. & N. W. R. R.
Survey made .....October, 1913, by C. & N. W. R. R.
Present crossing.....Grade.
Proposed crossing.....Overhead.
Conference .....None held.

Final adjustment:

The railroad company, in October, 1914, constructed an overhead crossing at this point. Plans for the crossing, as built, are on file with the Commission. The work was done and paid for entirely by the railroad company, without assistance from outside sources. The crossing as constructed serves only one property owner, being located on a stub road.

NO. 41—ADAMS-TAYLOR COUNTIES.

Date of request to Commission. July, 1914.
Location .....Section 33, Grant Twp.
Local name.....Unknown.
Road system.....Township.
Railroad .....C., B. & Q. R. R.
Survey made .....None made to date.
Present crossing.....Grade.

Proposed crossing.....Grade on relocated road.
Conference .....None held. Surveys for the relocation of the road necessary to make the crossing safe will be made at an early date.

NO. 42—MONTGOMERY COUNTY.

Date of request to Commission. May 18, 1914.
Location .....W. of Villisca, Sec. 20, Jackson Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made .....None.
Present crossing.....Overhead.
Proposed crossing.....Overhead rebuilt with approaches, graded.
Conference .....June 18, 1914, Villisca.

Present:
Superintendent Allen, C., B. & Q. R. R.
Senator F. F. Jones.
Mr. Dunahoo.
H. M. Howard, County Engineer.

A meeting was held in reference to the grading of the crossing which was being done at this time.

Conference .....October 23, 1914, Villisca.

Present:
Commercial Club Committee.
Mr. Smith, President, Commercial Club.
Senator F. F. Jones.
F. S. Williams, Member Commercial Club.
E. Williams, Engineer, Highway Commission.

A meeting was held with the Commercial Club Committee in reference to the improvement of this crossing at which time the proposition of a relocation of the road was taken up. It was suggested that the survey necessary for the improvement should be made by County Engineer Howard.

Final adjustment:

The railroad company has graded the south approach to the crossing involving an expenditure of $470. The county has graded the north approach in a similar manner, the dirt for both sides being furnished by the railroad company.

NO. 43—MILLS COUNTY.

Date of request to Commission. Not recorded.
Location .....E. of Emerson, Secs. 24-25, Indian Creek Twp.
Local name.....Emerson.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made .....None made.
Present crossing.....Undergrade.
Proposed crossing.....Undergrade.
Conference .....None held.

Final adjustment:

The county is constructing a permanent bridge to provide drainage at this point and a proposition has been submitted to the railroad asking them to pay $600 toward the improvement.

NO. 44—HAMILTON COUNTY.

A request has been made to the Commission for assistance in securing the elimination or improvement of a crossing in Section 17, Cass township, 4 miles N. of Webster City on C. & N. W. R. R. This crossing will be taken up by the Commission at an early date.

NO. 45—HAMILTON COUNTY.

A request has been made for assistance in securing plans for the improvement of the crossing in Section 8, Cass township, 5 miles N. of Webster City. This will be surveyed at the same time as crossing No. 44.

NO. 46—WOODBURY COUNTY.

Plans for the improvement of a crossing known as the Mahan Cut Off were prepared by the county engineer and sent to the Commission for approval. The grade lines were approved for temporary construction and the railroad company has graded a portion of the road at their expense.

NO. 47—DICKINSON COUNTY.

Date of request to Commission. March, 1914.
Location .....1 mile west of Montgomery, Secs. 28-33, Diamond Lake Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., R. I. & P. R. R.
Survey made .....September 5, 1914. Uncomplete.
Present crossing.....Grade.
Proposed crossing.....The surveys have not been completed for this crossing.
Conference .....None held.

NO. 48—RINGGOLD COUNTY.

Date of request to Commission. July 28, 1914.
Location .....2 miles S. W. Mt. Ayr, Secs. 10-15, Rice Twp.
Local name.....Second crossing S. of Mt. Ayr.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made .....None.
Present crossing.....Grade.
Proposed crossing.....Grade.
Conference .....None held.
Final adjustment:

The improvement of this crossing which consisted of grading the approaches was secured by correspondence with the railroad. The railroad company has widened the approaches and raised the fill on either side.

NO. 49—STORY COUNTY.

Date of request to Commission. August 14, 1914.
Location .....W. line Nevada. Between Sec. 1 Grant and 6 Nevada Twp.
Local name.....Blackman.
Road system.....Township.
Railroad .....C. & N. W. R. R.
Survey made .....None.
Present crossing.....Grade.
Proposed crossing.....Undergrade or reloaction.
Conference .....August 17, 1014. Nevada.
Present:

Sam. Steigerwalt, County Engineer.
J. H. Ames, Assistant Highway Engineer.

At this conference plans for the present improvement of the crossing were discussed and it was agreed that the most feasible plan for the elimination of the danger at this crossing consisted in the selection of a different route to carry the traffic from Nevada to the northwest. A route was selected and a proposition was formulated to present to the city council.

Final adjustment:

No final report on the decision of the city council has been received.

NO. 50—CLARKE COUNTY.

Date of request to Commission. July 20, 1914.
Location .....2 miles E. of Osceola, Secs. 15-22, Osceola Twp.
Local name.....Eggleston.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made .....August 17, 1914.
Present crossing.....Grade.
Proposed crossing.....Undergrade.
Conference .....None held.

Plans and an estimate of cost for this improvement have been prepared. A conference of the interested parties will be held at an early date.

NO. 51—WASHINGTON COUNTY.

Date of request to Commission. April, 1914.
Location .....In Iowa Junction, Sec. 10, Iowa Twp.
Local name.....Iowa Junction.
Road system.....Township.
Railroad .....C., R. I. & P. R. R.
Survey made .....August 14, 1914.
Present crossing.....Grade.
Proposed crossing.....Relocate road to eliminate three crossings.
Conference .....None held.

Plans and estimates of cost are now in the process of preparation and as soon as complete a conference will be held with interested parties.

NO. 52—MARSHALL COUNTY.

Date of request to Commission. About August 1, 1914.
Location .....2½ miles E. of Haverhill, Sec. 2, Jefferson Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., M. & St. P. R. R., Main Line.
Survey made .....By County Engineer.
Present crossing.....Grade.
Proposed crossing.....Grade. Beveling banks to obtain better view.
Conference .....August 15, 1914. Site of crossing.
Present:

E. L. Sinclair, Assistant Engineer, C., M. & St. P. R. R.
Members of Board of Supervisors.
W. W. Morehouse, County Engineer.
J. H. Ames, Assistant Highway Engineer.

Plans for the improvement of the crossing were discussed by those present.

Final adjustment:

The railroad company agreed to do the grading work necessary to improve the view on the north side of the track without cost to the county. The county agreed to pay 6 cents per cubic yard for the material excavated by the railroad company on the south side of the track and which was placed on the county right of way beyond the limits of the railroad company's right of way. The work on this crossing is completed at this date.

NO. 53—CRAWFORD COUNTY.

A request was made on August 18, 1914, to the Commission for assistance in improving two crossings on the Lincoln Highway, five miles S. W. of Dows City, Sections 24-25, Boyer township. Surveys for this improvement will be made as soon as possible.

NO. 54—GUTHRIE COUNTY.

Date of request to Commission. August 24, 1914.
Location .....2 miles W. of Menlo, Secs. 29-30, Beaver Twp.
Local name.....Wells.

Road system.....Township.
Railroad .....C., R. I. & P. R. R.
Survey made .....By county engineer and railroad company.
Present crossing.....Grade.
Proposed crossing.....Undergrade.
Conference .....August 25, 1914, Menlo.

Present:
C. W. Jones, General Manager, C., R. I. & P. R. R.
Mr. Gibbons, Superintendent, C., R. I. & P. R. R.
Mr. Peterson, Engineer, C., R. I. & P. R. R.
Mr. Sargent, Attorney, C., R. I. & P. R. R.
Board of Supervisors, Guthrie county.
Township Trustees, Beaver township.
P. E. Wylie, County Engineer.
E. Williams, Engineer, Highway Commission.

The plans as prepared by the railroad company and county engineer were discussed and at the conclusion of the meeting a proposition was submitted by the railroad company. This railroad company agreed to pay one-half the cost of making an undergrade crossing at this point which they estimate at a total cost of $2,400. The township trustees being unable to raise this amount of money from the funds available asked for more time to attempt to secure some private subscriptions in an effort to secure the funds necessary. No further disposition of the matter has been made to date.

NO. 55—LOUISA COUNTY.

Date of request to Commission. January, 1914.
Location .....1½ miles W. of Elrick Station, Sec. 25, Wapello Twp.
Local name....."Herrick."
Road system.....Township.
Railroad .....M. & St. L. R. R.
Survey made .....September 2, 1914.
Present crossing.....Grade.
Proposed crossing.....Undergrade.
Conference .....None held.

Plans and an estimate of cost ($3,488) have been prepared by the Commission and submitted to the parties interested. A conference will be arranged as soon as possible to secure an adjustment of cost for this improvement.

NO. 56—LOUISA COUNTY.

Date of request to Commission. September 1, 1914.
Location .....2 miles S. E. Morning Sun, Sec. 31, Morning Sun Twp.
Local name.....Unknown.
Road system.....Township.
Railroad .....C., R. I. & P. R. R.
Survey made .....September 3, 1914.
Present crossing.....Grade.
Proposed crossing.....Grade.
Conference .....None held.

Plans and estimates of cost are now being prepared by the Commission.

NO. 57—MONROE COUNTY.

Date of request to Commission. August, 1914.
Location .....1½ miles W. of Avery, Secs. 6-7, Mantua Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made .....September 9, 1914.
Present crossing.....Grade.
Proposed crossing.....Relocation of road. Elimination of crossing.
Conference .....None held.

Plans and estimates of cost are now in the course of preparation by the Commission

NO. 58—MARION COUNTY.

Date of request to Commission. April, 1914.
Location .....1½ miles W. of Knoxville.
Local name.....Unknown.
Road system.....Township.
Railroad .....C., B. & Q. R. R.
Survey made .....September 19, 1914.
Present crossing.....Grade.
Proposed crossing.....Undergrade.
Conference .....None held.

The surveys have been made for the improvement of this crossing and plans and estimates will be prepared as soon as possible.

NO. 59—MARION COUNTY.

The Commission has been requested to prepare plans for the improvement of a crossing in Section 35, Liberty township, on the C., B. & Q. R. R., and Wabash Railroad, near Hamilton. This will be taken up as soon as possible.

NO. 60—DECATUR COUNTY.

A request for plans for the improvement of a dangerous crossing in Section 30, Center township, was filed on September 7, 1914. The Commission has been unable to complete the surveys necessary for this crossing up to this date.

NO. 61—DALLAS COUNTY.

Date of request to Commission. July, 1914.
Location .....1¼ miles S. E. of Dexter, Secs. 22-23, Union Twp.
Local name.....Dexter.
Road system.....County.
Railroad .....C., R. I. & P. R. R.
Survey made .....None.
Present crossing.....Grade.
Conference .....August 22, 1914, Dexter.

County Engineer Naiden and District Engineer Coykendall made an examination of the crossing on August 22, 1914, and agreed that a great improvement could be made at this point by the expenditure of a small amount of money. The survey and plans for the improvement of this crossing were to be made and the matter taken up with the railroad officials by correspondence. No reply has been received from the railroad company to date.

NO. 62—MONROE COUNTY.

Date of request to Commission. September, 1914.
Location .....2 miles W. of Avery, Sec. 6, Mantua Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made .....September 16, 1914.
Present crossing.....Grade.
Proposed crossing.....Grade. Improved.
Conference .....None held.

The plans and estimates now in course of preparation.

NO. 63—MONROE COUNTY.

Date of request to Commission. September, 1914.
Location .....Between Sec. 31, Bluff and 36, Union Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., B. & Q. R. R., and Wabash R. R.
Survey made .....September 18, 1914.

Present crossing.....Grade.
Proposed crossing.....Relocation of road to eliminate crossing.
Conference .....None held to date.
Plans and estimates now in the course of preparation.

NO. 64—MONROE COUNTY.

Date of request to Commission. September, 1914.
Location .....Near Lovilla, Sec. 23, Union Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., B. & Q. R. R., and Wabash R. R.
Survey made .....September 18, 1914.
Present crossing.....Grade.
Proposed crossing.....Relocation of road to eliminate crossing.
Conference .....None held.
Notes for working out the plans for this crossing elimination have been secured and the plans will be prepared at an early date.

NO. 65—MONROE COUNTY.

Date of request to Commission. September, 1914.
Location .....3¼ miles E. of Albia, Sec. 1, Troy Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....M. & St. L. R. R.
Survey made .....September 17, 1914.
Present crossing.....Grade.
Proposed crossing.....Field notes have been taken but not platted for this work. No recommendations have been worked up for the improvement of this crossing.
Conference .....None held.

NO. 66—MARION COUNTY.

Date of request to Commission. April, 1914.
Location .....2 miles W. of Knoxville, Sec. 2, Knoxville Twp.
Local name.....Unknown.
Road system.....Township.
Railroad .....C., B. & Q. R. R.
Survey made .....September 24, 1914.
Present crossing.....Grade.
Proposed crossing.....Relocation of road to eliminate crossing.
Conference .....None held.
Plans and estimates are being worked up by the Commission for this crossing and will be completed soon.

NO. 67—MARION COUNTY.

Date of request to Commission. April, 1914.
Location .....2 miles E. of Knoxville, Sec. 10, Knoxville Twp.
Local name....."Hawkeye."
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made .....September 25, 1914.
Present crossing.....Undergrade.
Proposed crossing.....Relocation to avoid bad turn in road at crossing.
Conference .....None held.
Plans and estimates are now in course of preparation for this crossing.

NO. 68—MARION COUNTY.

Date of request to Commission. September, 1914.
Location .....In town of Swan, Secs. 17 and 20, Swan Twp.
Local name.....Swan.
Road system.....In corporation limits of Swan.

Railroad .....C., B. & Q. R. R.
Survey made .....September 25, 1914.
Present crossing.....Grade.
Proposed crossing.....Grade improved.
Conference .....None held.
Field notes have been secured for this crossing and the plans are now in the course of preparation.

NO. 69—WOODBURY COUNTY.

Date of request to Commission. September, 1914.
Location .....Near Lawton, Secs. 28-33, Banner Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C. & N. W. R. R.
Survey made .....September 30, 1914.
Present crossing.....Grade.
Proposed crossing.....Undergrade.
Conference .....None held.
Plans and estimates are in the course of preparation at this time.

NO. 70—WOODBURY COUNTY.

Date of request to Commission. September, 1914.
Location .....In Correctionville, Sec. 34, Union Twp.
Local name.....Front St. Crossing.
Road system.....In corporation limits of Correctionville.
Railroad .....Illinois Central.
Survey made .....October 1, 1914.
Present crossing.....Grade.
Proposed crossing.....Grade improved.
Conference .....None held.
Notes for the preparation of plans and estimates have been secured and will be platted at an early date.

NO. 71—WOODBURY COUNTY.

Date of request to Commission. September, 1914.
Location .....In Correctionville, Sec. 34 Union, and 6 Rock Twp.
Local name.....Fifth Street.
Road system.....Corporation of Correctionville.
Railroad .....C. & N. W. R. R.
Survey made .....October, 1914.
Present crossing.....Grade.
Proposed crossing.....Grade. Improved.
Conference .....None held.
Plans and estimates of cost are now being worked up and a conference will be arranged as soon as possible.

NO. 72—WOODBURY COUNTY.

Date of request to Commission. September, 1914.
Location .....Between Sec. 36 Little Sioux, and Sec. 31 Oto Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., M. & St. P. R. R.
Survey made .....October 2, 1914.
Present crossing.....Grade.
Proposed crossing.....Plans not prepared.
Conference .....None held to date.

NO. 73—JEFFERSON COUNTY.

Date of request to Commission. September, 1914.
Location .....E. of Lockridge, Sec. 36, Lockridge Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made .....October 9, 1914.
Present crossing.....Undergrade.
Proposed crossing.....Relocation of road to get view through undergrade crossing.
Conference .....None held.

Plans and estimates are now being worked up on this work.

NO. 74—LEE COUNTY.

A request has been made to the Commission for assistance in improving a series of crossings located near West Point on the West Point-Ft. Madison Road. Surveys are being made at this time for the relocation of a portion of the road to eliminate six crossings in a distance of one mile.

NO. 75—MILLS COUNTY.

Date of request to Commission. October 1, 1914.
Location .....Sec. 29, Silver Creek Twp. In Malvern.
Local name.....Unknown.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Present crossing.....Undergrade.
Proposed crossing.....Undergrade.
Conference .....October 27, 1914.
Present:
Board of Supervisors, Mills county.
H. C. Beard, Highway Commissioner.
E. Williams, Engineer, Highway Commission.
Number of interested citizens.

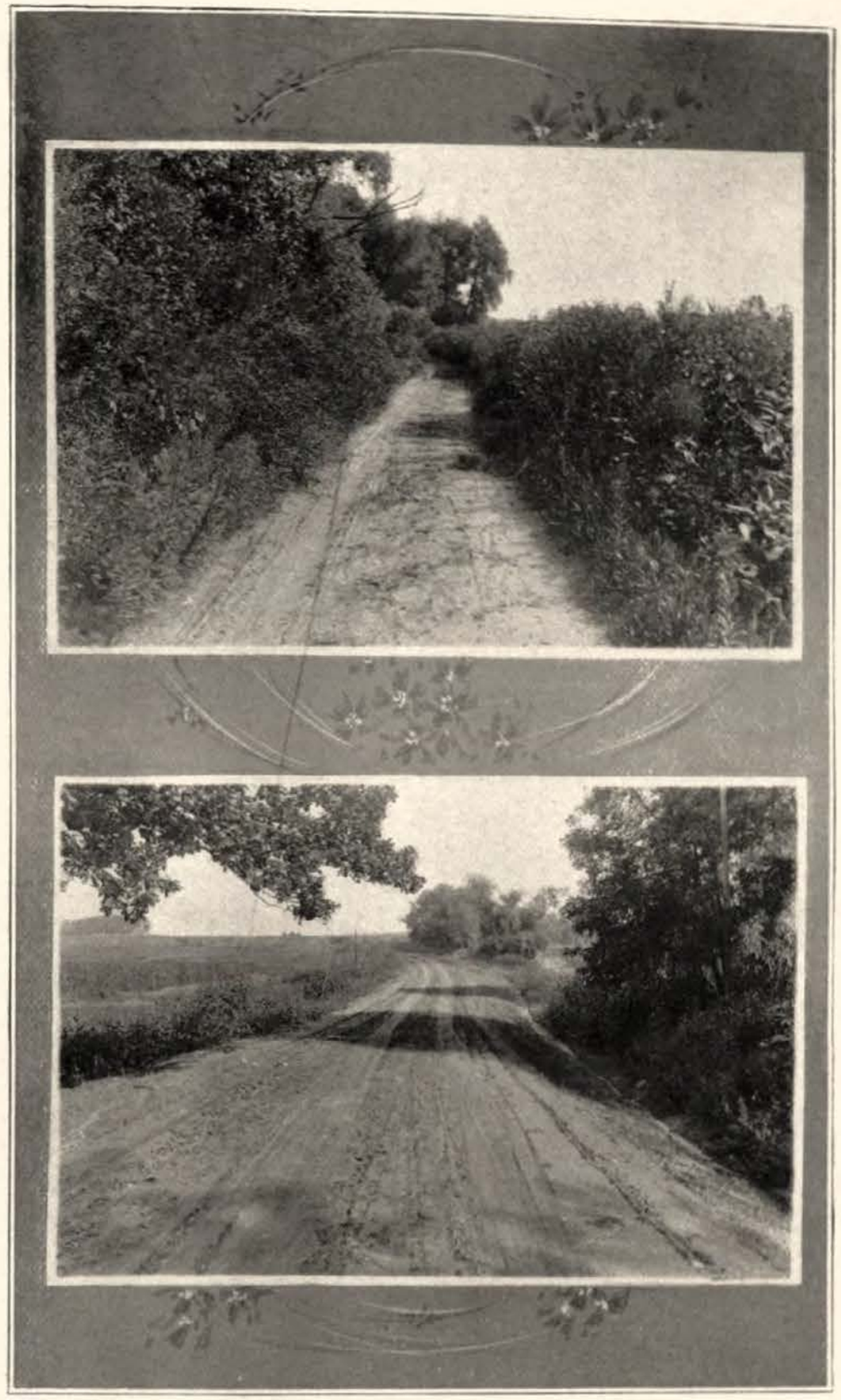
Three propositions were proposed at this conference in reference to the improvement. Modifications of the Commission's plans were proposed and a later date of conference arranged.

Conference.....November 6, 1914, Malvern.
Present:
Members Railroad Commission.
Members Board of Supervisors, Mills county.
W. D. Eaton, Robt. Rice and Gus. Laubenfels, C., B. & Q. R. R.
Dwight Lewis, Assistant Commerce Counsel.
H. C. Beard, Highway Commissioner.
E. Williams, Engineer, Highway Commission.
Number of interested citizens.

The three plans worked out by the Commission were discussed but no agreement as to cost could be agreed upon by the parties present.
The estimate of cost for plan No. 1 was.....$ 9,000.00
And for plan No. 2 was..... 25,000.00
Final adjustment:
The evidence taken at the conference has been submitted to the Railroad Commission and this entire matter left for their disposition. They have announced no decision at this date.

NO. 76—WOODBURY COUNTY.

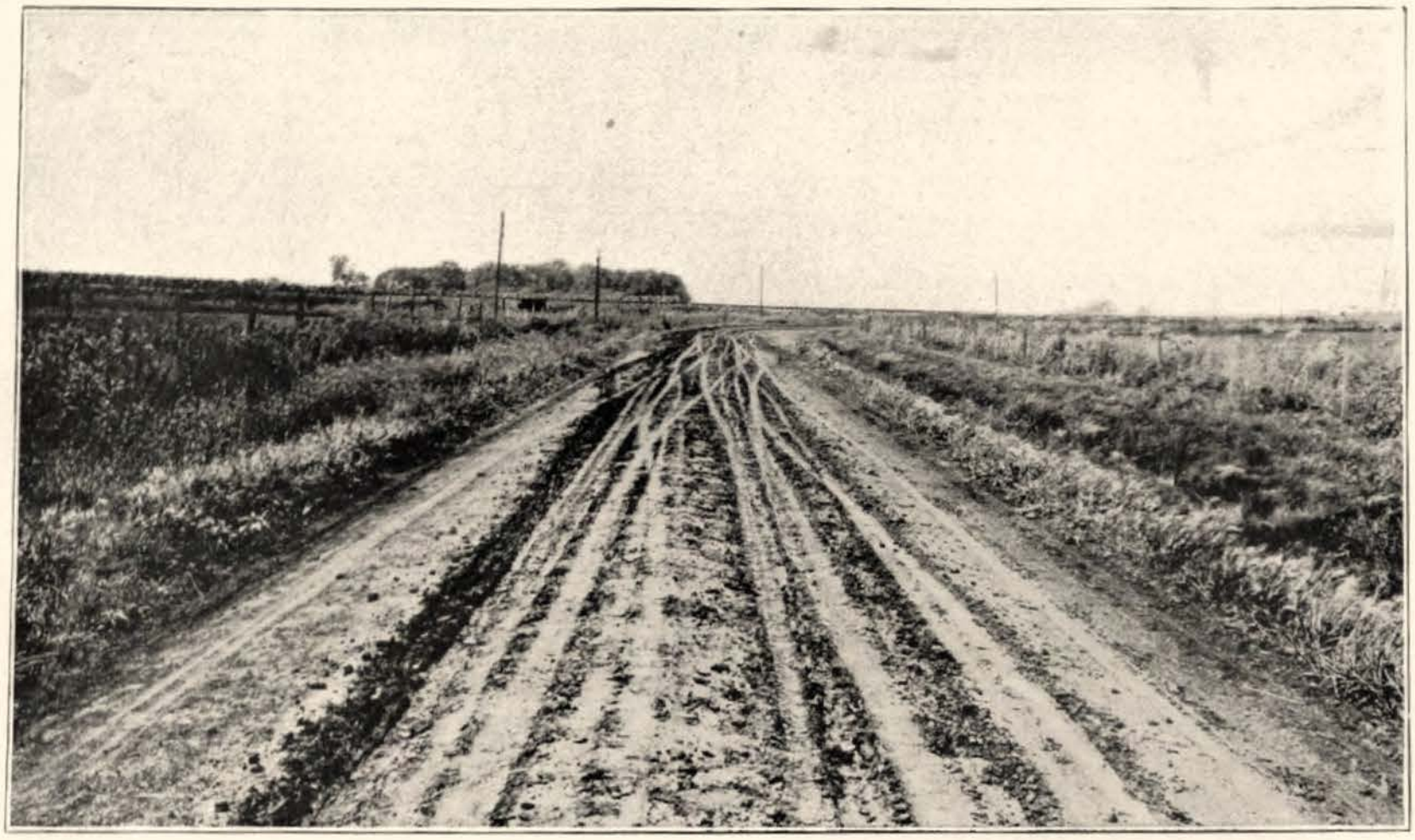
A request for plans for the improvement of a crossing between Sections 23-26, Liston township, has been made to the Commission. A preliminary examination was made on October 2d, and final surveys will be made as soon as possible.



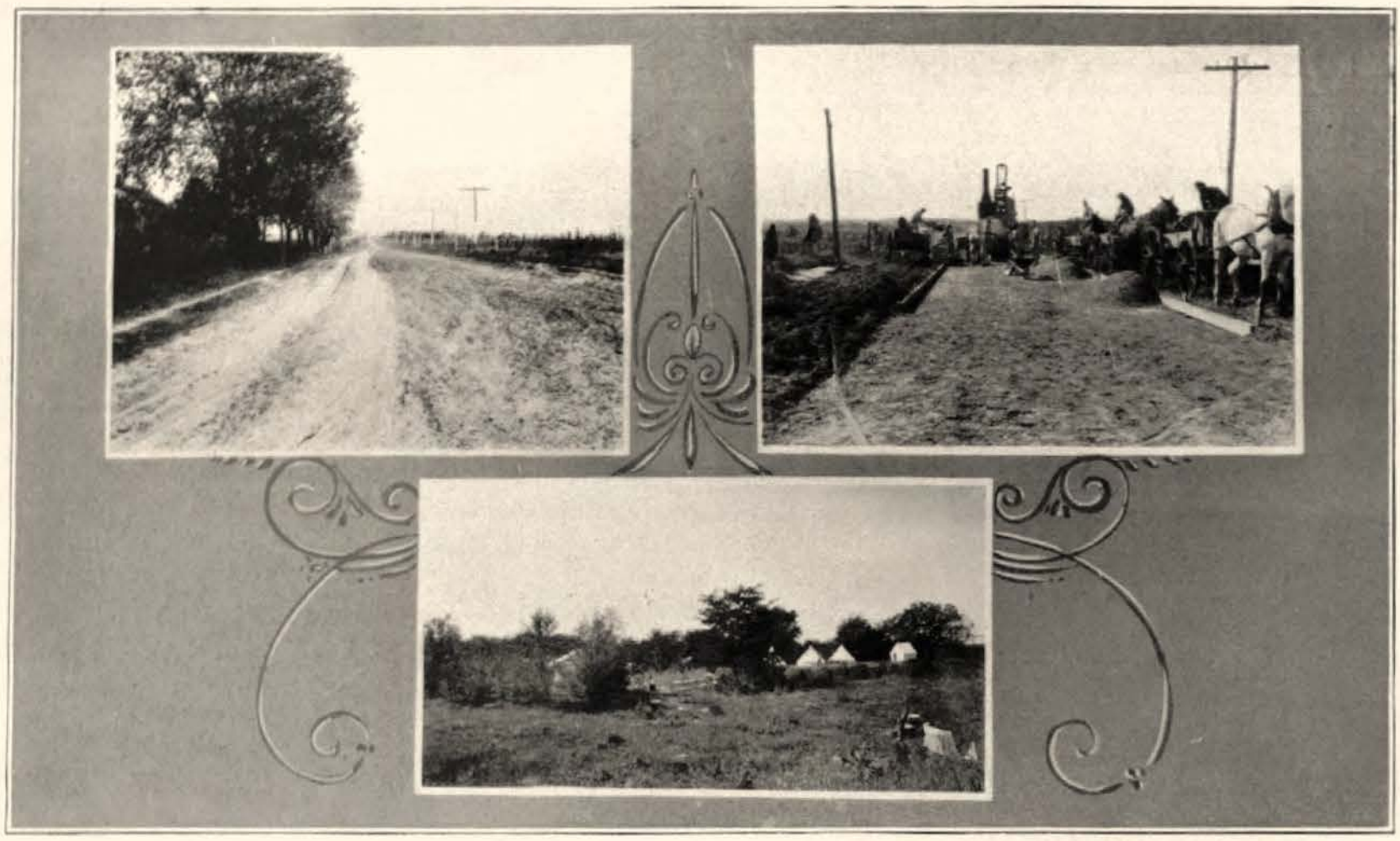
BEFORE AND AFTER—Iowa automobilists will hardly recognize the changed appearance in the brush grown road around Twin Lakes in Calhoun County.



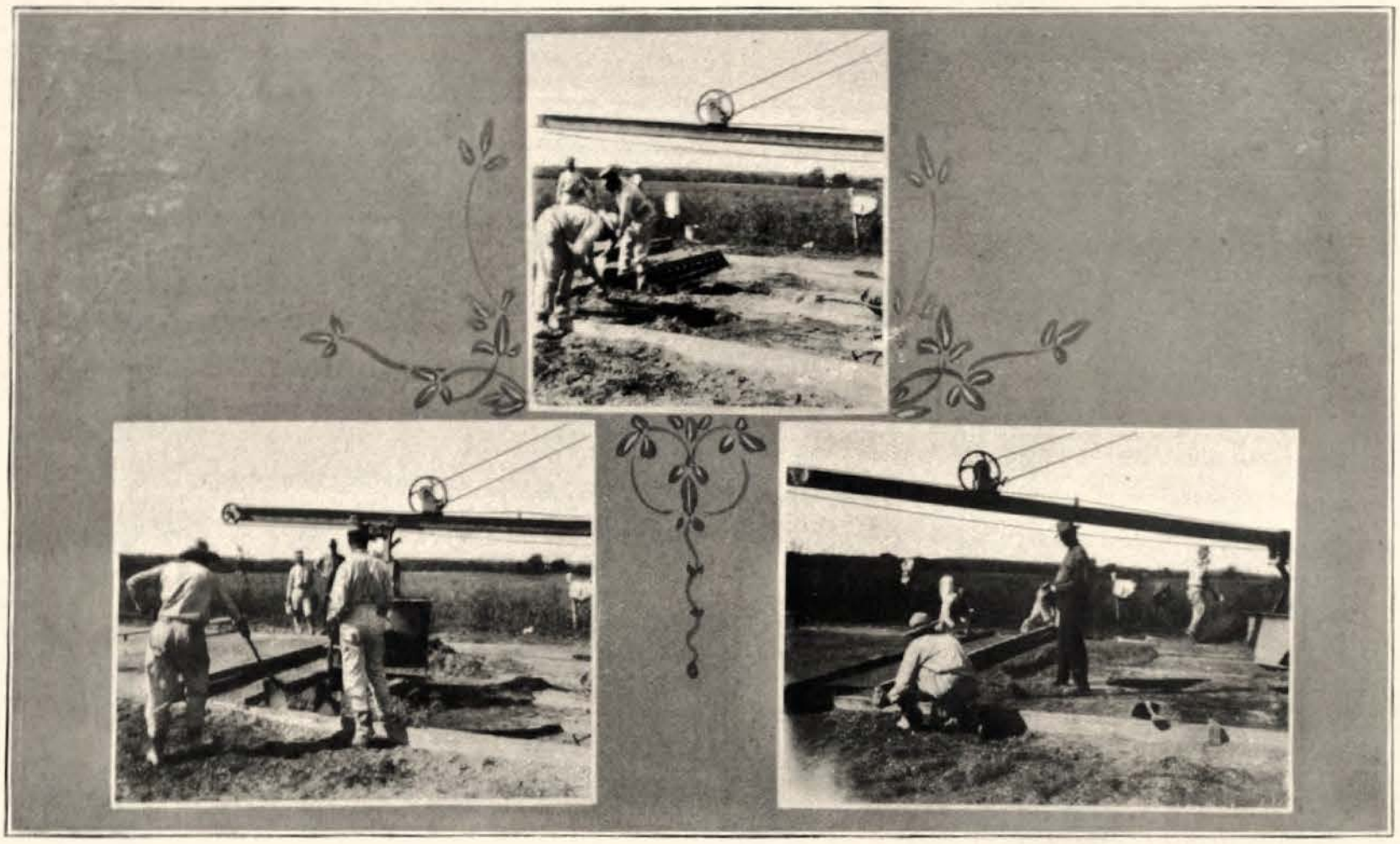
CROWNING DIRT ROADS—The Gasoline tractor blade grader outfits have been a familiar sight on Iowa roads during 1914. This is a Washington County outfit. The average cost of this type of work is approximately $50.00 per mile.



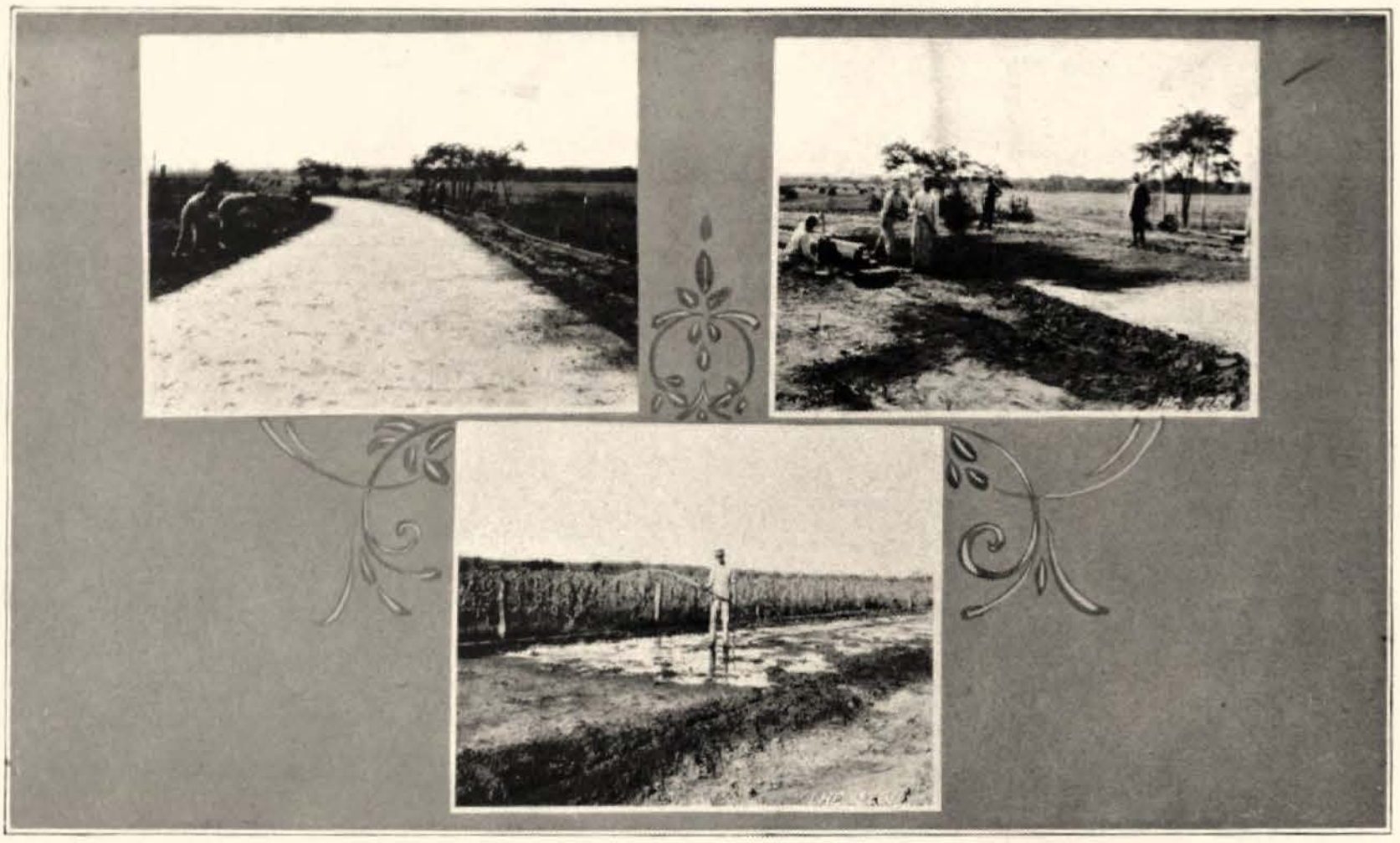
ROAD GRADING THAT LASTS—This stretch of road in Dallas County was graded about 1904 by B. F. Stanton. The road drag has been the only implement used on it since. It was built to what is approximately the present Iowa standard cross section.



BUILDING COLUMBUS JUNCTION CONCRETE ROAD—The road before improvement—Convict road builders camp on banks of Iowa River—Concrete mixing crew.



DUMPING THE CONCRETE MATERIAL—Placing expansion joints—Leveling material and shaping the road crown.



ROAD SURFACE READY FOR CURING—Dirt cover to prevent too rapid drying—Saturated twice daily for three weeks.



CULVERTS REPLACE BRIDGES—This 66' wooden bridge has been replaced by a 3x3 concrete culvert and a dirt fill. The concrete culvert with grass grown dirt fill should end all maintenance expense.



TESTING CONCRETE TILE—The Highway Commission and Good Roads Department of the Iowa State College conducted an extensive series of tests on the strength and durability of concrete tile during 1914. This tile failed under a pressure of 36 tons.

NO. 77—CERRO GORDO COUNTY.

Date of request to Commission. June, 1914.
Location ..... S. W. limits Rock Falls, Sec. 21, Falls Twp.
Local name..... Rock Falls.
Road system..... County.
Railroad ..... C., R. I. & P. R. R.
Survey made ..... October 15, 1914.
Present crossing..... Grade.
Proposed crossing..... Undergrade on relocated road.
Conference ..... None held.

Plans are being prepared by the Commission for the elimination of the grade crossing at this point. A conference of interested parties will be held at an early date.

NO. 78—CERRO GORDO COUNTY.

Date of request to Commission. October, 1914.
Location ..... S. W. corner Sec. 3, Lime Creek Twp.
Local name..... Unknown.
Road system..... Township.
Railroad ..... M. & St. L. R. R., and C. G. W. R. R.
Survey made ..... October 15, 1914.
Present crossing..... Grade.
Proposed crossing..... Grade. Improved.
Conference ..... None held to date.

Correspondence will be taken up with the railroads interested to secure the grading work necessary to make these crossings safe.

NO. 79—CERRO GORDO COUNTY.

Date of request to Commission. October, 1914.
Location ..... 1 mile S. of Swaledale, Secs. 15-16, Pleasant Valley Twp.
Road system..... County.
Railroad ..... C. G. W. R. R.
Survey made ..... October 16, 1914.
Present crossing..... Grade.
Proposed crossing..... Notes for improvement now being worked up.
Conference ..... None held.

NO. 80—LUCAS COUNTY.

Date of request to Commission. October 9, 1914.
Location ..... 1 mile W. of Russell, Secs. 1-2, Benton Twp.
Local name..... Taylor.
Road system..... Township.
Railroad ..... C., B. & Q. R. R.
Survey made ..... October 23, 1914.
Present crossing..... Grade.
Proposed crossing..... Undergrade.
Conference ..... None held.

Plans are now being worked out for the grade separation at this crossing and a conference will be held soon.

NO. 81—LUCAS COUNTY.

Date of request to Commission. October 22, 1914.
Location ..... In Sec. 19, Union Twp.
Local name..... Dead Man's Crossing.
Road system..... Township.
Railroad ..... C., B. & Q. R. R.
Survey made ..... October 23, 1914.
Present crossing..... Grade.
Proposed crossing..... Grade improved.
Conference ..... None held.

Plans and estimates of cost are being prepared for this crossing.

NO. 82—PALO ALTO COUNTY.

Date of request to Commission. October, 1914.
Location .....7 miles W. of Emmetsburg, Secs. 13-14, Highland Twp.
Local name.....Unknown.
Road system.....County and Township.
Railroad .....C., M. & St. P. R. R.
Survey made .....November 11, 1914.
Present crossing.....None.
Proposed crossing.....Overhead.
Conference .....October 30, 1914, Emmetsburg.
Present:
A. J. Burt, County Attorney.
T. R. Martin, County Engineer.
A. Marston, Highway Commissioner.
Interested citizens.

This informal conference was held to visit the site of the proposed improvement and determine the proper relocation of the road to avoid a very dangerous grade crossing. Surveys have since been made and the plans for the relocation of the road and overhead crossing will soon be prepared.

NO. 83—EMMET COUNTY.

Date of request to Commission. October, 1914.
Location .....2½ miles W. of Estherville, Secs. 4-5, Estherville Twp.
Local name.....Unknown.
Road system.....County.
Railroad .....C., B. & Q. R. R.
Survey made .....November 12, 1914.
Present crossing.....Grade.
Proposed crossing.....Overhead.
Conference .....None held.

Notes have been taken and plans and estimates will be prepared at once for the improvement.

PART FOUR—SECTION TWO

STANDARDIZATION OF HIGHWAY BRIDGE CONSTRUCTION.

The conditions governing the design of ordinary highway bridge structures are so widely diversified that the statement is often made that to standardize such construction over a territory of any considerable extent is, if not impossible, at least a task involving a multiplicity of details that render it impracticable. The State Highway Commission during the past two years has endeavored to prove the contrary to be true.

Iowa covers an area of slightly over 35,000,000 acres. Its general topography is that of a flat plain. With the exception of a very narrow strip along the northeastern border of the state, which still retains its original rugged topography, the entire state was at one time covered by the ice invasion, and the glaciated area includes three principal drift sheets. Topographical conditions in these drift regions are sufficiently different from one another and from the unglaciated region, as to affect greatly the bridge problems of the different parts of the state.

Three Topographical Divisions.

The Kansan drift which occupies the entire lower portion of the state and the western edge of the upper portion is the oldest of the drift areas. Here we find the drainage lines well defined, the streams being carried in general through sharply defined ravines. In this region there is a scarcity of concrete materials. The foundation material is a typical glacial clay, the surface soil on the western slope being the typical Missouri Valley loess, which is notable because of its apparent stability in embankments and cuts at vertical side slopes.

In the Iowan drift the drainage lines are not so well defined, the streams being in general carried in comparativly shallow channels, which ofttimes overflow during periods of high water. Deposits of concrete material are scattered more or less frequently over the entire area. The subsoil is a blue clay with occasional outcroppings of rock. This last condition, however, would be classed as local, rather than belonging to the drift area itself.

The youngest of the drift sheets is the Wisconsin, which lies west of the Iowan and is slightly larger in extent. In this area the drainage lines are only broadly defined. The topography is flat and during wet periods the stream valleys flood from hill to hill. We find here the shallow drainage channels typical of the Iowan drift and a more or less plentiful deposit of concrete materials scattered along the stream lines and terminal hills. The subsoil is either a sandy clay or the so-called gumbo, very retentive and difficult of drainage.

Influence of Topography on Selection of Type.

The varying topographical conditions which have just been described have operated to modify the general type of superstructures selected.

To meet the condition of scarcity of concrete materials found in the Kansan drift area required a relatively light-sectioned, heavily reinforced, structure in order that the cost of hauling might be reduced to a minimum. In this connection it was fortunate that the same agency, age, which produced the scarcity of concrete materials also operated to deepen the drainage channels and increase the available head-room. Thus the deck type of concrete girder construction, using a relatively thin, deep girder, has proved an economical solution.

To meet the conditions found in the Wisconsin and Iowan drifts the multiple span slab and thru-girder types were designed, these being less economical of material but more conservative of head-room. However, even in these last localities, the deck-girder type of construction has proved the more economical wherever local conditions would permit its use. Thus the thru-girder has been used in the Wisconsin and Iowan drift region, only when the peculiar topography of this area rendered the use of the deck type impracticable.

To meet conditions in the unglaciated topography of the northeastern section of the state, any of the above types may be used, as concrete material is plentiful and the saving of head-room is not a determining factor, although, in general, the topography of this region necessitates the use of larger waterways than in other sections of the state.

In connection with the standardizing of substructures it may be noted that in each of the drift areas the subsoil is a clay formation. Experience has taught us that once the foundations are carried well into this clay there is little advantage to be gained

as regards increasing the bearing value in carrying the foundation deeper, the use of piling being in general a cheaper and more effective method of strengthening the foundation. The depth of foundation is then governed by the necessity for protection against scouring, which is in general greater with streams which are not yet cut to their base level. The width of abutment depends not alone on the bearing value of the soil, but is governed by one other consideration, the horizontal component of the retained back filling. This is, of course, more or less a function of the drainage and a comparison of the conditions in the different areas in this regard will favor the Kansan as against the gumbo formation of the northern drifts. By making adequate provision for drainage through the abutments and wings, however, this condition can be so governed that for purposes of standardization, a uniform base width may be adopted for the entire state.

Types of Abutment.

The unit type of abutment has been chosen for the general standard of the state, although to meet the conditions of scarctiy of concrete material found in the Kansan drift area another type of abutment, the pedestal or integral approach span tpye, is being developed. In selecting the latter type of construction, use was made of two of the main characteristics of the topography of this locality. One is that the streams are in general cut to their base level and the danger of undermining at the outer ends of the wings is much less than in the other drift areas. The other is the peculiar ability of the loess to stand at very steep natural slopes, which permits of relatively small, deep excavation work and probably reduces the active horizontal pressure against the abutment pedestal, thus giving an added factor of safety in the design.

Culverts.

The box type of culvert has proven in general the solution of the culvert problem over the entire state, with the exception of the very deep ravines, requiring more than average fills. Due to one of the peculiar properties of the arch, namely, that an increase in fill does not produce a corresponding increase in ring stress, this latter type of culvert has been used with economy where the high fill over a box would necessitate a slab of considerable thickness. Such a depth of fill would be exceptional for this state and for all ordinary purposes the box type will prove the economical one.

Technical Features of the Standards Designed.

The principal types of standards thus far designed are the standard unit abutment, standard slab, standard deck girder, thru-girder, and standard culvert designs. These will be taken up in the order given.

Standard Unit Abutments.

In preparing designs for standard abutment construction the question which logically assumes first place is this: Against what active horozontal pressure is it best in the interests of both safety and economy to design abutments? A great diversity of opinion exists among engineers and builders concerning the true value to be assumed in this case, it being a fact that assumptions as to active horizontal pressure made by engineers, who have made a study of these conditions, are ofttimes found to differ by as much as fifty per cent.

Reinforced concrete has made possible the design of abutments and wings acting as one unit, and advantage is taken of this fact in the designs prepared by the Commission. This type is considerably more economical than abutments designed to act as retaining walls. This is illustrated by the following: Considering an abutment 10 feet high to act as a unit with the wings the foundation pressure is only 2,336 pounds per square foot. For the same height, the pressure on the foundation considering the abutment to act as a simple retaining wall is 5,000 pounds per square foot. The utility of the unit construction adopted is readily seen when it is considered that practically all the foundations in the state must be placed on clay or similar material.

An inspection of the structures heretofore constructed throughout the state discloses a deplorable lack of care in the treatment of the earth approaches. The wings are frequently inadequate to take care of the approach filling and the roadway is narrowed too much at the point where bridge and filling meet. To meet this condition and to secure a pleasing and safe approach, the wings on the standard substructure have been carried level with the floor out to a point which will give a roadway distance between them of twenty-six feet, and the handrailings have been extended to the same point.

To meet the varying conditions as to stream scouring the wings have been designed in two lengths. The maximum length is recommended for use where the waterway occupies the entire opening and where protection against flooding and scouring is particularly

necessary; the minimum length may be used over streams which are cut to their base level and for the many locations in which is found a narrow berm between the edge of the bank and the face of the abutment. The reinforcing in the entire substructure has been designed to utilize the entire weight of the wing in restraining overturning and to supply, in addition to the primary reinforcing system, a lighter secondary system to counteract every possible tendency toward the formation of cracks from whatever cause.

Slab and Girder Designs.

The slab type of construction used for spans from 14 to 26 feet are, as the name applies, simple slabs or beams of concrete reinforced for main and diagonal tension and simply supported by the abutments.

In the deck girder design a thin transverse flooring transmits the stress to deep and narrow supporting girders, which in turn transfer the load to the abutments by simple beam action.

The through girder type differs from the deck in that the girders are placed at the side of the roadway serving for handrails as well. The flooring is hung between the girders and acts as a beam partially fixed at the ends. The through girder is rather less economical of material than the deck type as is shown by a comparison of quantities in the two types for spans from twenty-four to forty feet (the span lengths for which the girder type has been designed). This comparison is given in the following table:

COMPARATIVE QUANTITIES FOR THROUGH GIRDER AND DECK-GIRDER TYPES.

Span	Cu. Yds. Concrete		Lbs. Reinforcing Steel	
	Through	Deck	Through	Deck
24 ft.	33.5	25.6	4,520	4,000
26 ft.	37.5	28.1	5,024	4,312
28 ft.	41.8	30.9	5,568	4,791
30 ft.	46.5	34.3	6,198	5,188
32 ft.	51.5	36.7	6,697	5,801
34 ft.	56.9	40.6	7,372	6,413
36 ft.	62.6	43.5	7,972	6,883
38 ft.	68.3	46.8	8,570	7,386
40 ft.	74.3	50.9	9,416	8,067

Culverts.

The standardization of the culverts was a comparatively easy matter. For the shorter spans, wings parallel with the roadway were used for the low fills, these being carried up above

the grade line sufficiently to provide a low guard rail which, for this size opening, was considered both safe and economical.

With the larger spans (8 feet and more) the straight wings to retain the fill efficiently assume such a length and height as to be very costly in comparison with the total expenditure usually allowed for such a culvert. To meet this condition, and also to provide a protection for the roadway where the fill is low, wings at 45 degrees in combination with a coped extension of wing and head wall, to form a low guard rail, have been adopted.

Due to the fact that a great deal of culvert work must necessarily be done without the supervision of an engineer, each culvert plan has been supplemented by a data sheet giving a diagram for the cutting and bending of bars and for staking out of the masonry lines.

In the standardization of steel bridges for the state there are several limiting conditions which reduce the types of bridges which may be used to advantage to a comparatively small number. The small amount of head-room available in most sections of the state eliminate at once any standard deck spans. The difficulties of transportation and erection make it very probable that plate girder spans will be little used except in special cases where local conditions are favorable. It is believed, however, that the use of this type of bridge will be sufficient to warrant a series of standard designs which are to be prepared at a later date. Comparatively few bridges of a greater length than 90 feet are required, and where the length exceeds this figure it is generally more economical, on account of the low head-room mentioned above with the consequent low piers and abutments, to use short spans rather than long ones. While the majority of the bridges in the state are short span bridges there are, however, enough longer ones required to warrant the preparation of standard designs for spans up to and including 150 feet. Above this span length all designs are special.

Aside from the plate girder spans upon which no work has as yet been done, the types selected for the standard designs are as follows:

I-Beam spans with 16, 18 and 20 foot roadways for spans from 16 to 32 feet, inclusive.

Pony trusses with 16 and 18 foot roadways for spans from 35 to 100 feet, inclusive.

Through trusses with 16 to 18 foot roadways for spans from 100 to 150 feet.

In the I-Beam spans the simplest construction is used and very little need be said in regard to them. Six I-Beams and two channels are used for the 16 foot roadways and seven I-Beams and two channels for the 18 and 20 foot roadways. The beams are held in position at the ends by filling between them with concrete, and expansion is secured by means of tar paper joints.

The pony trusses are divided into two types as follows:

Type I. Riveted Warren trusses with subdivided panels carrying a concrete floor slab directly on the floor beams.

Type II. Riveted Warren trusses carrying a concrete floor on steel joists.

The Type I truss is the one recommended in most cases, and, aside from the beam spans, a majority of the steel bridges being built are of this type and of spans from 40 to 70 feet. The Type II truss is generally used only where a temporary timber floor is desired which is later to be replaced by concrete.

The through truss spans run from 100 to 150 feet in length. These are riveted Pratt trusses carrying a concrete floor on steel poists.

The matter of the floors is, of course, an important one, and in view of the general conditions in the state it was deemed advisable to make all steel bridges heavy enough to carry concrete floors, the maintenance of timber bridge floors being a constant drain on the county bridge fund.

The concrete floor slabs for the Type I pony trusses are designed as continuous double reinforced beams, the engine wheels being assumed to have a lateral distribution of 4 feet. In designing the standard I-Beam spans and the floor joints for truss spans each engine wheel load is assumed to distribute over three joists for concrete floors and over two joinst for wood floors. Tests which are being carried on jointly by the Engineering Experiment Station of the Iowa State College and the Highway Commission, although not yet complete, indicate that the above assumptions are approximately correct.

In the design of the standard spans it has been the intention to secure as great rigidity as is consistent with economical design. Pin-connected trusses are not used in spans of less than 150 feet and therefore none of the standard spans are pin-connected. Angle sections are used for lateral bracing, rod laterals not being allowed in any case. End floorbeams are provided for all spans. The vertical posts in all pony trusses are built of four angles with

a solid web plate in order to stiffen the top chord as much as possible.

It is required that shop drawings for all bridges be approved by the Highway Commission and in this connection it was early discovered that ordinary stress sheets with no general details were unsatisfactory both to the Commission and to contractors. In fairness to all contractors it is necessary to secure as great uniformity as possible and the only way to secure this uniformity, and at the same time to get detailed shop drawings which will be in accordance with the ideas of the Commission, is to furnish general details. For this reason on all standard and special designs sufficient details are given to show clearly the type of construction required. A great deal of attention has been given to these details with the idea of securing the best construction possible. It has been the intention to adhere to what is considered good practice at the present time, with the idea of stiffness and rigidity always in mind, and the various types of details finally adopted have been the result of much consideration.

From among the details adopted as standard by the state Commission, and which differ radically from those used by the bridge companies prior to the passage of the new law, a mention may be made of the following:

1. The floor beams of all truss spans are swung above the bottom chord and connected directly to the vertical posts or hangers, thus giving greater rigidity both to the floor beams themselves and to the top chord.
2. End floor beams are used in all cases, as mentioned above, thus insuring greater rigidity and doing away with much faulty construction work in the field.
3. All pony trusses of spans over 65 feet are braced by outside brackets. This gives better alignment and greater stiffness to the top chord.
4. On spans of 65 feet and under expansion is secured by means of a sliding shoe moving on the planed surface of a cast iron masonry plate.
5. Above 65 feet all spans have pin bearing shoes and expansion is provided for by a cast iron rocker shoe of somewhat unusual design. This type of expansion rocker is used in preference to circular or segmental rollers for the reason that less trouble is encountered due to clogging with dirt.

Distribution of Plans.

Three to six hundred copies are required from each standard as soon as prepared. The only practical method of distributing this number is to have copies printed from zinc etchings on a good quality of paper.

The drawings are prepared with larger letters and figures and the zinc is reduced to a convenient size. The printed standards of the Commission are with few exceptions of the standard letter size (8½x11"), the same size as the standard specifications.

PART FOUR—SECTION THREE

MILEAGE OF, AND STANDARDS FOR, ROADS.

Mileage.

The certified reports of the county engineers show that Iowa has, outside of incorporations, 104,082 miles of road, and inside of corporations, 8,422 miles of streets, making a total of 112,504 miles of public highways. From these have been selected a county road system of 15,767 miles, an average of 159 miles per county. In the township system there are 88,315 miles, averaging 892 miles per county, which in the average county means 56 miles per township. The detailed mileage is given in Schedule Forty-six for all the counties.

Standards for Road Work.

A uniform system of road work for the state demanded uniform profiles, plans and sections. Unless restricted by certain fixed standards, it is apparent that the methods used in preparing road plans, profiles and fixing grade lines would vary in each county.

The first need was, then, a standardization of the method of representing profiles and plats. To this end a standard profile sheet was adopted, this being completed and supplied to the county engineers on June 10, 1913.

The standard profile sheet accomplished many things:

First. It standardized and made uniform the method of designating road sections. At the very outset it became apparent that a numerical system of designating roads, to be comprehensive in any degree, must be so complicated as to offset its utility, and after much consideration the method was finally adopted of designating each road by the names of its terminal towns and each section in that road by the letters of the alphabet. This method made it possible to locate any section of road from its name on the profile.

Second. It standardized and made uniform the size and scale for the profile sheet; the size finally adopted being 34"x22", outside dimensions; the scale being 1" to 5' vertical and 1" to 200' horizontal. One mile of road is platted on each sheet.

Third. By making specific mention of certain information on the standard profile sheet furnished the counties, this sheet furnished a first class manual of instruction for the guidance of the draftsmen in the offices of the county engineers. Details, such as the method of designating sec-

tion corners, meandering or angling roads, bridges, tile lines, fences, section and fractional section lines, right of way lines, railroad and topographical features were all specifically shown on the standard profile sheet, and the degree of uniformity which has been secured in the road work throughout the state has been largely due to the early date at which such standard sheet was sent to the various engineers.

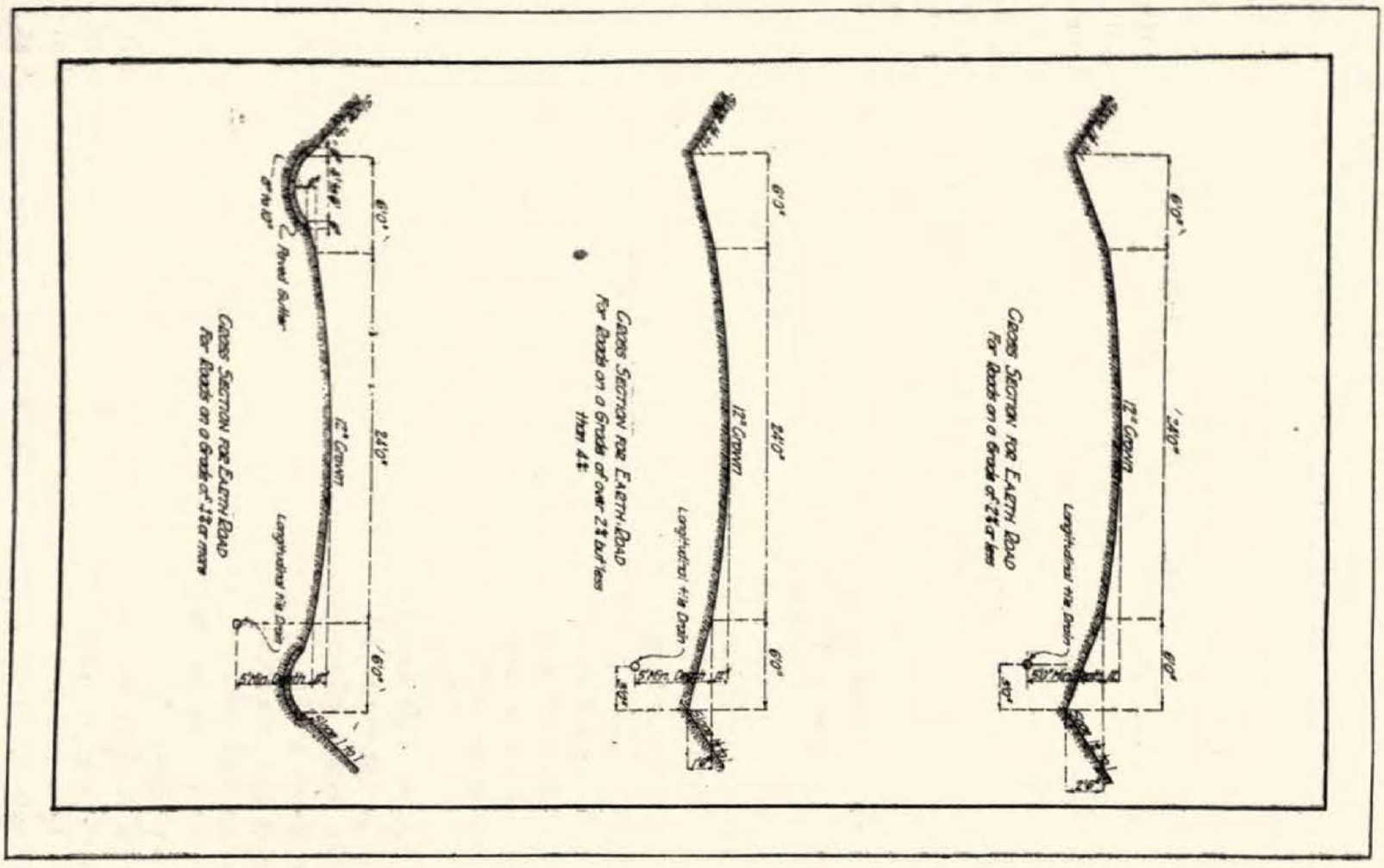
After the survey and platting of the profile comes the establishment of the grade line. As this is a function of the relative amount of cut and fill, it became apparent that before any grade lines could be established or estimates made, a cross section or sections standardizing the width of roadway, depth of crown, dimension of side ditch, etc., be prepared and furnished the county engineers. To this end considerable study was made, as a final result of which the sections shown herewith were used as standards by the Commission. The standard roadways were established in view of the average traffic conditions, and the requirements of safety throughout the state. Aside from these, the dimensions and contour of the sections were selected from the standpoint of removal of surface and ground water. A complete drainage system for earth road construction should perform two complete functions, namely; the speedy removal of surface water, and a thorough and permanent reduction in ground water level. The first is the function of the crown and side ditches, and the second of the tile lines placed at the side of the road as shown in the section. The 12 inch crown has been adopted with a view to this drainage, bearing in mind the safety and accommodation of travel, while the side ditches have been constructed at as flat a slope as is consistent with economical first cost.

It should be noted in a study of these sections that the future growth in traffic has been considered. The warning against narrow roadways has been sounded in the eastern states where the additional right of way is already required to carry the traffic. The width of the sections adopted is not alone to ensure the safety of the roads with our present slow and fast moving traffic, but to hold a sufficient width of right of way to provide for future requirements. The ditches are formed in such shape that the sides can be mowed with machines. On account of the scarcity of local stone, which in some states is utilized, the gutter, on all but the steepest grades, must depend upon sod protection only. It will be noted that the sections at the gutter lines are formed for this purpose.

One other consideration entered into the choice of form. All sections to be economical, must be capable of being finished by the machines available, practically without hand labor of any kind. On this account, no trapazoidal sections have been used.

The gravel sections shown are adaptable to prevailing conditions, their use being possible without the more expensive types of road rollers, although the use of rollers is urged.

There are many types of hard surface roads for country highway use. The one meeting with the greatest degree of popular approval at this time being perhaps the concrete single or double track road with earth, stone or gravel shoulders. Typical sections for both the gravel and hard surface roads have been made from time to time during the past two years by the Commission. As the use of either of these types of road is as yet comparatively restricted, no attempt will be made to standardize such construction until by more extensive use, the requirements of such construction will be indicated.



SCHEDULE FORTY-SIX.

MILEAGE OF HIGHWAYS IN STATE, AND MILEAGE OF APPROVED COUNTY ROAD SYSTEMS CERTIFIED BY COUNTY ENGINEERS.

County	Mileage of Public Highways			Mileage of County Roads	
	Outside Incorporated Towns	In Incorporated Towns	Total	Allowable	Approved
Adair	1,162.0	Not reported	1,162.0	174.3	172.0
Adams	809.0	36.0	845.0	126.8	117.0
Allamakee	1,052.0	Not reported	1,052.0	157.8	116.0
Appanoose	1,150.0	126.0	1,276.0	191.4	157.0
Audubon	870.0	39.0	909.0	136.4	137.0
Benton	1,352.8	97.2	1,450.0	217.5	211.0
Black Hawk	962.0	254.0	1,216.0	182.4	168.8
Boone	1,067.9	Not reported	1,067.9	160.2	158.0
Bremer	835.0	87.5	922.5	138.4	125.5
Buchanan	1,046.0	76.0	1,122.0	168.3	168.8
Buena Vista	1,112.0	70.0	1,182.0	177.3	167.0
Butler	1,111.0	66.0	1,177.0	176.6	174.2
Calhoun	1,100.0	95.0	1,195.0	179.3	168.0
Carroll	1,104.0	106.8	1,210.8	181.6	175.0
Cass	1,053.0	63.0	1,116.0	167.4	142.0
Cedar	1,032.0	41.0	1,073.0	161.0	158.3
Cerro Gordo	1,078.0	134.0	1,212.0	181.8	138.7
Cherokee	1,150.0	48.0	1,198.0	179.7	148.0
Chickasaw	947.5	54.0	1,001.5	150.2	154.5
Clarke	703.0	54.0	757.0	113.6	114.0
Clay	1,093.0	52.5	1,145.5	171.8	150.0
Clayton	1,313.0	125.0	1,438.0	215.7	199.3
Clinton	1,155.0	162.0	1,317.0	197.6	195.5
Crawford	1,390.0	Not reported	1,390.0	208.5	149.0
Dallas	1,010.0	113.4	1,123.4	168.5	171.5
Davis	997.4	24.5	1,021.9	153.3	155.8
Decatur	900.0	85.0	985.0	147.8	152.0
Delaware	1,104.0	35.4	1,139.4	170.9	171.8
Des Moines	659.0	147.4	806.4	121.0	81.5
Dickinson	681.0	Not reported	681.0	102.2	93.3
Dubuque	986.5	90.0	1,076.5	161.5	167.8
Emmet	716.0	20.0	736.0	110.4	103.5

SCHEDULE FORTY-SIX—Continued.

County	Mileage of Public Highways			Mileage of County Roads	
	Outside Incorporated Towns	In Incorporated Towns	Total	Allowable	Approved
Fayette	1,319.0	93.0	1,412.0	211.8	202.0
Floyd	958.5	102.0	1,060.5	159.1	138.0
Franklin	1,139.0	74.6	1,213.6	182.0	178.5
Fremont	850.0	75.0	925.0	138.8	143.0
Greene	955.0	66.0	1,021.0	153.2	132.5
Grundy	940.0	63.4	1,003.4	150.5	153.5
Guthrie	1,284.0	62.0	1,346.0	201.9	196.0
Hamilton	1,064.7	84.3	1,149.0	172.4	177.0
Hancock	1,027.0	Not reported	1,027.0	154.0	151.0
Hardin	1,061.0	122.5	1,183.5	177.5	173.8
Harrison	1,144.0	67.0	1,211.0	181.7	168.0
Henry	789.0	59.0	848.0	127.2	132.3
Howard	797.0	54.0	851.0	127.7	122.3
Humboldt	766.0	75.0	841.0	126.2	129.0
Ida	858.0	30.0	888.0	133.2	132.0
Iowa	1,165.0	47.6	1,212.6	181.9	171.0
Jackson	1,160.0	82.0	1,242.0	186.3	162.0
Jasper	1,399.5	90.5	1,490.0	223.5	204.8
Jefferson	845.0	45.5	890.5	133.6	135.3
Johnson	990.0	83.0	1,073.0	161.0	157.0
Jones	1,143.0	50.4	1,193.4	179.0	181.0
Keokuk	1,121.5	110.3	1,231.8	184.8	167.8
Kossuth	1,820.0	85.0	1,905.0	285.8	265.0
Lee	900.0	142.0	1,042.0	156.3	150.0
Linn	1,300.0	250.0	1,550.0	232.5	219.3
Louisa	658.5	55.2	713.7	107.0	109.0
Lucas	800.0	75.0	875.0	131.3	136.0
Lyon	1,235.0	56.3	1,291.3	193.7	188.5
Madison	1,132.0	66.0	1,198.0	179.7	162.0
Mahaska	1,075.0	65.0	1,140.0	171.0	131.8
Marion	1,070.0	85.0	1,155.0	173.3	166.8
Marshall	1,135.0	140.0	1,275.0	191.3	187.8
Mills	769.0	55.0	824.0	123.6	110.0
Mitchell	755.0	169.0	924.0	138.6	126.0
Monona	1,268.0	Not reported	1,268.0	190.2	155.0
Monroe	1,000.0	48.0	1,048.0	157.2	144.5
Montgomery	843.0	Not reported	843.0	126.4	125.0
Muscatine	755.0	144.0	899.0	134.9	135.2
O'Brien	1,125.0	79.5	1,204.5	180.7	181.0
Osceola	816.0	40.0	856.0	128.4	132.0
Page	1,038.0	120.0	1,158.0	173.7	174.0
Palo Alto	938.0	80.0	1,018.0	152.7	162.0
Plymouth	1,544.0	81.0	1,625.0	243.8	208.5
Pocahontas	1,182.0	58.5	1,240.5	186.1	168.5
Polk	1,222.0	430.5	1,652.5	247.9	180.0
Pottawattamie	1,670.0	280.0	1,950.0	292.5	254.0
Poweshiek	1,121.0	81.2	1,202.2	180.3	138.3
Ringgold	1,152.0	67.0	1,219.0	182.9	183.0
Sac	1,125.0	62.0	1,187.0	178.1	148.0
Scott	788.0	273.0	1,061.0	159.2	135.8
Shelby	1,084.0	58.0	1,142.0	171.3	157.0
Sioux	1,468.0	126.0	1,594.0	239.1	216.0
Story	1,060.0	141.5	1,201.5	180.2	135.0
Tama	1,302.0	105.0	1,407.0	211.1	207.0
Taylor	1,130.0	64.0	1,194.0	179.1	172.0
Union	869.0	105.0	974.0	146.1	152.0
Van Buren	873.3	60.0	933.3	140.0	132.8
Wapello	832.0	133.0	965.0	144.8	121.8
Warren	1,145.0	65.0	121.0	181.5	170.0
Washington	1,064.5	82.8	1,147.3	172.1	177.0
Wayne	1,060.0	59.0	1,119.0	167.9	167.0
Webster	1,235.0	115.5	1,350.5	202.6	181.0
Winnebago	807.5	56.5	864.0	129.6	128.8
Winneshiek	1,275.0	79.0	1,354.0	203.1	202.3
Woodbury	1,470.0	Not reported	1,470.0	220.5	213.0
Worth	706.0	36.0	742.0	111.3	114.5
Wright	986.0	208.0	1,194.0	179.1	173.5
Total	104,082.1	8,422.3	111,415.4	16,877.0	15,767.3

PART FIVE

Tests, Research and Technical Investigations.

PART FIVE

Tests, Research and Technical Investigations.

Prior to 1913, very few supplies or materials were purchased by the counties under any standard requirements or specifications. Under such conditions price became the ruling factor, rather than quality. Competition on a price basis without fixed or minimum standards of quality is the most difficult of any for the reputable manufacturer or meritorious article to meet.

Under such conditions, substitutions and low grade materials were being unloaded on the counties in big quantities. This was particularly true of culvert metals and bridge paints. Common sheet steel was sold as refined iron, and paint that scaled under service of less than a year, were common substitutions. In two years these conditions have been improved by standardization. The Commission is endeavoring to fix minimum standards of quality which places materials of equal merit upon a fair competitive basis.

Road Materials Laboratory.

After the establishment of the Commission as a separate state department, the Good Roads Experimentation appropriation was used by the college to build up a complete testing laboratory for all classes of road materials. This laboratory is organized under the Engineering Experiment Station, and all testing is done without charge for the counties and public officials.

The following samples have been tested, and the results reported:

Culvert Metals. Eighty-seven samples of sheet metal have been analyzed for carbon, phosphorous, sulphur, silicon, manganese and copper. These samples are also tested for gauge and protective coating.

Bridge Paints. Eighty samples of paints for structural steel have been analyzed for percentage of pigment, vehicle, water and volatile oils, value of pigment and chemical analysis of pigment.

Road and Bridge Materials. Other tests made are grouped as follows:

Tests of road and bridge building stone for impact and abrasion, cementing value of the residue, absorption and specific gravity.

Mechanical or sieve analysis of gravels.
Tests of various samples of cement submitted.
Tests of bituminous road materials such as tars, taroids, asphalts and oils.
Tests of reinforcing material for concrete work.

Research and Technical Investigations.

The location of the Commission at the State College is exceedingly favorable to the prosecution of such work, for by cooperation with the Engineering Experiment Station of the College the services of experts along particular lines of work are available, and access may be had to laboratory apparatus to duplicate which would require a large expenditure.

The engineers of the Engineering Experiment Station and of the Commission have cooperated during the past two years in the following lines of research:

Determination of lateral distribution on bridge floors.
Determination of the relative efficiency of different types of culvert pipe joints.
Determination of the breaking strength of reinforced concrete pipes.
Determination by service test of the relative value as a protective coating of various bridge paints.
Service tests made on culvert material.

Taking these up in order:

Determination of Lateral Distribution on Bridge Floors. The necessity for experimental work of this kind arises from the lack of reliable information, and the great value of such data as a modifying factor in the design of both steel and concrete bridge floors. The tests which have been under way for the past fifteen months comprise the following:

Lateral distribution tests on concrete slab bridges.
Lateral distribution tests on steel beam spans, with timber floor.
Lateral distribution tests on steel beam spans with concrete floor.

Two test bridges have been built, both of 18 foot clear span and 16 foot roadway, supported by concrete abutments which extend about three feet above the ground. One is a concrete slab span, and the other is a steel I-beam span.

To reproduce as nearly as possible the actual conditions of loading, the rear wheels of a traction engine are used, and the load applied directly to the axle by two one hundred ton hydraulic jacks. The upward thrust of the jacks is taken by an 18 inch I-beam, which is anchored at the sides of the bridge by two concrete piers, each four feet square in cross section. The distortions resulting from the applied load are measured with a Berry Extensometer fitted with an Ames dial.

The readings for test of lateral distribution on steel beam spans with timber floor were taken during the past summer. Transverse and diagonal plank flooring of both single and double thickness was used, and the load applied at a number of different points for each type of flooring.

Tests on the lateral distribution on concrete slab bridges and on the lateral distribution on steel beam spans with concrete floor are to be completed next year.

While the data gathered thus far are too incomplete to warrant any definite conclusions, they seem to indicate in a general way that the assumptions concerning distribution made in the standard specifications, as set forth elsewhere in this report, are very nearly correct.

Determination of the Relative Efficiency of Different Types of Culvert Pipe Joints. The necessity for tests and experimental work along this line arose from the many types of culvert pipe joints submitted from time to time to the Commission for approval by contractors and builders.

As the exact strength of such joints is affected by too many factors to be accurately determined by mathematical calculation, a series of tests, whose object is to reproduce as near as possible, field conditions, is in progress at the present time. The method adopted in the carrying out of these tests is briefly as follows:

> A section comprising three pipe (two joints) is tested as a unit, the standard sand bearing test adopted by the American Society for Testing Materials being used with this modification; that, whereas, the upper 90 degrees of the circumference is loaded along the entire length, the lower 90 degrees is bedded under the end sections only leaving the center pipe supported by the strength of the joints. Four sections have been tested thus far. All of these are 18" and the results are not sufficiently conclusive as yet to warrant publication.

Determination of Breaking Strength of Reinforced Concrete Pipes. The object of these tests is to study the effect of different methods and types of reinforcing, and to note the behavior under conditions approximating those encountered in the field, of loads sufficient to break the structures tested.

The method used in these tests is known as the "Standard Sand Bearing Test," adopted by Committee C-6 of the American Society for Testing Materials.

The tests thus far have been made upon but one brand of pipe, the "Massey," manufactured by the C. F. Massey Pipe Company of Chicago. These are reinforced concrete pipe, the reinforcement being of bars in the 36 inch and 48 inch sizes, and of wire mesh in the smaller sizes.

Thirteen pipes in all have been tested as follows:

4-48" diameter—bar reinforcement.
1-36" diameter—bar reinforcement.
3-30" diameter—wire mesh reinforcement.
1-24" diameter—wire mesh reinforcement.
4-18" diameter—wire mesh reinforcement.

The results thus far secured are very valuable in that they have pointed out certain defects or inefficiencies in the placing of reinforcing metal and the value of a thorough mechanical bonding in the same.

It may be noted here that an extended series of tests on reinforced tile is now being conducted by Committee C-6 of the American Society for Testing Materials, of which Commissioner Marston is chairman.

Determination by Service Test, of the Relative Value as a Protective Coating, of Various Bridge Paints. To study the comparative value as a protective coating of different commercial brands of paint one hundred and sixteen metal panels have been painted and exposed to outside atmospheric conditions. The one hundred and sixteen panels are painted with two coats, each representing different combinations of the commercial paints. About fifty paints are represented in the one hundred and sixteen panels, the first of which were put out in August, 1914, and the last are just being placed. It is the intention to study the effect of atmospheric agencies on the metals thus painted for a period of five years, compiling at the end of every year a progress report on the same. The value of these tests lies in the fact that commercial paints procured from the manufacturer are being used, rather than recommended combinations from any association or board of engineers.

Service Tests Made on Culvert Material. In order to study the effect of rust producing agencies on the various metals manufactured for culvert purposes, about ten sections of culverts representing the same number of different metals have been bedded in cinders and exposed to external atmospheric conditions. It is the intention to study the relative resistance of each of these test sections, and to determine if possible the relation existing between the purity of the metal and its resistance to corrosion.

In addition to the above, fifty samples of culvert metal have been exposed to an oxidizing atmosphere by being placed in the heating plant for the Iowa State College buildings. The behavior of these samples will be watched with special reference to the comparative stability in much the same manner as in the case of the sections exposed to external temperature conditions.

PART SIX

Financial Report.

PART SIX

Financial Report.

SALARIES AND TRAVELING EXPENSES.

April 23, 1913, to June 30, 1914.

Paid from appropriation under Chap. 133, Acts 35th G. A.

ADMINISTRATIVE.

Name	Character of Employment	Salary	Expenses	Total
A. Marston	Commissioner		$ 757.67	$ 757.67
J. W. Holden	Commissioner	$ 1,640.00	1,085.62	2,725.62
H. C. Beard	Commissioner	1,650.00	1,481.40	3,131.40
T. H. MacDonald	Highway Engineer	3,400.00	628.76	4,028.76
J. E. Kirkham	Consulting Bdg. Engineer	549.98		549.98
Total		$ 7,239.98	$ 3,953.45	$ 11,193.43

DESIGNING DEPARTMENT.

Name	Character of Employment	Salary	Expenses	Total
C. B. McCullough	Designing Engineer	$ 2,449.96	$ 200.10	$ 2,650.06
E. F. Kelley	Asst. Designing Engineer	2,042.00	73.44	2,115.44
L. H. Doughty	Designer	1,482.45	83.73	1,566.18
E. W. Blumenschein	Designer	1,572.30	25.18	1,597.48
J. A. Paulson	Chief Draftsman	1,560.00	8.45	1,568.45
H. W. Wilkison	Draftsman	798.70	6.99	805.69
Neil Adams	Draftsman	1,110.00		1,110.00
I. E. Trottnow	Draftsman	972.82		972.82
L. S. Gates	Draftsman	1,023.00		1,023.00
Bert Anderson	Draftsman	161.35	21.77	183.12
Hans Hanson	Clerk	306.40		306.40
Extra help		1,226.15		1,226.15
Total		$ 14,505.13	$ 419.66	$ 14,924.79

FIELD DEPARTMENT.

Name	Character of Employment	Salary	Expenses	Total
F. R. White	Field Engineer	$ 2,650.00	$ 726.48	$ 3,376.48
W. E. Jones	District Engineer	1,610.60	948.54	2,559.14
A. L. Goldenstar	Assistant Engineer	423.80	124.36	548.16
W. H. Root	District Engineer	1,625.00	964.72	2,589.72
C. E. Olson	District Engineer	1,307.48	755.26	2,062.74
E. Williams	District Engineer	1,625.00	1,173.51	2,798.51
C. Coykendall	District Engineer	1,625.00	893.62	2,518.62
O. W. Crowley	Assistant Engineer	970.83	312.69	1,283.52
J. F. Booth	Assistant Engineer	312.50		312.50
L. M. Martin	District Engineer	450.00	275.85	725.85
J. S. Morrison	District Engineer	240.00	140.50	380.50
W. F. Beard	District Engineer	176.00	48.78	223.78
Extra help		145.83	136.29	282.12
Total		$ 13,161.04	$ 6,500.60	$ 19,661.64

SALARIES AND TRAVELING EXPENSES—Continued.

OFFICE DEPARTMENT.

Name	Character of Employment	Salary	Expenses	Total
J. H. Ames	Asst. Highway Engineer	$ 2,179.92	$ 175.68	$ 2,355.60
L. A. Wilkinson	Accountant	2,352.47	44.24	2,396.71
Janet Jacobsen	Stenographer	1,006.00	26.28	1,032.28
Annie Laurie Bowen	Clerk	907.50		907.50
Anne Vanderlinden	File Clerk	906.60		906.60
Merle Crabtree	Stenographer	95.00		95.00
H. A. Iverson	Stenographer	32.00		32.00
Mrs. G. L. Bartow	Stenographer	189.99		189.99
Leona Pequignot	Stenographer	743.39		743.39
Thora Tallman	Stenographer	470.00		470.00
Anna Holden	Stenographer	111.12		111.12
Ethel Seamands	Stenographer	150.77		150.77
Extra help		55.85	36.89	92.74
Total		$ 9,200.61	$ 283.09	$ 9,483.70

EDUCATIONAL DEPARTMENT.

Name	Character of Employment	Salary	Expenses	Total
J. S. Dodds	Educational Engineer	$ 1,500.00	$ 594.66	$ 2,094.66
J. W. Eichinger	Bulletin Editor	413.40	31.05	444.45
R. E. Robertson	Assistant	266.84	22.06	288.90
Joe Long	Speaker		3.22	3.22
Extra help		124.88		124.88
Total		$ 2,305.12	$ 650.99	$ 2,956.11

UNCLASSIFIED HELP.

Name	Character of Employment	Salary	Expenses	Total
J. G. Freeland	Electrician	$ 1.63		$ 1.63
R. B. Gunn	Electrician	2.75		2.75
A. W. Minot	Laborer	.70		.70
Cam Sloss	Electrician	.87		.87
F. W. Fahrbach	Photographer	55.00	$ 59.86	114.86
C. A. Besser	Road Superintendent	25.00		25.00
A. L. Ames	Road Lecturer	535.00	374.76	909.76
Geo. L. Bartow	Road Lecturer	20.00	9.76	29.76
O. W. Schide	Laborer	2.25		2.25
C. W. Wade	Laborer	11.20		11.20
E. H. Cunningham	Road Lecturer	20.00	14.26	34.26
A. N. Johnson	Road Lecturer	15.00	24.45	39.45
Bruce Cole	Electrician	9.60	10.39	19.99
A. R. Hirst	Road Lecturer	15.00	25.00	40.00
Nathan Barber	Engineer	3.90		3.90
S. B. Gardner	Engineer	4.60		4.60
C. H. Lehmkuhl	Engineer	10.22		10.22
J. M. Malloy	Engineer	9.00		9.00
S. W. Beyer*	Geologist	450.00	84.81	534.81
P. L. Drew	Field man	32.80		32.80
P. F. Hopkins	Field man	17.70		17.70
Julius Beach	Blue printer	13.80		13.80

SALARIES AND TRAVELING EXPENSES—Continued.

Name	Character of Employment	Salary	Expenses	Total
Geo. Heisey	Stenographer	$ 32.50		$ 32.50
L. H. Pammel	Lecturer		21.79	21.79
J. M. Brockway	Lecturer		14.15	14.15
Total		$ 1,288.62	$ 639.23	$ 1,927.75
Grand total		$ 47,700.40	$ 12,447.02	$ 60,147.42

*Contract made with S. W. Beyer on July 1, 1913, to make examination of field deposits of road materials and to prepare a report showing location, amount, available deposits and character of material. Field work done in 1913.

ITEMIZED STATEMENT OF TRAVELING EXPENSE.

	Items of Expense	Amount
	A. Marston, Commissioner.	
1913	April, transportation $9.77, hotel $4.00, street car at Ames 5c, phone 40c; May, transportation $41.05, hotel $23.50, street car at Ames 25c, phone 70c; June, transportation, $44.13, hotel $13.90, street car at Ames 5c, phone 30c, parlor car 80c, porter 10c, grip check 10c; July, transportation $35.99, hotel $22.65, street car at Ames 30c, pullman $1.50, porter 60c; Aug., transportation $50.61, hotel $22.10, street car at Ames 10c, parlor car $1.00, pullman $12.25, grip check etc. 60c, porter $1.25, phone 30c; Sept., transportation $15.09, hotel $12.40, street car at Ames 20c, pullman $1.50, porter 25c; Oct., transportation $52.16, hotel $29.25, street car at Ames 15c, baggage check 10c; Nov., transportation $31.80, hotel $17.50, street car at Ames 15c, pullman $1.50, porter 25c; Dec., transportation $23.15, hotel $22.70, street car at Ames 10c, porter 25c;	
1914	Jan., transportation $12.88, hotel $10.30, street car at Ames 5c, baggage check 10c; Feb., transportation $25.63, hotel $10.40, street car at Ames 10c, porter 50c; Mar., transportation $64.60, hotel $19.95, street car at Ames 80c, railway guide 25c; April, transportation $15.49, hotel $13.00, phone 95c; May, transportation $46.93, hotel $19.60, street car at Ames 5c, railway guide 25c; June transportation $8.29, hotel $9.45, street car at Ames 5c; plus $1.20 to correct errors	$ 757.67
	J. W. Holden, Commissioner.	
1913	April, transportation $18.20; hotel and meals $8.15, miscellaneous $2.10; May, transportation $63.94, hotel and meals $41.75, sleeping car $1.50, miscellaneous $1.00; June, transportation $53.15, hotel and meals $36.05, miscellaneous $1.22; July, transportation $52.44, hotel $40.10, telephone 55c, sleeper $1.50; Aug., transportation $50.82, hotel $31.75, phone etc. $1.25, parlor car $1.00, sleeper $6.00; Sept., transportation $55.66, hotel $53.75, telephone etc. $3.15; Oct., transportation $43.79, hotel $48.55, telephone $1.95; Nov., transportation $42.19, hotel $9.65, telephone $1.95; Dec., transportation $22.17, hotel $31.65;	
1914	Jan., transportation $28.82, hotel $30.95, telephone 55c; Feb., transportation $32.23, hotel $33.30, telephone 90c; Mar., transportation $36.55, hotel $31.45, telephone $1.09; April, transportation $4.48, hotel $2.00; May, transportation $43.91, hotel $31.20, phone 25c, parlor car 50c; June, transportation $22.81, hotel $17.35, phone 25c; plus 10c to correct error	1,085.62

ITEMIZED STATEMENT OF TRAVELING EXPENSE—Continued.

	Items of Expense	Amount
	H. C. Beard, Commissioner.	
1913	April, transportation $32.47, hotel and meals $15.80, miscellaneous $4.20; May, transportation $77.20, hotel and meals $43.65, sleeping car $3.00, miscellaneous $7.50; June, transportation $71.69, hotel and meals, $43.05, miscellaneous $19.80 ($12.00 stenographic work 2 weeks); July, transportation $82.58, hotel $34.50, telephone etc. $3.08, stamps $1.00, stenographer $12.00; Aug., transportation $64.17, hotel $30.05, stamps $2.00, stenographer $12.55, telephone 95c; Sept., transportation $62.72, hotel $37.25, telephone etc. $3.97, stenographer $40.00, postage $2.00, pullman $2.00; Oct., transportation $33.91, hotel $22.15, parlor car $1.15, stenographer $10.00, telegrams etc. $2.42, postage $1.00; Nov., transportation $65.59, hotel $26.10, stenographer $30.00; postage 50c, telegrams $1.85; Dec., transportation $30.45, hotel $24.00, telegrams 87c, stenographer $40.00, postage $1.00;	
1914	Jan., transportation $43.08, hotel $23.93, stamps $3.50, phone etc. $1.15, stenographer $50.00; Feb., transportation $16.12, hotel $13.10, telegrams $1.66, stenographer $20.00, stamps $1.44; Mar., transportation $35.67, hotel $20.00, postage $4.50, telegrams etc. $1.10; April, transportation $34.00, hotel $21.60, postage $2.00, telegraph $5.92; May, transportation $46.78, hotel $29.36, phone etc. $1.25; postage $1.00, pullman $1.00; June, transportation $71.25, hotel $25.35, observation and parlor car $2.50; stamps $1.00, telegrams etc. $1.77, photos 80c, porter 25c	1,481.40
	Thos. H. MacDonald, Highway Engineer.	
1913	April, transportation $15.12, hotel and meals $21.55, misc. $1.60; May, transportation $11.07, hotel and meals $41.20, sleeping car $1.55, misc. $6.75; June, transportation $13.40, hotel and meals $3.55, sleeping car $4.00, misc. 75c; July, transportation $14.08, hotel $17.25, misc. $1.75; Aug., transportation $13.86, hotel $46.20, misc. express, etc. $95.90; Sept., transportation $16.65, hotel $10.00, misc. 40c; Oct., transportation $24.79, hotel $22.90, misc. $5.85; Nov., transportation $14.34, hotel $7.60, misc. $1.70; Dec., transportation $8.44, hotel $9.55, misc. 10c;	
1914	Jan., transportation $8.68, hotel $26.55, misc. $3.40; Feb., transportation $38.93, hotel $22.95, misc. $2.00; Mar., transportation $16.30, hotel $9.40, misc. $1.15; April, transportation $17.20, hotel $16.95, misc. 75c; May, transportation $5.04, hotel $8.00, misc. 35c; June, transportation $8.96, hotel $8.15, misc. $2.15	628.76
	O. B. McCullough, Designing Engineer.	
1913	April, transportation $8.45, hotel and meals $3.20; May, transportation $9.35, hotel and meals $4.25, misc. 50c; June, transportation $4.94, hotel and meals 70c; Aug., transportation $6.64, hotel and meals $2.00; Sept., transportation $1.48, hotel and meals $1.05; Oct., transportation $9.25; hotel and meals $6.00; Nov., transportation $3.05, hotel and meals $1.40; Dec., transportation $9.59, hotel and meals $10.00, misc. $2.50;	
1914	Jan., transportation $5.04, hotel and meals $22.10, misc. $1.05; Feb., transportation $5.49, hotel and meals $2.43; Mar., transportation $4.38, hotel and meals $2.50, misc. 50c; April, transportation $28.04, hotel and meals $23.05, sleeping car and parlor car $8.45, misc. $2.25; June, transportation $7.04, hotel and meals $3.45	200.10
	E. F. Kelley, Assistant Designing Engineer.	
1913	May, transportation $1.52, hotel and meals 75c; June, transportation $2.48, hotel and meals $1.00; June, transportation $1.30, hotel and meals 75c; July, transportation $1.40, hotel and meals $1.00, misc. 25c; Aug., transportation $9.14, hotel and meals $7.80, misc. 55c; Oct., transportation $5.78, hotel and meals $3.15;	
1914	Jan., transportation $6.08, hotel and meals $3.00, misc. 70c; April, transportation $6.04, hotel and meals $3.50; May, transportation $6.85, hotel and meals $4.85, misc. 5c; June, transportation $2.60, hotel and meals 65c, misc. $2.25	73.44
	L. H. Doughty, Designer.	
1913	August, transportation $1.46, hotel and meals $8.20, misc. $21.34; Oct., transportation $1.52, hotel and meals 30c;	
1914	Feb., transportation $2.89, hotel and meals $3.00; Mar., transportation $5.84, hotel and meals $18.70; April, transportation $2.89, hotel and meals $5.45; May, transportation $1.48, hotel and meals $5.30; June, transportation $2.96, hotel and meals $3.40; less $1.00 received for lumber	83.72
	E. W. Blumenschein, Structural Engineer.	
1913	Oct., transportation $5.78, hotel and meals $3.10;	
1914	April, transportation $2.60, hotel and meals $2.75; misc. 50c; June, transportation $7.60, hotel and meals $2.85	25.18

ITEMIZED STATEMENT OF TRAVELING EXPENSE—Continued.

	Items of Expense	Amount
	J. A. Paulson, Chief Draftsman.	
1913	Oct., transportation $3.14, hotel and meals 35c;	
1914	June, transportation $4.06; hotel and meals 90c	8.45
	H. W. Wilkison, Draftsman.	
1914	Mar., transportation $1.42, hotel and meals $1.10; April, transportation $1.46, hotel and meals $2.80, misc. 20c	6.99
	B. E. Anderson, Draftsman.	
1913	Aug., transportation $7.82, hotel and meals $11.65, misc. $2.30	21.77
	F. R. White, Field Engineer.	
1913	April, transportation $46.78, hotel and meals $23.00, misc. $4.42; May, transportation $54.82, hotel and meals $26.85, misc. $3.24; June, transportation $36.48, hotel and meals $11.80, misc. $1.00; June, transportation $12.40, hotel and meals $4.00; July, transportation $21.94, hotel and meals $9.05, misc. $1.25; Aug., transportation $28.83, hotel and meals $13.45, misc. $1.45; Sept., transportation $47.30, hotel and meals $26.70, sleeping car $2.00, misc. $1.60; Oct., transportation $43.50, hotel and meals $23.70, sleeping car $1.65, misc. 25c; Nov., transportation $18.31, hotel and meals $3.25; Dec., transportation $32.05, hotel and meals $5.05;	
1914	Jan., transportation $24.49, hotel and meals $8.65, miscellaneous, $2.52; Feb., transportation $9.89, hotel and meals $3.85; March, transportation $29.12, hotel and meals $16.05, miscellaneous $1.09; April, transportation $39.76, hotel and meals $13.40, miscellaneous $2.15; May, transportation $35.06, hotel and meals $16.60, miscellaneous $4.19; June, transportation $10.99, hotel and meals $3.65	726.48
	W. E. Jones, District Engineer.	
1913	June, transportation $22.80, hotel and meals $17.80, miscellaneous 95c; June, transportation $13.07, hotel and meals $14.80, miscellaneous $1.17; July, transportation $41.60, hotel and meals $40.05, miscellaneous 60c; Aug., transportation $48.32, hotel and meals, $42.45, miscellaneous $1.55; Sept., transportation $47.22, hotel and meals $43.38, miscellaneous, 75c; Oct., transportation $41.18, hotel and meals $41.65, miscellaneous $1.55; Nov., transportation $24.52, hotel and meals $24.45, miscellaneous $2.15; Dec., transportation $24.15, hotel and meals $19.30, miscellaneous 85c;	
1914	Jan., transportation $7.45, hotel and meals $6.70, miscellaneous 95c; Feb., transportation $47.01, hotel and meals $19.95, miscellaneous $1.10; March, transportation $45.96, hotel and meals $53.40, miscellaneous $1.50; April, transportation $31.70, hotel and meals $42.10, miscellaneous $1.20; May, transportation $42.55, hotel and meals $47.95, miscellaneous $2.00; June, transportation $32.67, hotel and meals $45.55, miscellaneous $2.55	943.54
	A. L. Goldenstar, Assistant Engineer.	
1913	June, transportation $7.22, hotel and meals $5.45, miscellaneous 60c; July, miscellaneous 90c; Aug., transportation $8.80, hotel and and meals $23.45, misc. $1.15; Oct., transportation $12.60, hotel and meals $23.45, misc. $1.15; Oct., transportation $12.90, hotel and meals $9.85; Dec., transportation $4.10, hotel and meals $3.60;	
1914	Jan., transportation $8.10, hotel and meals $5.00, miscellaneous $1.50	124.36
	W. H. Root, District Engineer.	
1913	April, transportation $2.64; May, transportation $1.90; June, transportation $16.69, hotel and meals $6.20, miscellaneous 55c; July, transportation $48.20, hotel and meals $46.60, miscellaneous $4.30; Aug., transportation $54.27, hotel and meals $16.85, miscellaneous $2.39; Sept., transportation $37.88, hotel and meals $27.75, miscellaneous $2.61; Oct., transportation $45.36, hotel and meals $42.20, miscellaneous $4.50; Nov., transportation $48.60, hotel and meals, $32.50, miscellaneous $3.50; Dec., transportation $38.15, hotel and meals $25.50, miscellaneous $1.35;	
1914	Jan., transportation $35.97, hotel and meals $26.60, miscellaneous $3.10; Feb., transportation $27.72, hotel and meals $31.60, miscellaneous $1.70; March, transportation $46.42, hotel and meals $34.40, miscellaneous $3.00; April, transportation $29.04, hotel and meals, $32.35, miscellaneous $7.43; May, transportation $33.70, hotel and meals $34.95, miscellaneous $5.85; June, transportation $27.95, hotel and meals $34.85, miscellaneous $7.51	964.72

ITEMIZED STATEMENT OF TRAVELING EXPENSE—Continued.

	Items of Expense	Amount
	O. E. Olson, District Engineer.	
1913	April, transportation $1.46, hotel and meals 25c; May, transportation $11.11, hotel and meals $10.90, miscellaneous 80c; June, transportation $29.74, hotel and meals $30.20, miscellaneous $2.10; June, transportation $4.39, hotel and meals $8.10, miscellaneous $1.00; July, transportation $41.87, hotel and meals $43.25, miscellaneous $2.20; Aug., transportation $35.90, hotel and meals, $33.05, miscellaneous, $2.58; Sept., transportation $57.41, hotel and meals $42.10, miscellaneous $3.10; Oct., transportation $38.44, hotel and meals $41.05, miscellaneous, $1.62; Nov., transportation, $39.40, hotel and meals, $35.90, miscellaneous $1.30; Dec., transportation $18.89, hotel and meals $25.90, miscellaneous, $1.95;	
1914	Jan., transportation $23.03, hotel and meals $25.45, miscellaneous $2.25; Feb., transportation $31.10, hotel and meals $20.30, miscellaneous $1.35; March, transportation $42.19, hotel and meals $40.95, miscellaneous $2.45	755.26
	E. Williams, District Engineer.	
1913	June, transportation $38.36, hotel and meals $36.10, miscellaneous $1.35; June 30, transportation $5.83, hotel and meals $2.85; July transportation $50.24, hotel and meals $56.40, miscellaneous $5.97; Aug., transportation $77.19, hotel and meals $49.80, miscellaneous $3.30; Sept., transportation $44.36, hotel and meals $53.85, miscellaneous $6.15; Oct., transportation $45.46, hotel and meals $56.70, miscellaneous $3.00; Nov., transportation $52.36, hotel and meals $81.15, miscellaneous $1.55; Dec., transportation $42.74, hotel and meals $50.10, miscellaneous $4.90;	
1914	Jan., transportation $24.65, hotel and meals $28.65, miscellaneous 55c; Feb., transportation $32.06, hotel and meals $37.20, miscellaneous 95c; March, transportation $37.69, hotel and meals $66.25, miscellaneous $5.35; April, transportation $32.91, hotel and meals $31.65, miscellaneous $4.30; May, transportation $26.62, hotel and meals, $31.80; miscellaneous 50c; June, transportation $22.67, hotel and meals $18.35, miscellaneous $1.65	1,173.61
	O. Coykendall, District Engineer.	
1913	June, transportation $23.39, hotel and meals $18.15, miscellaneous $1.60; June 30, transportation $1.60, hotel and meals $1.00; July, transportation $63.10, hotel and meals $35.10, miscellaneous $2.95; Aug., transportation $48.98, hotel and meals $32.60, miscellaneous $3.65; Sept., transportation $54.15, hotel and meals $32.90, misc. $1.90; Oct., transportation $66.28, hotel and meals $33.10, miscellaneous $5.05; Nov., transportation $34.22, hotel and meals $27.35; miscellaneous $1.00; Dec., transportation $35.47, hotel and meals $26.05, miscellaneous $3.20;	
1914	Jan., transportation $38.57, hotel and meals $16.85, miscellaneous 85c; Feb., transportation $28.86, hotel and meals $11.55, miscellaneous $1.10; March transportation $35.04, hotel and meals $22.05, miscellaneous $1.85; April, transportation $74.60, hotel and meals, $27.60, miscellaneous $1.90, sleeping car $2.40; May, transportation $16.43, hotel and meals $4.50, miscellaneous 20c; June, transportation $33.78, hotel and meals $21.85, miscellaneous $1.05	893.62
	O. W. Crowley, Assistant Engineer.	
1913	Oct., transportation $16.14, hotel and meals $20.00, miscellaneous 45c; Nov., hotel and meals $31.10, miscellaneous 15c; Dec., transportation $2.60, hotel and meals $28.70, miscellaneous $1.20;	
1914	Jan., hotel and meals $35.90; Feb., transportation $2.60, hotel and meals $20.10, miscellaneous $3.60. March, hotel and meals $35.25, miscellaneous 35c; April, transportation $11.24, hotel and meals $29.60, miscellaneous $4.90; May, transportation $7.94, hotel and meals $41.25, miscellaneous $3.70; June, transportation $1.22, hotel and meals $13.90, miscellaneous 90c	312.69
	L. M. Martin, District Engineer.	
1914	March, transportation $10.34, hotel and meals $11.30, miscellaneous, 60c; April, transportation $36.09, hotel and meals $31.80, miscellaneous $5.25; May, transportation $42.32, hotel and meals $48.20, miscellaneous $17.15 (photographs, $7.00); June, transportation $20.28, hotel and meals $40.70, miscellaneous $11.32, (freight bill $6.62)	275.85
	J. S. Morrison, District Engineer.	
1914	May, transportation $27.59, hotel and meals $46.00, miscellaneous $1.00; June, transportation $34.87, hotel and meals $38.50, miscellaneous $2.45	140.50

ITEMIZED STATEMENT OF TRAVELING EXPENSE—Continued.

	Items of Expense	Amount
	W. F. Beard, Assistant Engineer.	
1914	May, transportation $2.93, hotel and meals $21.40, miscellaneous 20c; June, transportation $1.00, hotel and meals $23.25	48.78
	J. S. Coye, Extra Help.	
1913	Dec., transportation $2.80, hotel and meals 50c;	
1914	March, transportation $9.17, hotel and meals $4.00	16.47
	T. R. Agg, Extra Help.	
1914	April, transportation $7.56, hotel and meals $1.75, sleeping car 80c	10.11
	F. O. Laing, Extra Help.	
1913	Aug., transportation $4.00, hotel and meals $1.30; Sept., transportation $15.07, hotel and meals $40.15, miscellaneous 80c	62.32
	S. B. Gardner, Extra Help.	
1913	Nov., transportation $2.56, hotel and meals $1.00	3.56
	H. M. Howard, Extra Help.	
1913	Oct., transportation $17.28, hotel and meals $2.65	19.93
	L. A. Besser, Extra Help.	
1913	Aug., transportation $7.31, hotel and meals $8.50, miscellaneous 60c; Sept., transportation $8.50, hotel and meals $23.90, (advance and paid $25.00)	23.90
	J. H. Ames, Office Engineer.	
1913	April, transportation $8.36, hotel and meals $3.35; May, transportation $9.31, hotel and meals $4.30; June, transportation $3.40, hotel and meals $3.30; July, transportation $1.74, hotel and meals 85c; Aug., transportation $9.34, hotel and meals $12.95, miscellaneous $3.00; Sept., transportation $8.64, hotel and meals $4.65, miscellaneous 75c; Oct., transportation $6.44, hotel and meals $2.60; Nov., transportation $1.40, hotel and meals 50c; Dec., transportation $19.80, hotel and meals $1.95, miscellaneous $2.10;	
1914	Jan., transportation $1.40, hotel and meals $4.55, miscellaneous $2.20 (Note $1.00 paid for paper clips not classified as expenses); Feb., transportation $27.14, hotel and meals $10.60, miscellaneous $2.30; March, transportation $2.80, hotel and meals $4.20; April, transportation $3.00, hotel and meals 85c; May, transportation $2.60, hotel and meals $1.00; June, transportation $2.86, hotel and meals $1.60, miscellaneous 5c	175.68
	L. A. Wilkinson, Sr., Accountant.	
1913	May, transportation $8.75, hotel and meals $2.00; June, transportation $1.50, hotel and meals 50c; July, transportation $4.76, hotel and meals $2.70, miscellaneous 5c; Sept., transportation $1.45, hotel and meals 75c; Nov., transportation $6.46, hotel and meals $13.45;	44.24
1914	Jan., transportation $1.42, hotel and meals 35c, miscellaneous 10c	26.28
	Janet Jacobsen, Stenographer.	
1914	Jan., transportation $3.08, hotel and meals $22.60, miscellaneous 60c	.73
	Jennie Emerson, Extra Help.	
1913	July, transportation 73c	3.10
	E. L. Marriage, Extra Help.	
1913	Aug., transportation $2.60, hotel and meals 50c	5.81
	G. A. Senninger, Extra Help.	
1913	Sept., transportation $4.56, hotel and meals $1.25	9.61
	H. B. Rosenkrans, Extra Help.	
1913	Sept., transportation $8.61, hotel and meals $1.00	2.58
	J. L. Hanrahan, Extra Help.	
1913	Sept., transportation $2.58	7.36
	J. D. Hennan, Extra Help.	
1913	Sept., transportation $6.36, hotel and meals $1.00	3.32
	Monroe L. Patzig, Extra Help.	
1913	Dec., transportation $3.32	4.38
	M. T. Finley, Extra Help.	
1913	Aug., transportation $2.38, hotel and meals $2.00	
	J. S. Dodds, Educational Engineer.	
1913	May, transportation $6.00, hotel and meals $5.00, miscellaneous $1.00; July, transportation $34.00, hotel and meals $10.00; Aug., transportation $4.58, hotel and meals $1.60, miscellaneous $1.30; Oct., transportation $4.28, hotel and meals $6.60; Nov., transportation $5.36, hotel and meals $4.45, miscellaneous 25c; Dec., transportation $28.09, hotel and meals $22.40, miscellaneous $6.80;	

ITEMIZED STATEMENT OF TRAVELING EXPENSE—Continued.

	Items of Expense	Amount
1914	Jan., transportation $35.74, hotel and meals $25.50, miscellaneous $5.25; Feb., transportation $57.48, hotel and meals $34.60, miscellaneous $3.45; March, transportation $50.74, hotel and meals $34.30, miscellaneous $4.90; April, transportation $7.20, hotel and meals $9.40, miscellaneous $13.14; May, transportation $50.48, hotel and meals $28.95, miscellaneous $22.03; June, transportation $23.75, hotel and meals $29.85, miscellaneous $14.29. Note: Miscellaneous expenses include freight and express on educational exhibit of road work	594.66
	J. W. Eichinger, Editor Service Bulletin.	
1914	March, transportation $1.40, hotel and meals $1.30; April, transportation $4.44, hotel and meals $1.95, miscellaneous $1.25; May, transportation $9.86, hotel and meals $4.80, miscellaneous $6.05	31.05
	R. E. Robertson, Assistant.	
1913	July, transportation $5.00;	
1914	Jan., transportation $7.06, hotel and meals $9.50, miscellaneous 50c	22.06
	J. L. Long, Educational Department.	
1913	June, transportation $1.47, hotel and meals $1.00, miscellaneous 75c	3.22
1913	F. W. Fahrbach, Photographer, August, transportation $27.49, misc. 60c; Nov., misc. 30c; Dec., transportation $30.57, misc. 90c	$ 59.86
1913	A. L. Ames, Road Lecturer, August, transportation $18.35, meals and lodging $5.50, Pullman $1.50; Sept., transportation $20.93, meals and lodging $8.00; Dec., transportation $13.08, hotel and meals $11.30;	
1914	January, transportation $11.71, hotel and meals $15.00; Feb., transportation $49.29, hotel and meals $24.30, Pullman $6.00, misc. $2,85, salary (classified as expense) $40.00; March, transportation $57.33, hotel and meals $55.15, pullman $5.90, miscellaneous $3.50; April, transportation $3.63, hotel and meals $3.00, stenographic help $13.00; June, transportation $4.44, hotel and meals $1.00	374.76
1913	George L. Bartow, Road Lecturer, September, transportation $7.76, hotel and meals $2.00	9.76
1914	E. H. Cunningham, Road Lecturer, March, transportation $5.76, hotel and meals $8.50	14.26
1914	A. N. Johnson, Road Lecturer, January, transportation $17.95, hotel and meals $3.35, pullman $2.75, misc. 40c	24.45
1914	B. H. Cole, Electrician, January, transportation $6.04, hotel and meals $3.95, misc. 40c	10.39
1913	A. R. Hirst, Road Lecturer, December, transportation $18.20, hotel and meals $1.95, pullman $4.25, miscellaneous 60c	25.00
1913	S. W. Beyer, Geologist, July, transportation $16.60, meals and lodging $14.10, misc. 25c; Aug., transportation $35.71, hotel and meals $17.30, misc. 85c	84.81
1914	L. H. Pammel, Lecturer, June, transportation $12.54, hotel and meals $9.25	21.79
1914	J. M. Brockway, Lecturer, March, transportation $6.90, hotel and meals $7.25	14.15

OFFICE AND DESIGNING DEPARTMENT SUPPLIES.

Paid from appropriation under Chapter 133, Acts Thirty-fifth General Assembly. From April 23, 1913, to June 30, 1914, inclusive.

	To Whom Paid—For What Purpose.	Amount
1913	May 12, Dahlberg Offisupply Co., stenographer outfits and notebooks, $8.70; May 20, J. W. Butler Paper Co., 1 roll wrapping paper, $2.04; A. C. McClurg Co., stationery for office, $4.61; McNamara-Kenworthy Co., stationery for office, $19.25; Koch Bros., supplies, $26.75; McMillan Book Co., record book, $19.60; A. C. McClurg Co., desk blotters, $5.70; Revolute Machine Co., 8 lamp tube, $27.00; C. L. Dahlberg Co., printograph and stationery, $22.35; June 4, A. C. McClurg, pencil sharpeners, 24c; A. C. McClurg, memo books and filiers, $4.69; Revolute Machine Co., 1 C. A. shifter bulb, $4.10; L. A. Will, 600 expansible file pockets, $45.00; McNamara-Kenworthy Co., 2 doz. env., 20c; Koch Bros. Printing Co., 2,000 letterheads and 2,000 env., $24.60; June 21, Book Store, blotters, ink, etc., $25.75; Book Store, blue	

OFFICE AND DESIGNING DEPARTMENT SUPPLIES—(Continued).

	To Whom Paid—For What Purpose.	Amount
	print material, $62.21; Book Store, tacks, erasers, pencils, etc., $27.59; Book Store, blue print material, $1.65; June 30, McNamara-Kenworthy Co., 200 grip files, $86.00; Ames Weekly Times, 1,000 filing cards, $3.50; Tablet and Ticket Co., 2 office boxes and env., $8.08; July 14, Book Store for June, 1913, $44.07; Book Store, blue print paper, June, $42.50; July 21, Marshall Printing Co., 100 daily office record books, $13.65; July 28, A. C. McClurg & Co., ½ doz. fillers, No. 5055½, $1.30; Koch Bros. Printing Co., 6 style J, No. 640, 8½x14, $4.80; Aug. 5, Book Store, blue print paper, July, $26.44; Book Store, July account, $66.88; McNamara-Kenworthy Co., 1 record book, $1.60; Keuffel & Esser, detail paper, drawing ink, soft rubber erasers, thumb tacks, $4.64; Keuffel & Esser, blue print paper, $96.66; Keuffel & Esser, 2 rolls tracing cloth, $14.54; Whiting Paper Co., 2½ reams paper, $10.20; Aug. 15, Boone Blank Book Co., 150 blanks, $7.50; Sept. 8, McNamara-Kenworthy Co., 1 record book, $1.60; Sept. 8, King Printing Co., 1,500 letterheads, $1.90; A. C. McClurg & Co., ½ doz. desk blotter holders, $11.40; Sept. 22, Revolute Machine Co., ½ payment, blue print machine, $328.00; McNamara-Kenworthy Co., 108 No. 410 S grip files, $51.84; A. C. McClurg & Co., 1 doz. 5055½ standard fillers, $2.60; Book Store, blue print paper, Aug., $28.08; Sept. 22, Book Store account, Aug., $67.23; Oct. 20, Book Store account, Sept., $32.20; Book Store, blue print paper, Sept., $23.70; W. M. Welch Co., 1,000 expense books, $25.00; Jno. C. Moore Corporation, 6 F. 2¼ binders, $15.00; Russell's Railway Guide Co., Russell's Railway guide, 1 yr., $2.50; Whiting Paper Co., 2 reams 24 lb. paper, $10.20; Revolute Machine Co., ½ payment blue print machine, $328.00; American Papeterie & Env. Co., 20 M. wrappers and envs., $148.61; American Litho. & Ptg. Co., 10,000 litho. letterheads, $55.00; Nov. 17, Book Store account, Oct., $24.48; Nov. 28, correction, $1.50; Dec. 22, McNamara-Kenworthy Co., 25 grip files, No. 504-0, $4.50; McNamara-Kenworthy Co., 100 grip files, $43.00; Book Store account, Nov., $67.13; John C. Moore Corporation, 3,000 sheets, 189718, for loose leaf binders, $12.75; McNamara-Kenworthy Co., 1,000 Moore's loose leaves, $2.50; A. C. McClurg & Co., blades for pencil sharpener, 82c;	
1914	Jan. 9, McNamara-Kenworthy Co., 100 grip files, $18.00; Frederick Post Co., 1 roll tracing cloth, $6.80; Frederick Post Co., sepia solar paper, $3.23; Jan. 23, Matt Parrott & Sons Co., road profile binder, $18.25; J. H. Ames, paper fasteners, $1.00; Feb. 9, Des Moines Stationery Co., rubber bands, etc., $1.80; Matt Parrott & Sons Co., blanks, form No. 83, $3.08; Book Store account, Jan., $40.47; McNamara-Kenworthy Co., card holders, $1.25; Ames News Stand, paper and carbon, $2.70; Feb. 14, Book Store, blue print paper, Jan., $27.35; Book Store, 500 yds. of blue print paper, No. 221, $13.50; Feb. 14, Tilden Store Co., 2 50 yd. rolls ribbon, $2.00; McNamara-Kenworthy Co., bristol board, etc., $2.20; Frederick Post Co., 3 24 yd. rolls tracing cloth, $20.39; Book Store account, Jan., $33.95; Feb. 23, Des Moines Stationery Co., drawing paper, 60c; Des Moines Stationery Co., binders and drawing paper, $2.00; Des Moines Stationery Co., pencil sharpener, $6.00; Des Moines Paper Box Mfg Co., mailing tubes, $4.50; Mar. 16, Book Store, blue print paper, Feb., $16.75; Book Store account, Feb., $23.67; Jno. C. Moore Corporation, 2 F. 2¼ binders $8.18; Mar. 28, Des Moines Paper Box Mfg. Co., mailing tubes, $4.00; Dahlberg Offisupply Co., loose leaf note books, $2.16; April 9, Eaton-Frye Co., carbons and ribbons, $8.64; Eaton-Frye Co., typewriter ribbons, $40.00; Carpenter Paper Co., 3 M. envs., $10.80; Eugene Dietzgen Co., 3 dust brushes, $2.14; April 24, Book Store, blue print, March, $48.93; Book Store account, March, $71.80; J. W. Butler Paper Co., wrapping paper and photo filing cards, $11.63; McNamara-Kenworthy Co., 2 bone folders, 80c; American Lithograph & Printing Co., 20,000 letterheads, $86.00; Matt Parrott & Sons Co., sheets for road profile holders, $2.60; Harger & Blish, 3 doz. blank dictating machine records, $10.80; Safford Stamp Works, 1 No. 0 Superior band dater, $1.50; May 12, Book Store, blue print paper, April, $15.95; Book Store account, April, $47.80; Carpenter Paper Co., 3,000 envs., $13.50; Eaton-Frye Co., carbon paper, $18.00; May 26, B. F. Swanson Co., Dermox, $4.00; McNamara-Kenworthy Co., sealers, $6.30; Whiting Paper Co., 2 reams paper, $10.60; Jno. C. Moore Corporation, 3,000 sheets No. 196766, Moore loose leaves, $12.75; Safford	

OFFICE AND DESIGNING DEPARTMENT SUPPLIES—(Continued).

To Whom Paid—For What Purpose.	Amount
Stamp Works, 1 No. 0 Superior band dater, $1.50; Carpenter Paper Co., 10 M. envs., $29.83; May 29, Revolute Machine Co., 1 blower for blue print machine, $6.00; Revolute Machine Co., ⅛ H. P. motor for blue print machine, $28.75; Revolute Machine Co., 52" mercury lamp tube, $40.00; June 10, Book Store account, May, $39.02; Book Store, blue print paper for May, $29.75; Revolute Machine Co., shifter for blue print machine, $2.60; Dahlberg Offisupply Co., note books and copy holders, $5.00; June 23, Kraft Brown envs. (Butler Paper Co.), N.o 22713, $54.87; Frederick Post Co., 3 50 yd. rolls blue print paper, $3.10, Des Moines Stationery Co., scrap book, $5.75; Frederick Post Co., 2 10 yd. rolls blue print paper, $2.74; June 30, Keuffel & Esser, 500 sheets paper, $1.50	$ 2,947.15

EQUIPMENT AND REPAIRS.

Paid from appropriation under Chapter 133, Acts Thirty-fifth General Assembly. From April 23, 1913, to June 30, 1914, inclusive.

To Whom Paid—For What Purpose.	Amount
1913 May 20, Des Moines Rubber Stamp Works, seal of commission, $2.00; McNamara-Kenworthy Co., numbering machine, $14.00; L. C. Smith & Bros., 2 L. C. Smith typewriters, $105.00; June 4, E. D. Bream, 2 road atlases, $20.00; Eugene Dietzgen, T squares, straight edges, etc., $39.88; Chase & West, 1 desk for office, $30.00 Remington Typewriter Co., 1 Remington typewriter, $70.00; Chase & West, 1 table, $4.20; Star Engraving and Printing Co., 1 halftone, $1.26; July 14, Harger & Blish, 4 Edison's dictaphones, $487.00; Book Store, 1 Underwood typewriter, $71.75; Book Store, 2 letter size, 2 drawer cabinets, $37.50, Book Store, 1 No. 32 Sec., 2 No. 52 Sec., 1 No. 101 Sec., 1 No. 106 Base, 1 No. 12 top, $33.83; Chase & West, 2 desks, $60.00; A. C. McClurg & Co., 1 clock, $2.30; July 21, Revolute Machine Co., 1 Mercury tube for B. P. machine, $54.00; L. C. Smith & Bros., 1 L. C. Smith typewriter, $50.00; July 28, Chase & West, 2 No. 468 desks, $62.15; Chase & West, 2 No. 140 chairs, $13.20; Aug. 5, S. Davidson & Bros., 2 No. 3359 chairs, $11.50; S. Davidson & Bros., 6 No. 3651 chairs, $27.00; S. Davidson & Bros., 2 No. 3694½ chairs, $11.00; S. Davidson & Bros., 2 No. 3695½ chairs, $8.00; Aug. 15, Keller-Farnsworth Furniture Co., tables for exhibit at Council Bluffs, $3.50; Commercial club, chairs and labor for exhibit at Council Bluffs, $1.60; Aug. 26, L. C. Smith & Bros., 2 L. C. Smith typewriters, $100.00; Sept. 8, Iowa Publishing Co., 10 black leather auto guides, $23.00; S. Davidson & Bros., 3 G. O. chairs (rented) (fair), $1.05; Sept. 22, Jake Sturtz, repairs on drafting tables, $3.88; Oct. 4, Jake Sturtz, resurfacing tables, $10.00; Oct. 20, Des Moines Stationery Co., 1 No. 468, 60" Moon desk, $30.25; Oct. 27, B. E. Norton, help on forms, $6.44; E. L. Marriage, help on forms, $4.84; Nov. 17, J. W. Butler Paper Co., 1 roll wrapping paper, $1.98; Book Store, filing sections and bases, 2 No. 408, 1 pr. No. 400 ends, 1 shelf, 3 sets bases, 1 No. 60, 2 No. 59, 1 No. 106, 1 No. 34, 2 No. 12, 3 No. 404, 1 pr. No. 400 ends, 4 sets No. 410, $182.18; Dec. 22, superintendent's storeroom, lamp shades, key sockets, drop cord, $2.37; Eugene Dietzgen Co., locator's hand level, $5.00; Carnegie Steel Co., 6 copies of Carnegie's Pocket Companion, $6.00;	
1914 Feb. 9, John Sloss, wiring for lamps, $2.25; Chase & West, 2 tables, $15.50; Chase & West, 1 desk, No. 106, $30.00; E. H. Sargent & Co., 72 8 oz. bottles for bitumen, etc., $6.75; Joe Schilling, wiring desk lamps and dictating machines, $2.25; Cam Sloss, wiring desk lamps and dictating machines, $3.60; Photo section, prints and films, $1.10; The Road Maker, advertising, $11.20; Burroughs Adding Machine Co., 1 Burroughs adding machine, $393.75; Feb. 14, Book Store, sections, 1 pr. No. 400 ends, 2 sections, No. 34207, $39.00; D. J. Bullock, 6 sets casters, $4.50; superintendent's storeroom, electric supplies, wiring, $8.82; Feb. 23, C. B. Nelson Construction Co., lamp stand and 2 shades, $3.18; Carr Hardware	

EQUIPMENT AND REPAIRS—(Continued).

To Whom Paid—For What Purpose.	Amount
Co., 6 heavy tin spoons, 1 pt. Jap-a-Lac, 1 brush, ½ gross 1¼" screws, 2 oz. pans, 15 sq. ft. 1¼" bdw. clo., 7 sq. ft. 1½" bdw. clo., $5.76; Mar. 14, Harger & Blish, tubing for dictaphones, 40c; A. N. Johnson, gravel testing outfit, $3.25; Des Moines Stationery Co., $84.00; Clay Cameron, blue print mach. wiring, $1.88; April 9, A. W. Minott, blue print machine wiring, $2.63; April 24, Book Store, 3 No. 408 sections, $54.25; S. Davidson & Bros., 3 office chairs, Dist. No. 2, $13.50; superintendent's storeroom, wiring supplies for office, $15.36; May 1, Des Moines Stationery Co., 1 No. 468 60" desk, $30.25; May 12, J. A. Giffen, 1 filing cabinet (Atlantic), $28.00; Book Store, 1 No. 1102 base, 1 No. 1034 section, 1 No. 1017 section, 1 No. 1012 top, $29.95; L. C. Smith & Bros., rubber cushions for typewriters, 75c; Underwood Typewriter Co., 1 Underwood typewriter, $71.75; May 26, S. Davidson & Bros., 3 office chairs, No. 212, $13.50; Economy Drawing Table Co., 1 No. 3 drawing table, $17.64; May 29, Adams Furniture Co., furniture polish, $1.00; June 10, Royal Typewriter Co., 1 Royal typewriter with carrying case, $45.00; June 10, Book Store, 11 No. 12 tops, 35 No. 52 sections, 9 No. 102 bases, 2 No. 106 bases, 4 No. 50 sections, 2 No. 16 sections, 2 No. 32 sections, 12 desk trays, $530.04; Chase & West, 1 No. 325 desk, $32.00; Chase & West, 1 No. 106 desk, $30.00; Chase & West, 1 No. 1401½ chair, $7.00; Chase & West, 3 No. 71 G. O. tables, $12.90; Chase & West, 1 No. 106 desk, $26.50; Chase & West, 1 No. 1401½ chair, $7.00; Chase & West, 1 No. 1401½ chair, $7.20; Chase & West, 1 No. 1401½ chair, $7.00; June 23, Matt Parrott & Sons, road and bridge records, $6.19; Eimer & Amend, 2 doz. 200 cc. cylinder graduates with diam, of base 7½ cm., for sand tests, $12.00; June 30, F. M. Alexander, 55 feet mold, exhibit frames, $2.20; J. H. Marshall & Son, 33 yds. cork carpet, dist office No. 4, $37.13; Frank Madearie, painting room, court house, dist. office No. 41, $42.00; superintendent's storeroom, coat and hat hooks for office, 21c; Des Moines Stationery Co., 10 brief cases, $88.75; superintendent's storeroom, wiring supplies for office, $11.35	$ 3,412.19

TELEPHONE AND TELEGRAPH.

From April 23, 1913, to June 30, 1914, inclusive.

Paid from appropriation under Chap. 133, Acts 35th G. A.

To Whom Paid—For What Purpose.	Amount
1913 May 10, $6.75; May 12, $11.62; June 4, $2.02; June 4, $24.86; June 21, $42.63; July 14, $55.18; July 14, $5.05; July 28, $36.36; Aug. 5, $32.98; Aug. 5, $3.85; Sept. 8, $16.65; Sept. 8, $6.75; Sept. 8, $44.33; Oct. 20, $21.27; Oct. 20, 70c; Oct. 27, $31.60; Oct. 27, $53.80; Oct. 27, $7.30; Nov. 17, $3.92; Nov. 17, $1.55; Dec. 22, $6.75; Dec. 22, $2.98; Dec. 22, $14.54; Dec. 22, $3.70;	
1914 Jan. 9, $10.45; Feb. 9, 95c; Feb. 9, $11.62; Feb. 9, $20.70; Feb. 9, 55c; Feb. 14, $10.60; Mar. 16, $8.00; Mar. 16, $20.84; Mar. 16, $57.15; Mar. 16, $22.84; Mar. 16, 41c; April 9, $1.25; April 9, $8.50; April 24, $31.95; May 1, $5.80; May 12, $18.87; May 12, $8.00; May 26, $1.50; May 26, $26.18; May 26, 25c; May 26, $17.50; June 10, $15.34; June 23, $2.00; June 30, $7.65	$ 745.93

POSTAGE, STAMPED ENVELOPES, ETC.

From April 23, 1913, to June 30, 1914, inclusive.

Paid from appropriation under Chap. 133, Acts 35th G. A.

To Whom Paid—For What Purpose	Amount
1913 May 12, $20.00; June 4, $100.00; June 4, $246.60; June 4, $5.00; June 30, 75c; July 28, 44c; Aug. 15, $125.00; Aug. 28, $10.00; Dec. 22, 75c; Dec. 22, $221.60;	
1914 Jan. 26, $125.00; Feb. 9, $100.00; Mar. 28, $100.00; May 26, $350.00; June 10, $332.40; June 23, $120.00; June 23, $30.00; June 30, $42.48	$ 1,930.02

PRINTING.

From April 23, 1913, to June 30, 1914, inclusive.

Paid from appropriation under Chap. 133, Acts 35th G. A.

	To Whom Paid—For What Purpose	Amount
1913	May 12, C. L. Dahlberg, printograph work $36.69; May 20, Heilhecker Printing Co., blanks $36.25; Heilhecker Printing Co., blanks $4.79;June 21, Chicago Label & Box Co., labels $8.06; Heilhecker Printing Co., 1,000 road books $287.54; Marshall Printing Co., receipts $5.15; Marshall Printing Co., checks $7.50; July 14, King Printing Co., letterheads and envelopes $63.85; July 21, Jno. C. Moore Corporation, 2,500 blanks $11.25; Le Mars Printing Co., 1,500 blank forms $11.25; July 28, Ames Evening Times, 2,800 miscellaneous blanks $18.00; Aug. 5, Marshall Printing Co., 50 office record books $7.85; Jahn & Ollier Co., 20 zinc cuts $75.00; Ames Evening Times, 1,000 blanks $4.75; Aug. 15, Boone Blank Book Co., 150 blanks $2.00; King Printing Co., 5,000 office records $15.00; King Printing Co., 5,000 Form No. 57, $15.00; Aug. 26, B. L. Weaver, composition and reserve plate $2.00; Matt Parrott & Sons, 1,500 blanks, ten forms $20.18; Sept. 8, Heilhecker Printing Co., Service Bulletin No. 1, June edition $1,274.49; King Printing Co., 5,000 Form No. 20 $15.00; Boone Blank Book Co., 2,400 blanks $32.00; American Lithograph & Printing Co., 500 sets standard plans $47.10; Perkins Bros. Co., 150 blanks $3.15; Oct. 4, King Printing Co., forms and postal cards $23.00; Nov. 17, King Printing Co., printing on maps and 12,000 forms Nos. 74 and 79, $66.50; Dec. 1, King Printing Co., short course folders and forms $26.35; Dec. 22, Printing section Iowa State College, forms 42 pp. different forms $31.35;	
1914	January 9, Homestead Co., 5 copper half tones $7.58; King Printing Co., 2,000 mailing env. and 2,000 6x9 booklets $57.70; Jan. 26, Robert Henderson, engineers' report blanks $95.18; Feb. 9, American Lithograph & Printing Co., bridge books, patents and records $11.00;	
1914	February 9, American Litho. & Printing Co., 50 Litho cuts $62.00; Printing Section Iowa State College, 1,000 official communications, Nos. 16, 17 and 18, 2 and 3 sheets each $4.90; King Printing Co., 2,000 bulletins $56.00; Feb. 14, Ames Tribune, 1,000 cards $4.25; March 16, Printing Section Iowa State College, blanks $3.80; King Ptg. Co., 2,000 bulletins $56.00; Ames Tribune, 400 programs $4.00; J. S. Dodds, printing for short course $4.85; King Printing Co., 25 placards $2.75; Marshall Ptg. Co., 100 fee cards $3.10; March 28, King Printing Co., printing on county maps $10.00; King Printing Co., 2,000 bulletins $56.00; April 9, Printing Section Iowa State College, forms $6.13; Robert Henderson, 1,000 standard bridge specifications $130.01; April 24, King Printing Co., blanks, misc. office records $48.25; Ames Tribune, 2,000 bulletins $42.00; Ames Tribune, forms, reports, etc. $21.25; May 12, Printing Section Iowa State College, 150 letters, 215 letters, 200 contracts 8 pp. 8 forms, $7.62; Ames Tribune, 2,000 bulletins and extra, reprint April, 1914 bulletin and 6 pages extra $105.00; May 26, King Printing Co., bridge records and cards $3.50; American Litho & Printing Co., 1,000 blank sheets $1.14; May 29, American Litho. & Printing Co., plates and forms $52.30; June 10, Ames Tribune, 10,000 Iowa Road Laws, 12 pp. supplement to May bulletin $205.00; Ames Tribune, 1,000 circulars $2.50; Homestead Company, etchings and half-tones $24.34; Printing Department Iowa State College, 925 form letters $1.64; Homestead Company, copper half-tones $6.42; American Litho. & Printing Co., 2 zinc plates, 600 sheets, 8½x11, 2 forms, 19 zinc plates, 5,700, 19 forms $109.83; Ames Tribune, 7,500 bulletins and circulars, additional service bulletins, 200 circular letters, form 23, S. B. Sup., Vol. II, No. 5, 1,000 copies, 2,000 circular letters, official communications $276.50;	
1914	June 10, American Litho. & Printing Co., 20 plates, 6,000 sheets 8½x11, 20 forms $104.60; American Litho. & Printing Co., 14 zinc plates, 3,000 blanks, 12 forms of 300 each, 4 zinc plates, standard plans, 1,200 sheets, 4 forms, bridge plans $315.50; Ames Tribune, crossing blanks and records $8.50; Homestead Co., copper half-tones $13.06; June 30, Ames Tribune, 10,000 bulletins, regular June issue, Vol. II, No. 6 $218.00; Ames Tribune, form No. 1a, Field Notes for bridges $4.50	4,119.75

MAPS.

From April 23, 1913, to June 30, 1914, inclusive.

Paid from appropriation under Chap. 133, Acts 35th G. A.

	For What Purpose	Amount
1913	May 12, 1 four-section map, in case, $115.00, 2 sets Iowa topo. maps $39.60, 2 Clarke Co. topo. maps 50c; June 30, 6 maps each of 15 counties, 1" to 1 mile, printed in black and white and mounted on muslin, at $25.00 per county, $375.00; July 14, payment on map contract, 15 counties, $375.00; payment on map contract, 20 counties, $500.00; July 28, payment on map contract, 18 counties, $450.00; Aug. 5, payment on map contract, 20 counties, $500.00; payment on map contract, 11 counties, $275.00; Sept. 8, binders for maps, $12.50; Sept. 22, tube paints for maps, 50c;	
1914	Feb. 9, 4 litho, blks., 400 each, $65.50; Feb. 14, payment on map contract, 76 counties, $1,470.00; Feb. 23, payment on map contract, 15 counties, $525.00; Mar. 16, payment on map contract, 15 counties, $445.00; payment on map contract, 18 counties, $510.00; payment on map contract, 15 counties, $525.00; Mar. 28, payment on map contract, 35 counties, $625.00; April 9, payment on map contract, 15 counties, $305.00; April 24, payment on map contract, 15 counties, $225.00; June 10, payment on map contract, 20 counties, $300.00	$ 7,538.60

Note: All map contracts made with the Iowa Publishing Co., Des Moines, Iowa.

EDUCATIONAL DEPARTMENT.

From April 23, 1913, to June 30, 1914, inclusive.

Paid from appropriation under Chap. 133, Acts 35th G. A.

	To Whom Paid—For What Purpose	Amount
1913	July 21, Iowa Engineering Society, 100 reprints $2.25; Aug. 5, E. R. Ballard, photo plates and prints $28.50; Aug. 15, Thos. H. MacDonald, storage on freight 70c; H. M. Mize, painting screen doors $1.40; R. A. Pettibone, making screens $3.60; Edgar Hervig, painting screens 60c; Road Maker, advertising $11.20; Aug. 26, F. W. Fahrbach, plates and negatives $65.75; Iowa Press Clipping Bureau, press clippings $10.00; J. B. Long, cloth sign for U. S. Exhibit $4.50; Sept. 8, Wm. J. Leverett, stereopticon at Council Bluffs, $4.00; Commercial Club, duster at Council Bluffs 45c; Roadmaker, advertising $11.20; Jewett Lumber Co., lumber and nails at State Fair $5.85; Sept. 22, Selck Tent and Awning Co., rent on tables, etc., at State Fair $60.30; E. H. Sargent & Co., chemicals, cadmium chlorid $5.55; Iowa Press Clipping Bureau, press clippings $10.00; Oct. 4, Cam Sloss, installing wall plugs $1.40; Oct. 20, A. L. Champlin, freight $12.18; Iowa Press Clipping Bureau, press clippings 1 month $10.00; O. G. Lorimor, photos $2.50; Merchants Transfer & Storage Co., 2 tables at State Fair grounds $2.00; Oct. 27, Roadmaker, advertising $11.20; Nov. 17, Younker Bros., burlap $13.95; Iowa Press Clipping Bureau, press clippings 1 month $10.00; O. E. Boyack, negatives and prints $30.00; Dec. 1, Free Lance, 1½ doz. newspapers 75c; Dec. 22, D. W. Bolton, photo plates, $8.10; F. W. Fahrbach, negatives and prints $11.90; Victor Animatograph Co., 1 stereopticon $55.00; Iowa Press Clipping Bureau, press clippings 1 month $10.00; Photo Section, roll film, neg. and copy $2.40;	
1913	December 22, Child Art Rooms, photos, Grinnell, $18.50; E. H. Sargent & Co., bottles and jars $9.54; L. M. Bosworth, postage deposit for bulletin $25.00;	
1914	January 9, E. E. Fulton Co., 1 B. & L. M. P. lens, tube jacket $10.50; Quade Studio, slides $15.30; Citizens Lumber Co., lumber, 9 11-4-2 stops, etc. $3.86; Jan. 26, G. B. Turner, 7 negatives Springville road $7.00; Iowa Press Clipping Bureau, press clippings $10.00; Quade Studio, 8 lantern slides $2.40; Iowa Engineer, 1 halftone, 30", Campus bridge $2.75; Bosworth Drug Store, 7 films $4.55; Dept of Ag. Engineering, I. S. C., use of tractor and engineer	

EDUCATIONAL DEPARTMENT—Continued.

For What Purpose	Amount
$4.00; Feb. 14, Iowa Press Clipping Bureau, press clippings 1 month $10.00; Feb. 23, Victor Animatograph Co., 6' carbons and animatographs $3.00; March 16, Iowa Press Clipping Bureau, press clippings 1 month $10.00; C. W. Parry, photos Guthrie county road work $5.00; D. J. Bullock, emery dust, glass and glue $1.75; Carr Hdw. Co., 6 heavy tin spoons 60c; M. B. Griffith, setting up picture machine $5.00; H. L. Munn Lumber Co., lumber, 3 1-12, 12 No. 2 W. P. $2.33; J. Howard Frazier, services for short course $21.00; H. L. Munn Lumber Co., 70 ft. 1¼ cypress strips 63c; A. L. Champlin, hauling picture machine, etc. $3.10; Margaret Hall Club, meals for speakers, etc. $9.50; Haverly Transfer Line, piano moving, short course $5.00; March 28, Superintendent's store room, electrical supplies, plugs 12c; photo section, films, prints, etc. $19.70; Homestead Co., 2 copper halftones $3.76; April 9, Iowa Engineer 1 halftone $2.75; Homestead Co., 3 copper halftones $8.00; Carr Hdw. Co., 1 pt. black paint, bolts, etc. $2.25; Iowa Press Clipping Bureau, press clippings 1 month $10.00; C. R. Babcock, 7 prints $2.45; April 24, photo section, 3 prints, 15 twp. maps $11.25; Homestead Co., retouching photo and copper halftone $2.76; April 24, photo section, 3 lantern slides, prints, etc. $9.40; May 1, Homestead Co., 3 zinc etchings $4.33; May 12, Iowa Press Clipping Bureau, press clippings for 1 month $10.00; Homestead Co., 6 copper halftones, etc. $9.65; May 26, Bosworth Drug Co., 50 ingento mouldings, $28.00; Citizens Lumber Co., lumber, cypress, etc. $8.36; Turner Post Card Co., 7 prints and negatives $7.09; June 10, Bosworth Drug Co., 1 crown tripod, 1 protar lens, $125.23; photo section, I. S. C., 10 negatives and prints $8.90; F. W. Fahrbach, 10 negatives and prints, etc. $19.99; B. F. Swanson, 7,000 blank addressing plates $55.09; Iowa Press Clipping Bureau, press clipings $10.00; June 23, W. S. Belvel, 4 negatives and prints, Union county $9.50; A. L. Shager, 5 negatives of bridges $7.50; Homestead Co., 1 zinc etching $1.46; Des Moines Photo Materials Co., 1 5x7 Ziess Protar lens $15.00; Homestead Co., 2 zinc etchings $3.26; Des Moines Trunk Factory, 1 trunk to order $15.00; June 30, (889) 76 prints and negatives $13.82	$ 1,022.15

EXPRESS, FREIGHT AND CARTAGE.

From April 23, 1913, to June 30, 1914, inclusive.

Paid from appropriation under Chap. 133, Acts 35th G. A.

	For What Purpose	Amount
1913	July 1, book store for June, etc., $6.87; book store express for June, $1.25; freight on letter files, $2.25; freight on desks, $5.98; Aug. 5, hauling, 7-8-13, 25c; July, express, book store, $3.40; Aug. 15, 13 boxes, Council Bluffs, $3.00; hauling road models, 13 boxes $3.00; freight, road models, 13 boxes, $88.70; freight, road models, 13 boxes, $44.64; hauling 13 boxes at Council Bluffs, $5.00; Champlin July account, $33.99; photos, negatives and auto hire at Humboldt, $6.00; Aug. 26, 2 loads, exhibits, 1 helper, $5.00; 11 road models, freight, Council Bluffs, $19.80; Sept. 8, freight on 17 boxes, Fair, $83.00; Champlin, express, $1.50; hauling models at Council Bluffs, $3.00; drive to Boone and college farm, $5.00; Oct. 20, book store, express, $10.14; Oct. 20, Champlin, F. &. D., Aug., $17.01; Nov. 17, book dept., exp., for Oct., $7.32; Sept. 8, book dept., Aug., account, $48.90; Dec. 22, freight on mixer, $10.32; Champlin, Oct. account, $17.24; inspection of county roads, auto at Indianola (Marston), $17.55; book dept., Nov., $8.94;	
1914	Jan. 26, inspection of county roads, livery (Marston), $1.50; Feb. 2, Champlin, freight, Dec. and Jan., $18.74; book store, Dec., $20.58; Feb. 14, book store, Jan. account, $9.67; Mar. 14, book store, Feb., $14.81; Mar. 28, Champlin, Jan., Feb. and Mar., $6.94; April 9, Champlin, 85c; book store, March account, $15.03; April 24, Champlin, March and April, $9.51; May 12, book store account, $7.30; drayage on exhibit to train, $1.00; May 26, freight on box and bale, $8.31; June 10, book store, exp., May, $15.87; Champlin, April and May, $14.63; June 23, Champlin, June, 55c	$ 604.35

MISCELLANEOUS EXPENSE.

From April 23, 1913, to June 30, 1914, inclusive.

Paid from appropriation under Chap. 133, Acts 35th G. A.

	For What Purpose	Amount
1913	June 4, A. L. Champlin, express and freight, hauling gravel and cement $1.00; June 21, Book Store, express for May $9.90; Book Store, express for May $3.83; June 30, A. L. Champlin, freight bill, No. 836 $1,63; L. M. Roberson, livery, auto, 7 hrs. at $2.50, $17.50; L. E. Kratzer, auto, 3 hrs. at $2.50, $7.50; May 10, Educational Summary, F. W. Fahrbach, negative $1.50; May 20, Star Engraving & Printing Co., halftone $1.26; June 4, photo section, prints and negatives $24.70; O. D. Davidson, road work and supplies $2.58; photo section, 1 print 25c; F. W. Fahrbach, negative $1.50; Ag. Engineering Sales and Repair Dept., supplies, gasoline and oil $4.00;	
1914	March 16, Winter Short Course, $46.56; June 30, not otherwise classified $9.34	133.05

RECEIPTS TO JUNE 30, 1913.

May 12, 1913, 8% motor vehicle license		$ 24,989.09
DISBURSEMENTS.		
Disbursements		$ 8,468.55
Balance, June 30, 1913		$ 16,520.54

		RECEIPTS.	
1913			
July	1	Balance on hand	$ 16,520.54
1913			
Aug.	5	Motor vehicle—8 per cent	$ 16,648.08
Sept.	6	Interest on deposits	23.94
Sept.	6	Interest on deposits	36.88
Sept.	6	Cash—sales mdse.	3.20
Nov.	28	Correction, credit item to treasurer	1.50
Nov.	29	Interest on deposits	39.53
Nov.	29	Interest on deposits	33.76
Nov.	29	Interest on deposits	23.20
Dec.	9	Motor vehicle—8 per cent	9,195.01
1914			
Feb.	9	Cash—map sales	42.25
Feb.	14	Motor vehicle—8 per cent	11,574.26
Mar.	16	Winter short course	111.00
Mar.	27	Interest on deposits	25.65
April	9	Motor vehicle—8 per cent	17,353.50
June	30	Cash—mdse. returned	5.00
June	30	Motor vehicle—8 per cent	37,711.66
June	30	Interest on deposits	36.59
		Total	$ 92,865.01
Total balance and receipts			$ 109,385.55
Expenditures			74,132.49
Balance, June 30, 1914			$ 35,253.49

RECAPITULATION.

Salaries and per diem	$ 47,700.40
Traveling expense	12,447.02
Equipment and repairs	3,412.19
Office and designing department supplies	2,947.15
Telephone and telegraph	745.93
Postage and stamped envelopes, etc.	1,980.02
Printing	4,119.75
Maps	7,538.60
Educational department	1,022.15
Express, freight and cartage	604.35
Miscellaneous expense	133.05
Total	$ 82,600.61

PART SEVEN

ROADS THROUGH AND ADJACENT TO STATE INSTITUTIONS.

PART SEVEN

Roads Through and Adjacent to State Institutions.

At the various institutions governed by the Board of Control of State Institutions and the State Board of Education there are about fifty miles of public highways running through or lying adjacent to the lands belonging to these several institutions. As the state lands pay no taxes the building and maintenance of these roads have been a matter of contention between the communities and the governing bodies of these institutions for many years. Every community contended that such roads should be maintained or improved at the expense of the state, but the boards governing the institutions were unable to comply with this demand on account of no appropriations made for this specific purpose.

Under these conditions many miles of roads adjoining the spacious grounds and splendid buildings of many of our institutions have been left practically untouched and unimproved for so long that most unsatisfactory conditions existed. In fact some of the worst roads in any of the communities were those adjacent to the state lands.

In an effort to place the responsibility for the improvement and maintenance of these roads upon the state authorities, an act was passed by the Thirty-third General Assembly known as chapter 93. No work was done under this act, as it was not deemed sufficiently definite by the Attorney General to justify the expenditure of public funds under its provisions. The Thirty-fifth General Assembly in Chapter 124, made the necessary amendments to make the law plain and workable.

Under date of June 13, 1914, Mr. George Cosson, Attorney General, wrote the following opinion on request of the Board of Control of State Institutions:

"I am in receipt of your communication of the 11th instant directing my attention to chapter 124, acts of the Thirty-fifth General Assembly, amendatory of chapter 93, acts of the Thirty-third General Assembly, and submitting the following questions:

"'Has the board of control authority, under this statute and the statute which it amends, to order, at state expense, grading and making of a highway, including constructing bridges or culverts on a highway located on state lands which has recently been opened for public travel?'

"As pointed out in your letter, section 1 of chapter 124, acts of the Thirty-fifth General Assembly, provides in part:

"'That all roads and highways within and adjacent to lands belonging to the state, including those under the supervision of the state board of education, shall constitute a separate road district under the control and supervision of the supervisor appointed by the board of control of state institutions with all the powers, duties and responsibilities imposed upon road supervisors,' etc.

"And that:

"'All cost of maintaining, repairing, renewing and improving the roads within the road district containing state lands, except county bridges, after the expenditure of the road poll tax, either in money collected or in labor, shall be paid out of any general funds in the hands of the state treasurer, not otherwise appropriated, upon warrants drawn by the state auditor after certificate of amount due, shall have been filed in his office by the board of control.'

"It follows from that part of the section just quoted that the board of control has authority to establish a road district on any lands at any of the state institutions under the control of the board of control or the board of education, or any lands adjacent to lands belonging to the state at any of such institutions, and to do the necessary grading and all other work necessary in constructing the highway, including the building of bridges and culverts.

"Your jurisdiction not only includes the roads and highways within the lands belonging to the state, but also roads and highways within and *adjacent* to lands belonging to the state; therefore, your second question must be answered in the affirmative.

"It will be noticed that section 1 does not authorize the expenditure of money to construct county bridges. Wherever, however, a bridge or culvert is necessary to the establishment of a road which is to be maintained and controlled by the state pursuant to the provisions of chapter 124, acts of the Thirty-fifth General Assembly, it would not constitute a county bridge or culvert. It follows, of course, that wherever a bridge was to be established upon a regular constituted highway under the control and jurisdiction of the county that your board would not be authorized to expend money for a bridge of this nature, for the reason that it would be a county bridge."

Acting under authority of this opinion the Board of Control of State Institutions on May 7, 1914, by resolution appointed Thos. H. MacDonald, engineer of the State Highway Commission, general supervisor of all the state highways passing through or adjacent to the lands of the state which come under the charge of the Board of Control by virtue of the act as outlined above.

At each of the nineteen state institutions thus affected the Board of Control appointed a local supervisor who works under the instructions of the general supervisor. The local supervisors are responsible for collecting the poll tax within the district, and for general maintenance work, such as dragging the roads, mowing the weeds and emergency repairs. All other improvements or repairs are carefully estimated and plans prepared before the work is undertaken.

On June 23, 1914, the State Highway Commission agreed to supply through the engineering organization of the Commission all plans and surveys necessary for maintaining and improving these state roads.

It would be noted from the above that none of the officers directly connected with the work receive any additional compensation for the time devoted to this work, and that the engineering, plans and specifications are furnished free of any cost by the State Highway Commission.

State Road Work During 1914.

No work was started under authority of this act until July, 1914. During the fall improvement was made of the so-called Boone Street ditch on the south line of the college land at Ames, which has long been the most dangerous piece of road in that community. Work was also started on opening a new road north from the college grounds to connect with one of the public roads of Franklin Township. This road had been a subject of controversy for ten years, and had been the cause of much bitter feeling on the part of farmers living north of the college, because no public highway was established on this side of the college farm. Suit against the Board of Education was pending in the district court of Story County, to settle which the improvement of this road was undertaken. A concrete bridge was built over Squaw creek, and the improvement will be finished early in 1915.

Plans were also prepared for the grading of dangerous pieces of road along the state lands at the state hospital at Cherokee. Work was not started during 1914 on account of difference of opinion between the county board of Cherokee County and the city council of the City of Cherokee as to the proper location for the new road which was necessary to avoid some of the bad hills encountered. An agreement was finally reached between these two boards, however, and work will be completed in 1915.

Use of Prisoners on State Roads.

At the time the responsibility for the improvement and maintenance of state roads was assumed by the Board of Control it adopted the policy of using prisoners from the Reformatory at Anamosa and the Penitentiary at Fort Madison insofar as possible on the work to be done. A camp was established at Ames during 1914, and all of the labor on the bridge and road improvements, except where necessary to employ teams, was performed by these men.

The law permitting the use of prisoners on the highways provides that they shall be paid at the prevailing rate for such labor. Acting under this statute the men were paid from twenty to twenty-five cents per hour, and all expenses of the camp, including officers' salaries, transportation and all other camp expenses, were deducted from the amount earned by the men. The prisoners themselves were allowed five cents per hour net, and this amount was held for them until discharge, or paid to dependent relatives or deposited at interest.

In establishing the camp care was taken to provide for the best sanitary conditions, and apparently from every standpoint the use of prisoners for this work was successful. The outofdoor work soon made a very marked difference in the physical appearance of the men.

From the standpoint of work accomplished the amount and quality will compare favorably with that of any labor that can be secured. In fact it is believed that under a good foreman both the quantity and quality of the work that will be turned out by a crew of prisoners after a few weeks will surpass that of an ordinary crew of free labor of the "casual employment" type.

Work Planned for 1915.

During the fall and winter surveys, plans and estimates have been prepared by the Commission for the state institutions at Woodward, Cherokee and Ames, and surveys will be made at the state institutions at Clarinda, Glenwood and Eldora for improvements to be made during 1915.

PART EIGHT

SUMMARY OF ROAD AND BRIDGE WORK.

PART EIGHT

Summary of Road and Bridge Work.

NOVEMBER 1, 1913—NOVEMBER 1, 1914.

BRIDGE WORK.

Financial Statement.

Amount collected Nov. 1, 1913-Nov. 1, 1914	$3,543,000.00	
Outstanding indebtedness Nov. 1, 1914	1,331,000.00	
Total		$4,874,000.00
Outstanding indebtedness Nov. 1, 1913	$1,049,000.00	
Balance on hand Co. Bridge Fund, 11-1-13	683,000.00	
Total	$ 366,000.00	
Net balance on hand Nov. 1, 1914	502,000.00	
Total		$ 868,000.00
Estimated total expenditure bridge fund		$4,006,000.00
Culverts paid for out of road fund		1,021,000.00
Total estimated expenditure for bridges and culverts		$5,027,000.00

Classified Expenditure.

Completed bridges and culverts	$3,100,000.00
Repair work	1,160,000.00
Bridge and culvert material on hand Nov. 1, 1914	260,000.00
Equipment purchased during 1914	50,000.00
Uncompleted construction and unclassified	357,000.00
	$5,027,000.00

New Construction.

	No.	Total Cost	Per Cent of Total Expenditure	
Permanent bridges	711	$ 1,080,000.00		
Permanent culverts	5,876	1,575,000.00	Permanent work	85%
Temporary bridges	475	112,000.00		
Temporary culverts	4,383	306,000.00	Temporary work	13%
Miscellaneous	144	270,000.00	Miscellaneous work	2%
Total	11,589	$ 3,100,000.00		100%

Permanent Structures Completed—		
Total number built	6,587	
Total cost	$2,655,000.00	
Temporary Structures Completed—		
Total number built	4,858	
Total cost	$ 418,000.00	
Miscellaneous Structures Completed—		
Total number built	144	
Total cost	$ 27,000.00	

Engineering.

County engineering cost for bridges and culverts including all salaries and expenses from Nov. 1, 1913-Nov. 1, 1914	$ 156,400.00
Percentage cost engineering, bridges and culverts	3.1%

ROAD WORK.

Financial Statement.

County Road Funds.

Amount collected Nov. 1, 1913-Nov. 1, 1914		$3,330,000.00	
Outstanding indebtedness, Nov. 1, 1914		744,000.00	
Net balance Nov. 1, 1913	$ 919,000.00		
Outstanding indebtedness Nov. 1, 1913	229,000.00		
		790,000.00	
		$4,864,000.00	
Balance on hand Nov. 1, 1914	$ 440,000.00		
Culverts paid for out of road fund	1,021,000.00		
		1,461,000.00	
Estimated actual expenditure for county road work			$3,403,000.00

Classified Expenditure.

Permanent grading	$ 762,000.00	
Repair work	633,000.00	
Road machinery	160,000.00	
Tractor work	101,000.00	
Surfacing	97,000.00	
Dragging	280,000.00	
Unclassified grading	56,000.00	
Road material on hand	22,000.00	
Unreported and unclassified expenditures	1,292,000.00	
		$3,403,000.00

Grading.

Classification	No. Miles	Total Cost	Cost Per Mile
Permanent grade line standard section	418	$ 620,000.00	$ 1,484.00
Temporary grade line standard section	416	140,600.00	338.00
Tractor grading standard section	1,210	101,200.00	83.00
Miscellaneous	132	55,700.00	422.00
Total	2,176	$ 918,100.00	

Surfacing.

Classification	No. Miles	Total Cost	Cost Per Mile
Gravel	65	$ 45,700.00	$ 705.00
Sand—clay	1.8	3,600.00	2,000.00
Macadam	3.3	17,200.00	5,200.00
Concrete—16′	2.2	22,200.00	10,190.00
Concrete—20′	.3	6,460.00	22,280.00
Miscellaneous	3.	1,700.00	570.00
Total	75.6	$ 96,860.00	

Maintenance.

Total number of miles county road system	15,767
Total number of miles reported regularly dragged	13,028
Average number of times dragged during the year	16.7
Average cost per mile dragging, both sides	73c

Engineering.

County engineering cost for roads, including all salaries and expense from Nov. 1, 1913, to Nov. 1, 1914	$ 174,635.00
Percentage engineering cost—roads	5.1%

TOWNSHIP ROAD WORK.

Financial Statement.

Net balance on hand Nov. 1, 1914	$ 414,000.00	
Net balance on hand Nov. 1, 1913	341,000.00	
Difference		$ 73,000.00
Amount collected Nov. 1, 1913-Nov. 1, 1914		$3,098,000.00

SUMMARY.

Expenditures, 1914.

Bridges and culverts	$5,027,000.00	
County road work	3,403,000.00	
Township road work	3,171,000.00	
		$11,601,000.00

*The above summary is as complete and accurate a statement of the total expenditures for road and bridge building and maintenance during 1913-14 as can be prepared from the data available. The date at which the county engineers were required by law to prepare their annual reports made it necessary in many cases for them to make estimates instead of give actual figures. The engineers' reports in some instances were entirely lacking either in actual figures or estimates. This made it necessary for the Commission accountants to either make estimates of their own from any data available, or to ignore the item for that county. Both the general summary and the summaries for the individual counties of the state are based entirely on the data supplied to the Commission by the county engineers in their annual reports and the corrections made at later dates to these reports.

ADAIR COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 3,732.98	
	Overdraft, Jan. 1		$ 518.57
	Amount collected to Nov. 1	32,864.69	30,134.08
	Amount of balance Nov. 1		1,659.96
	Amount of overdraft Nov. 1	573.71	
	Outstanding bills Nov. 1		4,174.49
	Outstanding warrants Nov. 1	1,344.89	402.08
		1914	1915
	Estimated bridge funds to be collected during	30,776.00	30,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	11,717.44	12,145.60
	Bridge and culvert equipment on hand Nov. 1	1,234.25	1,862.00
III.	Repair.		
	Amount spent in repair wood bridges	6,065.77	5,197.65
	Amount spent in repair steel bridges (wood floors)	1,470.00	
	Amount spent in repair concrete bridges	651.71	400.16

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete pipe	118	$ 11,905.62	126	$ 16,636.72
	Reinforced concrete box culvert	28	11,625.28	23	10,803.28
	Concrete arch culvert	14	1,455.20	6	814.08
	Boiler pipe culvert	2	242.77	1	195.36
	Wood pile bridge	3	513.02	3	402.56
		165	$ 25,741.88	159	$ 28,942.00

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 1,963.43	$ 1,584.97

Roads.

		Jan. 1-'13	Nov. 1-'13
I.	County Road Fund.		
	Amount of balance	$ 3,515.55	$ 3,482.05
		1913	1914
	Amount paid in		24,819.26
	Outstanding bills Nov. 1	2,740.05	2,445.94
	Outstanding warrants Nov. 1	239.40	753.87
	Amount of balance Nov. 1	3,482.05	987.19
		1914	1915
	Estimated amount to be collected during		25,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	1,480.00	2,639.00
	Road machinery on hand Nov. 1	6,669.51	839.57
III.	*Road Repair.*		
	Amount spent on road repairs on County Road System	680.98	894.60
IV.	Culverts Classified as Road Work.		
	Total	172	172
V.	Maintenance of County Road System.	148	172
	No. of miles County Road System	7.2	18
	No. of miles regularly dragged	$ .60	$ .60
	Average number of times dragged		
	Average cost per mile dragged, both sides		
VI.	Permanent Work on County Road System.		
	1913—None.		
	1914—To temporary grade line with Standard Cross Section (Class 1B) 73 miles, costing $13,626.10.		
VII.	Permanent Work on Township Road System.		
	1913—None.		
	1914—None reported.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	14	19
	No. of miles staked for grader repair	--	24½
	No. of miles profiles platted	8	3
	No. of miles grade line approved by Highway Commis'n	--	3
	No. of miles officially approved by Highway Commission	--	--
IX.	Total Engineering Cost—Road Construction, etc.	$ 744.33	$ 843.67

ADAMS COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 4,353.94	$ 2,788.26
	Amount collected to Nov. 1	20,441.69	26,825.98
	Amount of balance Nov. 1	2,788.26	11,371.49
	Outstanding bills Nov. 1		2,800.00
	Outstanding warrants Nov. 1	15,000.00	18,874.19
		1914	1915
	Estimated bridge funds to be collected during	27,410.00	27,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	6,000.00	9,600.00
	Bridge and culvert equipment on hand Nov. 1	75.00	300.00
III.	Repair.		
	Amount spent in repair wood bridges		4,044.44
	Amount spent in repair steel bridges (wood floors)		283.04
	Amount spent in repair concrete bridges		179.40

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete pipe	7	$ 1,269.85	43	$ 6,504.15
	Concrete box culverts	20	7,160.63	20	6,564.15
	Steel girder	1	1,534.27		
	Wood pile bridges	30	5,631.66	12	3,159.24
	Boiler pipe culverts			4	162.00
		58	$15,596.41	79	$ 16,389.54

		1913	1914
V.	Engineering on bridge and culvert repair and construction.		
	Salaries, transportation and supplies	$ 1,252.17	

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 449.41	$ 9,949.25
		1913	1914
	Amount paid in	22,410.48	27,669.03
	Outstanding bills Nov. 1		
	Amount to balance Nov. 1	9,949.25	8,422.46
	Outstanding warrants Nov. 1		638.86
		1914	1915
	Estimated amount to be collected during	22,000.00	21,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	1,008.00	1,500.00 estimated
III.	Repair.		
	Amount spent on repairs county road system	6,957.37	1,606.46
IV.	Culverts Classified as Road Work.		
	Totals	4,949.40	11,065.71
V.	Maintenance of County Road System.		
	No. of miles county road system	117	117
	No. miles regularly dragged	---	60
	Average No. times dragged	---	17
	Average cost per mile dragged both sides		$ .70
VI.	Permanent Work on County Road System.		
	1913—None.		
	1914—Blade Grader Work (Class II C) 41.5 miles at a cost of $2,303.42.		
VII.	Permanent Work on Township Road System.		
	1913—None.		
	1914—None reported.		
VIII.	Engineering	1913	1914
	No. miles surveyed	--	3
	No. miles staked out for grader repair	--	--
	No. miles of profile platted	--	3
	No. miles grade line approved by Highway Commission	--	1
	No. miles officially approved by Highway Commission	--	1
IX.	Total Engineering Cost—Road Construction, etc.	$ 125.00	$ 1,151.55

ALLAMAKEE COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 5,453.22	$ 4,710.19
	Amount collected to Nov. 1	23,260.19	29,370.26
	Amount of balance Nov. 1	9,586.77	4,417.92
	Outstanding bills Nov. 1		7,000.00
	Outstanding warrants Nov. 1		7,413.42
		1914	1915
	Estimated bridge funds to be collected during	29,840.00	30,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair wood bridges		3,405.72
	Amount spent in repair steel bridges (wood floors)		947.99
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culvert	7	$ 2,260.65	24	$ 5,180.33
	Masonry arch culvert	7	1,733.03	4	890.71
	I-Beam concrete abutment	2	2,527.95	1	980.33
	Abutment	1	3,954.50	1	663.32
	Reinforced concrete slabs	3	1,778.55	16	11,639.66
	Steel truss	1	1,868.70		
	Corrugated pipe			2	208.18
	Concrete pipe			5	393.92
	Concrete deck girder			1	1,692.41
		21	$14,123.38	54	$ 21,648.86

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction Salaries, transportation and supplies	$ 2,067.19	$ 2,748.62

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund		
	Amount of overdraft		$ 5,110.42
	Amount of balance	$ 2,053.67	
		1913	1914
	Amount paid in	18,249.72	24,774.90
	Outstanding bills Nov. 1	5,000.00	7,000.00
	Outstanding warrants Nov. 1	207.00	15,342.03
	Amount overdraft Nov. 1	5,110.42	
	Amount of balance Nov. 1		3,530.58
		1914	1915
	Estimated amount to be collected	25,000.00	25,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1		
III.	Repair.		
	Amount spent on road repairs on County Road System	70.00	525.00
IV.	Culverts Classified as Road Work.		
	Total	12,379.30	5,221.43
V.	Maintenance of County Road System.		
	No. miles county road system	1,846.71	
	No. miles regularly dragged	116	116
	Average number times dragged	40	110
	Average cost per mile dragged, both sides	5.5	20
VI.	Permanent Work on County Road System.	$ .45	$ .86
	1913—To permanent grade with standard cross section 13 miles costing $34,849.50. 90,547 cu. yds. material moved at average cost of 38c, some solid rock work. 4.5 miles surfaced with 10' clay at cost of $5,298.22.		
	1914—To permanent grade with standard cross section (Class II-A) 2.3 miles costing $16,000.00. 22,547 cu. yds. at average of 70c. Some rock.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.		
		1913	1914
	No. miles surveyed		6
	No. miles staked for grader repair	18	
	No. miles profile platted		1.5
	No. miles grade line approved by Highway Commission		1.5
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 1,452.62	$ 927.00

APPANOOSE COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1		
	Overdraft Jan. 1	$ 4,650.63	$ 7,752.16
	Amount collected to Nov. 1	23,063.72	26,248.29
	Amount of balance Nov. 1		
	Overdraft Nov. 1	1,209.50	5,214.30
	Outstanding bills Nov. 1		967.32
	Outstanding warrants Nov. 1		1,046.56
		1914	1915
	Estimated bridge funds to be collected	26,000.00	27,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	3,500.00	2,500.00
	Bridge and culvert equipment on hand Nov. 1	500.00	500.00
III.	Repair.		
	Amount spent in repair of wood bridges		5,812.89
	Amount spent in repair of steel bridges with wood floors		1,743.04
	Amount spent in repairing concrete bridges		72.65

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe	2	$ 315.97	5	$ 871.74
	Reinforced concrete box	1	647.16	39	11,407.34
	Concrete pipe			2	431.80
	Concrete arch culvert			1	170.00
	Masonry arch culvert			1	855.50
	I-Beam concrete abutments			4	4,800.90
	Steel truss, concrete abutment			2	2,471.90
		3	$ 963.13	54	$ 20,509.18

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction Salaries, transportation and supplies	$ 1,094.50	$ 1,119.60

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 4,114.16	$ 2,424.20
	Amount of overdraft		
		1913	1914
	Amount paid in		24,214.69
	Outstanding bills Nov. 1	1,222.30	421.00
	Outstanding warrants Nov. 1	2,041.38	141.89
	Amount of balance Nov. 1	2,424.20	
	Amount of overdraft Nov. 1		1,000.20
		1914	1915
	Estimated amount to be collected	24,000.00	25,500.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	2,420.00	2,258.00
III.	Repair.		
	Amount spent for repairs on county road system		4,651.56
IV.	Culverts Classified as Road Work.		
V.	Maintenance of County Road System.		
	No. miles in county road system	157	157
	No. miles regularly dragged	---	148
	Average number of times dragged	---	10
	Average cost per mile dragged both sides		$ .60
VI.	Permanent Work on County Road System.		
	1913—None.		
	1914—To temporary grade with standard cross section (Class II-B) 78.5 miles costing $10,587.93.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	---	94.5
	No. miles staked for grader repair	---	---
	No. miles profile platted	---	10
	No. miles grade line approved by Highway Commission	---	1
	No. miles officially approved by Highway Commission	---	---
IX.	Total Engineering Cost	$ 451.80	$ 1,657.74

AUDUBON COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 849.02	$ 766.27
	Overdraft Jan. 1		
	Amount collected to Nov. 1	24,858.96	30,332.03
	Amount of balance Nov. 1	2,628.65	3,045.11
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	4,000.00	10,900.00
	Outstanding warrants Nov. 1	11,690.96	13,733.22
		1914	1915
	Estimated bridge funds to be collected	31,000.00	33,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	3,360.94	3,873.88
	Bridge and culvert equipment on hand Nov. 1	1,523.25	5,768.88
III.	Repair.		
	Amount spent in repair of wood bridges	5,553.38	11,166.13
	Amount spent in repair of steel bridges with wood floors		113.50
	Amount spent in repair of concrete bridges		118.70

		1913		1914	
		No	Cost	No.	Cost
IV.	New Construction.				
	Concrete pipe	5	$ 865.18	2	$ 379.91
	Reinforced concrete box	13	8,948.39	36	7,420.72
	Retaining wall, concrete deck girder	1	990.52		
	Plate girder	1	3,558.08		
	Wood pile bridge	33	6,441.26	33	6,672.05
	Bulkheads on boiler pipe and corrugated pipe		758.00		
	Corrugated pipe			208	5,469.44
	Boiler pipe			33	2,216.17
	Head walls			3	424.51
		53	$21,561.43	315	$ 22,582.80

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 1,761.65	$ 2,335.76

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 1,039.04	$ 2,870.64
	Amount of overdraft		
		1913	1914
	Amount paid in		38,758.62
	Outstanding bills Nov. 1	7,000.00	8,000.00
	Outstanding warrants Nov. 1		10,379.91
	Amount of balance Nov. 1	2,870.64	3,430.38
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	400.00	1,245.62
	Road machinery on hand Nov. 1	662.45	2,200.00
III.	Repair.		
	Amount spent on road repairs on county road system	11,401.86	13,586.22
IV.	Culverts Classified as Road Work	7,802.88	10,114.50
V.	Maintenance of County Road System.		
	No. miles county road system	137	137
	No. miles regularly dragged	---	137
	Average number of times dragged	---	22
	Average cost per mile dragged both sides	$ .50	$ .70
VI.	Permanent Work on County Road System.		
	1913—None.		
	1914—Work to amount of $5,458.45 reported. No mileage given or classification made.		
VII.	Permanent Work on Township Road System.		
	1913—None.		
	1914—Not reported.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	14	56
	No. of miles staked for grader repair	---	---
	No. of miles profile platted	6	69
	No. of miles grade line approved by Highway Commis'n	1	2
	No. of miles officially approved by Highway Commis'n	---	---
IX.	Total Engineering Cost	$ 494.00	$ 1,431.20

BENTON COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 6,927.21	$ 1,558.79
	Overdraft Jan. 1		
	Amount collected to Nov. 1	51,271.93	59,802.81
	Amount of balance Nov. 1	3,104.70	7,643.78
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		8,000.00
	Outstanding warrants Nov. 1		23,903.15
		1914	1915
	Estimated amount to be collected in	60,455.30	60,500.00
		1913	1914
II.	Equipment and Material.	11,717.44	
	Bridge and culvert material on hand Nov. 1	1,234.25	1,180.10
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		15,501.70
	Amount spent repair wood bridges	12,487.90	1,186.39
	Amount spent repair steel bridges (wood floors)		784.75
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Reinforced concrete box	63	$22,778.55	76	$ 22,376.52
	Circular concrete culvert	1	187.50	38	5,214.05
	I-Beam concrete abutments	11	12,051.44	2	2,127.77
	Wood pile bridges	24	7,015.17	9	3,559.17
	Concrete deck girder			1	1,600.00
	Reinforced concrete slabs	4	5,789.50	6	7,502.16
	Steel trusses with concrete abutments	5	6,533.88	5	14,380.82
		108	$54,365.04	137	$ 56,760.49

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 1,073.18	$ 2,174.79

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$18,541.92	$ 20,025.63
	Amount of overdraft		
		1913	1914
	Amount paid in	16,790.47	55,158.37
	Outstanding bills November 1		1,000.00
	Outstanding warrants November 1	20,025.63	1,737.08
	Amount of balance November 1		
	Amount of overdraft		
		1914	1915
	Estimated amount to be collected in	40,000.00	40,000.00
		1913	1914
II.	Equipment and Material.		
	Road material on hand November 1	600.00	9,323.30
	Road machinery on hand November 1		
III.	Repair.	4,029.36	3,877.96
	Amount spent repair County Road System		
IV.	Culverts Classified as Road Work.	16,869.97	21,644.79
	Total		
V.	Maintenance of County Road System.		
	No. miles County Road System	211	211
	No. miles regularly dragged	200	206
	Average number times dragged	6	14
	Average cost per mile dragged both sides	$ .60	$ .75
VI.	Permanent Work on County Road System.		
	1913—One mile to permanent grade, costing $2,429.78. 1700′ paved with 16′ concrete costing $4,119.76.		
	1914—To temporary grade with standard cross section (Class II-B) 13 miles costing $13,078.40; rock berm on 1700′ concrete pavement cost $4,835.21.		
VII.	Permanent Work on Township Road System.		
	1913—None reported.		
	1914—Taylor Township, Section 9—477′ of 16′ concrete pavement. Total cost $1,171.95.		
		1913	1914
VIII.	Engineering.		
	No. miles surveyed	25	401
	No. miles staked out for grader	12	23
	No. miles profile platted	3	
	No. miles grade line approved by Highway Commission.		23
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Construction, etc.	$ 392.62	$ 954.42

BLACK HAWK COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 762.02	$ 344.36
	Overdraft Jan. 1		
	Amount collected to Nov. 1	32,179.07	42,305.18
	Amount of balance Nov. 1		10,417.04
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		4,391.00
	Outstanding warrants Nov. 1	6,180.29	53.75
		1914	1915
	Estimated bridge funds to be collected during	42,077.17	39,160.32
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	2,735.91	4,393.79
	Bridge and culvert equipment on hand Nov. 1	150.00	727.00
III.	Repair.		
	Amount spent in repair wood bridges	4,358.46	6,212.88
	Amount spent in repair steel bridges, (wood floors)	2,976.12	2,157.82
	Amount spent in repair concrete bridges	54.43	2,796.35

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe	2	$ 123.34		
	Reinforced concrete box culvert	77	11,498.87	68	$ 13,513.42
	Circular concrete box culvert	4	547.37	6	733.90
	I-Beam concrete abutments	7	6,659.11		
	Retaining wall			1	432.71
	Wood pile bridge	1	123.48	3	542.98
	Abutment			1	1,337.81
		91	$18,952.17	79	$ 16,560.82

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 1,413.80	$ 2,428.37

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 9,833.73	$ 9,571.54
	Amount of overdraft		
		1913	1914
	Amount paid in	24,912.92	41,633.27
	Outstanding bills Nov. 1	5,285.70	2,755.17
	Outstanding warrants Nov. 1	68.99	516.40
	Amount of balance Jan. 1	3,296.83	879.92
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected	42,000.00	37,707.80
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		490.00
	Road machinery on hand Nov. 1	301.00	4,447.00
III.	Road Repair.		
	Amount spent on road repairs on County Road System	2,052.86	2,291.29
IV.	Culverts Classified as Road Work.		
	Total	14,753.55	16,219.10
V.	Maintenance of County Road System.		
	No. miles County Road System	169	169
	No. miles regularly dragged	---	161.5
	Average number of times dragged	---	17.1
	Average cost per mile dragged both sides	$ .75	$ .75
VI.	Permanent Work on County Road System.		
	1913—12.3 miles permanently graded at cost of $10,575.91. Surfaced with 20′ gravel 3.3 miles at cost of $4,880.83.		
	1914—To permanent grade with standard cross section (Class II-A) 4 miles costing $5,273.12. Tractor grader work (Class II-C) 40.4 miles, costing $3,434.33. 6.73 miles surfaced at cost $7,362.74.		
VII.	Permanent Work on Township Road System.		
	4.55 miles graded at cost of $2,688.16.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	48	49.5
	No. of miles staked for grader repair	11	55
	No. of miles profile platted	34	49
	No. of miles grade line approved by Highway Commission	15	7.5
	No. of miles officially approved by Highway Commission	---	---
IX.	Total Engineering Cost—Road Construction, etc.	$ 2,146.55	$ 2,644.63

BOONE COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1st	$ 1,010.56	
	Overdraft Jan. 1st		$ 2,751.07
	Amount collected to Nov. 1st	33,074.19	28,780.55
	Amount of balance Nov. 1st		
	Overdraft Nov. 1st	2,751.07	430.36
	Outstanding bills Nov. 1st		1,474.31
	Outstanding warrants Nov. 1st	9,561.93	5,266.93
		1914	1915
	Estimated bridge funds to be collected	29,609.25	29,500.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	5,250.88	5,155.77
	Bridge and culvert equipment on hand Nov. 1	709.00	850.15
III.	Repair.		
	Amount spent in repair of wood bridges		2,285.81
	Amount spent in repair of steel bridges with wood floors		2,484.50
	Amount spent in repair of concrete bridges		1,275.99

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe	44	$ 1,953.66		
	Corrugated pipe	15	539.10		
	Concrete box culverts	19	6,044.86	6	$ 1,781.02
	Sewer pipe culvert	1	40.22		
	Cast iron pipe culverts	27	1,055.63		
	I-Beam on piling	2	1,732.68		
	Concrete deck girder	1	1,329.40	2	3,441.90
	Concrete arch culverts	2	5,960.54	1	1,433.25
	Reinforced concrete slabs	3	2,379.72	3	2,204.63
	Concrete pipe			19	1,741.78
	Boiler pipe culvert			1	35.25
	Abutments			3	2,736.56
		114	$21,035.81	35	$ 13,374.39

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 855.00	$ 1,661.24

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$12,041.94	$ 8,698.21
	Amount of overdraft		
		1913	1914
	Amount paid in		43,316.80
	Outstanding bills Nov. 1	4,148.95	5,490.17
	Outstanding warrants Nov. 1	8,698.21	3,206.59
	Amount of balance Nov. 1		
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		27,190.56
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	7,668.35	6,966.90
	Road machinery on hand Nov. 1		
III.	Repair.		
	Amount spent on repairs to county road system	3,076.59	1,552.41
IV.	Culverts Classified as Road Work	1,541.24	8,157.83
V.	Maintenance of County Road System.		
	No. of miles county road system	158	158
	No. of miles regularly dragged	---	106
	Average No. of times dragged	---	34
	Average cost per mile dragged both sides		$ .46
VI.	Permanent Work on County Road System.		
	1913—Permanent grade, 22 miles, costing $8,413.91.		
	1914—To permanent grade and standard cross section 21 miles, costing $16,933.30.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	80	37
	No. of miles staked for grader repair	---	---
	No. of miles profile platted	27	58
	No. of miles grade line approved by Highway Commis'n	---	---
	No. of miles officially approved by Highway Commis'n	---	23
IX.	Total Engineering Cost	$ 2,511.14	$ 1,382.40

BREMER COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 2,002.84	$ 304.27
	Overdraft Jan. 1		
	Amount collected to Nov. 1	28,369.64	37,477.85
	Amount of balance Nov. 1	376.44	16,202.64
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		3,300.00
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	35,568.63	37,500.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,124.00	5,136.20
	Bridge and culvert equipment on hand Nov. 1	50.00	50.00
III.	Repair.		
	Amount spent in repair wood bridges	8,039.76	3,253.39
	Amount spent in repair steel bridges, (wood floors)	2,000.00	608.83
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Reinforced box culverts	13	$ 2,790.48		
	Corrugated pipe culverts			11	$ 1,189.61
	Wood pile bridges	10	2,346.34	4	656.03
	Reinforced concrete box			33	5,020.63
	Reinforced concrete slabs	2	5,616.74	3	2,087.81
	Boiler pipe culvert				1,471.81
	Steel trusses, concrete floor	2	2,808.36		
	I-Beam concrete abutment			1	442.71
	High truss	1	5,666.04		
	Miscellaneous culverts	19	481.69		
		47	$19,709.65	53	$ 10,868.60

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 285.12	$ 1,189.84

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 3,219.82	$ 5,940.70
	Amount of overdraft		
		1913	1914
	Amount paid in		24,324.46
	Outstanding bills Nov. 1	1,614.17	1,350.00
	Outstanding warrants Nov. 1		
	Amount of balance Nov. 1	5,940.70	3,159.94
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		25,500.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	4,395.93	3,174.85
III.	Repair.		
	Amount spent on road repairs on County Road System	950.67	1,981.24
IV.	Culverts Classified as Road Work.		
	Total	783.64	3,041.41
V.	Maintenance of County Road System.		
	No. miles county road system	125.5	125.5
	No. miles regularly dragged	31	125.5
	Average number times dragged	7	7
	Average cost per mile dragged, both sides	$ .62	
VI.	Permanent Work on County Road System.		
	1913—Permanently graded 1.2 miles costing $970.78. To surface with 16' macadam .4 mile at cost of $1,683.98. To surface with 16' gravel .33 mile costing $359.15.		
	1914—To permanent grade with standard cross section (Class II-A) 4.73 miles costing $7,614.62. 20 miles tractor grader work (Class II-C) costing $2,608.39.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	19	23.5
	No. miles staked for grader repair		
	No. of miles profile platted	12	31.5
	No. miles grade line approved by Highway Commission		13
	No. miles officially approved by Highway Commission		5
IX.	Total Engineering Cost—Road Construction, etc.	$ 745.94	$ 1,742.97

BUCHANAN COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 403.57	$ 1,619.37
	Overdraft Jan. 1		
	Amount collected to Nov. 1	33,012.61	39,340.35
	Amount of balance Nov. 1	6,657.53	12,580.52
	Overdraft Nov. 1	700.00	4,165.00
	Outstanding bills Nov. 1	14,800.31	8,775.00
	Oustanding warrants Nov. 1	1914	1915
	Estimated bridge funds to be collected	39,550.00	39,500.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	5,834.00	350.00
	Bridge and culvert equipment on hand Nov. 1	511.00	200.00
III.	Repair.		
	Amount spent in repair wood bridges	8,000.00	2,471.10
	Amount spent in repair steel bridges, wood floors		
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe	15	$ 951.67	174	$ 3,385.52
	Reinforced concrete box culverts	22	4,951.63	60	13,462.43
	I-Beam on piling	1	721.03		
	Circular concrete			5	485.55
	I-Beam concrete abutments			1	1,565.00
	Reinforced concrete slabs			2	1,347.10
		38	$ 6,624.33	242	$ 20,245.60

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 470.00	$ 773.70

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 9,259.08	$ 16,182.55
	Amount of overdraft		
		1913	1914
	Amount paid in	22,850.61	29,947.95
	Outstanding bills Nov. 1		600.00
	Outstanding warrants Nov. 1		8,177.75
	Amount of balance Nov. 1	16,182.55	698.87
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		31,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		4,000.00
	Road machinery on hand Nov. 1	1,790.00	3,000.00
III.	Repair.		
	Amount spent on road repairs on County Road System		6,699.31
IV.	Culverts Classified as Road Work.		
	Total		12,930.05
V.	Maintenance of County Road System.		
	No. miles in county road system	169	169
	No. miles regularly dragged		12
	Average number of times dragged	---	
	Average cost per mile dragged, both sides		$ .75
VI.	Permanent Work on County Road System.		
	1913—Permanently graded and gravel surfaced at cost of $5,226.77.		
	1914—To permanent grade with standard cross section (Class II-A) 7.35 miles costing $18,599.35.		
VII.	Permanent Work on Township Road System.		
	1914—To temporary grade with standard cross section (Class II-B) 15 miles costing $5,018.80.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	7.5	11
	No. miles staked for grader repair		
	No. miles profile platted	7.55	11
	No. miles grade line approved by Highway Commission	4	6
	No. miles officially approved by Highway Commission		6
IX.	Total Engineering Cost—Road Construction, etc.	$ 459.60	$ 1,225.00

BUENA VISTA COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 4,186.42	$ 980.26
	Overdraft Jan. 1		
	Amount collected to Nov. 1	35,923.09	48,535.72
	Amount of balance Nov. 1	1,428.25	
	Overdraft Nov. 1		6,237.45
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1	3,198.51	3,119.34
		1914	1915
	Estimated bridge funds to be collected during	48,548.15	49,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,500.00	1,200.00
	Bridge and culvert equipment on hand Nov. 1	200.00	925.00
III.	Repair.		
	Amount spent in repair wood bridges	1,699.73	2,546.91
	Amount spent in repair steel bridges, (wood floors)	150.24	103.16
	Amount spent in repair concrete bridges	812.90	

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culvert	1	$ 17.75		
	Concrete box culverts			126	$ 21,601.96
	Reinforced concrete box culverts	68	16,636.85		
	Concrete arch culverts	8	1,975.55	4	1,074.52
	I-Beam concrete abutments	23	22,076.93	9	9,352.87
	Wood pile bridges	12	2,107.88		
	Steel trusses with concrete floor and abutments	8		6	13,535.30
	Retaining walls			2	387.40
		120	$55,359.76	147	$ 45,952.05

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 1,050.50	$ 1,716.81

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 9,579.07	$ 18,148.14
	Amount of overdraft		
		1913	1914
	Amount paid in		43,960.80
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		
	Amount of balance Nov. 1	18,148.14	13,612.89
	Amount of overdraft No. 1		
		1914	1915
	Estimated amount to be collected		40,200.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	2,500.00	6,000.00
III.	Repair.		
	Amount spent on road repairs on County Road System	2,324.12	1,128.38
IV.	Culverts Classified as Road Work.		
	Total	8,711.89	15,657.71
V.	Maintenance of County Road System.		
	No. miles county road system	167	167
	No. of miles regularly dragged		167
	Average number of times dragged		10
	Average cost per mile dragged, both sides	$ .65	$ .72
VI.	Permanent Work on County Road System.		
	1913—Permanently graded 2.3 miles costing $3,680.33.		
	1914—To permanent grade with standard cross section (Class II-A) 13.4 miles costing $10,974.38. 42 miles tractor grader work (Class II-C) costing $3,166.56.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	4	24
	No. miles staked for grader repair		
	No. of miles profile platted	3	21.5
	No. miles grade line approved by Highway Commission	3	21.5
	No. miles officially approved by Highway Commission		20.5
IX.	Total Engineering Cost—Road Construction, etc.	$ 473.49	$ 1,923.86

BUTLER COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 7,461.33	$ 3,664.83
	Overdraft Jan. 1		
	Amount collected to Nov. 1	36,406.74	44,466.08
	Amount of balance Nov. 1	23,010.68	13,162.77
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	13,000.00	11,000.00
	Outstanding warrants Nov. 1	1,000.00	16.00
		1914	1915
	Estimated bridge funds to be collected during	45,000.00	45,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,984.00	2,075.00
	Bridge and culvert equipment on hand Nov. 1	700.00	300.00
III.	Repair.		
	Amount spent in repair wood bridges	19,876.53	4,215.00
	Amount spent in repair steel bridges (wood floors)	1,095.00	2,211.31
	Amount spent in repair concrete bridges		514.66

		1913		1914	
		No.	Cost	No.	Cost
	Corrugated pipe culverts	2	$ 63.90	1	$ 39.66
	Concrete box culverts	17	1,919.43		
	Concrete through girder	1	3,695.18		
	Wood pile bridge	2	980.00		
	Reinforced concrete slabs	4	5,412.50	8	10,074.80
	Reinforced concrete box			30	5,873.71
	Concrete deck girder			2	3,908.50
	Steel truss, concrete floor and abutments			1	3,763.05
		26	$12,071.01	42	$ 23,659.72

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 832.65	$ 1,777.55

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$11,687.59	$ 21,804.05
	Amount of overdraft		
		1913	1914
	Amount paid in		42,038.11
	Outstanding bills Nov. 1	6,661.89	5,217.60
	Outstanding warrants Nov. 1	1,195.21	372.45
	Amount of balance Nov. 1	21,804.05	4,561.50
	Amount of overdraft Nov. 1		
		1914	1915
	Esimated amount to be collected		30,500.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	5,635.00	10,145.00
III.	Road Repair.		
	Amount spent on road repairs on County Road System	10,748.95	8,643.22
IV.	Culverts Classified as Road Work.		
	Total	125.80	4,635.24
V.	Maintenance of County Road System.		
	No. of miles County Road System	174.3	174.3
	No. of miles regularly dragged	167	167
	Average number of times dragged	11	9
	Average cost per mile dragged, both sides	$ .55	$ .63
VI.	Permanent Work on County Road System.		
	1914—To permanent grade with standard cross sections (Class II-A) three and one-half miles, cost $4,680.93. To temporary grade with standard cross section (Class II-B) one and threefourths miles costing 2,749.03. Tractor grader work (Class II-C thirty-three miles costing $8,736.05. 2.25 miles surfaced with 9' gravel at cost of $1,467.35.		
VII.	Permanent Work on Township Road System.		
	1914—Tractor grader work (Class II-C). Twenty-eight miles costing $2,022.24.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	4	19.5
	No. of miles staked for grader repair	3	65.0
	No. of miles profile platted	---	19.5
	No. of miles grade line approved by Highway Commission	---	9
	No. of miles officially approved by Highway Commission	---	---
IX.	Total Engineering Cost—Construction, etc.	$ 345.52	$ 2,111.49

CALHOUN COUNTY.

Bridges.

		1914	1915
	Balance on hand Jan. 1	$ 562.56	$ 1,608.95
	Overdraft Jan. 1		
	Amount collected to Nov. 1	27,462.99	33,642.94
	Amount of balance Nov. 1	11,501.72	9,215.14
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	9,442.77	9,913.52
	Outstanding warrants Nov. 1		
		1913	1914
	Estimated bridge funds to be collected during	32,439.61	33,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	200.00	600.00
	Bridge and culvert equipment on hand Nov. 1		10.00
III.	Repair.		
	Amount spent repair wood bridges		
	Amount spent repair steel bridges, wood floors		
	Amount spent repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	10	$ 6,585.11	15	$ 7,803.63
	Concrete pipe culverts			89	5,148.64
	I-Beam concrete abutments	4	4,308.53		
	Abutment	1	825.72		
	Reinforced concrete slabs			3	2,967.25
	Steel truss, concrete floor and abutments	3	4,368.88	1	3,095.00
	Miscellaneous bridges			2	2,228.13
	Concrete arch bridge			1	12,989.25
		18	$16,088.24	111	$ 34,231.90

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 315.50	$ 1,376.50

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 5,717.72	$ 8,847.73
	Amount of overdraft		
		1913	1914
	Amount paid in during		41,736.89
	Outstanding bills Nov. 1	1,842.41	3,104.75
	Outstanding warrants Nov. 1	1,165.53	2,549.41
	Amount of balance Nov. 1	8,847.73	4,259.11
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		42,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	600.00	8,670.00
III.	Repair.		
	Amount on repairs County Road System	2,888.15	3,316.58
IV.	Culverts Classified as Road Work.		
	Total		8,432.84
V.	Maintenance of County Road System.		
	No. miles County Road System	168	168
	No. miles regularly dragged	168	168
	Average number times dragged	---	15.9
	Average cost per mile dragged, both sides		$ .75
VI.	Permanent Work on County Road System.		
	1913—Permanently graded, 1 mile costing $246.00.		
	1914—To permanent grade with standard cross section (Class II-A) 17 miles, costing $17,208.34. To temporary grade with standard cross section (Class II-B) 2.25 miles, costing $1,136.45. Tractor grader work (Class II-C) 41.5 miles costing $2,703.26.		
VII.	Permanent Work on Township Road System.		
	1914—To temporary grade with standard cross section (Class II-B) 14.8 miles costing $2,920.73. (Class II-B)1.7 miles costing $1,309.66.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	5	56
	No. miles staked for grader repair	1	79
	No. miles profile platted	4	53
	No. miles grade line approved by Highway Commission	4	42.5
	No. miles officially approved by Highway Commission	---	42.5
IX.	Total Engineering Cost—Road Construction, etc.	$ 130.00	$ 2,565.08

CARROLL COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 8,208.29	$ 607.09
	Overdraft Jan. 1		
	Amount collected to Nov. 1	37,470.41	49,086.44
	Amount of balance Nov. 1	7,320.00	11,117.89
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		4,000.00
	Outstanding warrants Nov. 1	51,427.06	59,826.58
		1914	1915
	Estimated bridge funds to be collected	48,619.95	47,960.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		550.00
	Bridge and culvert equipment on hand Nov. 1		400.00
III.	Repair.		
	Amount spent in repair wood bridges; steel bridges, (wood floors)	17,560.21	15,482.36
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts	21	$ 851.66	224	$ 4,179.66
	Concrete box culverts	28	13,949.66	48	16,238.86
	Circular concrete culverts	5	399.80	12	1,625.60
	Concrete arch culverts	2	1,527.30		
	Abutment			1	1,214.47
	Sewer pipe culvert	1	152.00		
	Concrete slab			1	1,509.33
	Wood pile bridges	19	3,768.55	2	3,608.45
	Concrete arch bridge	1	1,568.00		
	Steel trusses on piling			2	894.00
	Reinforced concrete slab	5	9,944.89		
	Steel trusses, concrete floor and abutments	19	44,065.00	2	5,434.90
		101	$76,166.86	292	$ 34,705.27

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 2,183.00	$ 3,098.48

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 4,758.31	$ 13,901.55
	Amount of overdraft		
		1913	1914
	Amount paid in		35,214.23
	Outstanding warrants Nov. 1	2,000.00	3,000.00
	Outstanding bills Nov. 1	13,901.55	13,076.85
	Amount of balance Nov. 1		
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		35,160.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1		1,083.75
III.	Repair.		
	Amount spent on road repairs on County Road System	5,221.62	5,928.13
IV.	Culverts Classified as Road Work.		
	Total	3,920.52	18,404.89
V.	Maintenance of County Road System.		
	No. miles county road system	175	175
	No. miles regularly dragged	165.5	161
	Average number of times dragged	8.3	17.4
	Average cost per mile dragged, both sides	$ .65	$ .786
VI.	Permanent Work on County Road System.		
	1914—To permanent grade with standard cross section (Class II-A) 1.74 miles costing $4,287.36.		
VII.	Permanent Work on Township Road System.		
	1914—To permanent grade with standard cross section (Class II-A) 2 miles costing $1,591.07.		
		1913	1914
VIII.	Engineering.		
	No. miles surveyed	10	17
	No. miles staked for grader repair	---	---
	No. miles profile platted	---	17
	No. miles grade line approved by Highway Commission	---	17
	No. miles officially approved by Highway Commission	---	---
IX.	Total Engineering Cost—Road Construction, etc.	$ 513.00	$ 2,021.16

CASS COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1		$ 1,983.04
	Overdraft Jan. 1	$ 1,958.66	
	Amount collected to Nov. 1	31,753.55	45,341.81
	Amount of balance Nov. 1	205.99	4,911.35
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	10,044.12	4,367.74
	Outstanding warrants Nov. 1	17,312.63	9.60
		1914	1915
	Estimated bridge funds to be collected during	45,265.73	45,631.50
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		2,028.88
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair wood bridges		11,047.65
	Amount spent in repair steel bridges, wood floors		6,271.00
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	45	$16,048.64	21	$ 7,472.79
	Corrugated pipe culverts			134	4,329.74
	Concrete arch culvert	1	225.34		
	Concrete pipe culverts			19	3,330.80
	Boiler pipe culverts	10	2,607.39	26	1,729.40
	Concrete deck girders	2	2,154.24		
	Headwalls			3	322.60
	Wood pile bridges	1	522.76	10	2,191.62
	Reinforced concrete slabs	2	2,537.05		
		61	$24,095.42	213	$ 19,376.95

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 1,440.37	$ 1,883.30

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 6,106.67	$ 15,565.97
	Amount of overdraft		
		1913	1914
	Amount paid in	22,834.78	32,232.83
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		
	Amount of balance Nov. 1	15,565.97	11,987.35
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected during		31,926.33
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	300.00	
III.	Repair.		
	Amount spent on road repairs on County Road System	9,742.85	31,861.58
IV.	Culverts Classified as Road Work.		
	Total		13,995.67
V.	Maintenance of County Road System.		
	No. miles county road system	142	142
	No. miles regularly dragged	---	142
	Average number times dragged	---	17.4
	Average cost per mile dragged, both sides		$ .75
VI.	Permanent Work on County Road System.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	---	---
	No. miles staked for grader repair	---	10
	No. miles profile platted	---	---
	No. miles grade line approved by Highway Commission	---	---
	No. miles officially approved by Highway Commission	---	---
IX.	Total Engineering Cost—Road Construction, etc.		$ 500.00

CEDAR COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$14,591.25	$ 12,287.62
	Overdraft Jan. 1		
	Amount collected to Nov. 1	34,082.38	39,888.64
	Amount of balance Nov. 1	18,596.91	26,018.39
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	6,309.29	9,000.00
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	39,000.00	35,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		875.00
	Bridge and culvert equipment on hand Nov. 1		315.00
III.	Repair.		
	Amount spent in repair wood bridges, steel bridges, (wood floors)		6,489.72
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	48	$12,986.58	129	$ 29,435.49
	Corrugated pipe culverts			50	806.86
	Circular concrete culverts	1	135.87	2	257.78
	Concrete arch culverts	8	1,520.23		
	Cast iron pipe	4	939.24		
	Boiler pipe culverts			82	3,583.26
	I-Beam concrete abutments	1	1,182.25	2	2,635.79
	Concrete slabs	3	3,031.73	3	3,910.98
	Concrete deck girder			1	1,529.25
	Steel truss, concrete floor and abutments	1	2,155.91	1	2,999.00
	Pair abutments			2	2,494.93
	Head walls			7	951.23
		66	$21,951.81	279	$ 48,604.57

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 1,733.56	$ 2,341.52

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 3,350.47	$ 12,975.68
	Amount of overdraft		
		1913	1914
	Amount paid in	20,077.59	38,000.00
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1	14,594.93	9,000.00
	Amount of balance Nov. 1	12,875.68	10,767.15
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		35,120.72
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1		1,412.00
III.	Repair.		
	Amount spent on road repairs on County Road System	4,000.00	6,414.47
IV.	Culverts Classified as Road Work.		
	Total	17,349.29	28,300.00
V.	Maintenance of County Road System.		
	No. miles county road system	158.3	158.3
	No. miles regularly dragged	---	150
	Average number times dragged	---	---
	Average cost per mile dragged, both sides	---	---
VI.	Permanent Work on County Road System.		
	1913—¾ mile surfaced with 16' macadam at cost of $1,862.01.		
	1914—To permanent grade with standard cross section (Class II-A) 2.18 miles at cost of $3,071.86.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	10	25
	No. miles staked for grader repairs	---	115
	No. miles profile platted	10	25
	No. miles grade line approved by Highway Commission	1	4.5
	No. miles officially approved by Highway Commission	---	3
IX.	Total Engineering Cost—Road Construction, etc.	$ 423.97	$ 1,093.81

CERRO GORDO COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$13,498.63	$ 12,701.24
	Overdraft Jan. 1		
	Amount collected to Nov. 1		51,424.48
	Amount of balance Nov. 1	12,761.24	
	Overdraft Nov. 1		963.12
	Outstanding bills Nov. 1		3,000.00
	Outstanding warrants Nov. 1		2,187.00
		1914	1915
	Estimated bridge funds to be collected	50,000.00	48,600.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	920.00	1,550.00
	Bridge and culvert equipment on hand Nov. 1	267.00	1,296.00
III.	Repair.		
	Amount spent in repair wood bridges		1,788.88
	Amount spent in repair steel bridges, wood floors		2,549.73
	Amount spent in repair concrete bridges		22.00

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe	48	$ 2,319.68		
	Corrugated pipe			19	$ 1,208.90
	Concrete box culverts	39	9,258.72	59	13,641.99
	Concrete deck girders	2	3,287.00	1	5,263.68
	Circular concrete culverts			75	5,181.72
	Concrete thru girders	1	1,375.00	3	4,074.19
	Steel girder	1	1,400.00		
	Concrete slabs	8	6,209.25		
	Concrete arch			1	13,130.00
	Reinforced concrete slabs			10	9,230.17
	Steel trusses, concrete floor and abutments	2	14,006.00	1	1,776.00
	Miscellaneous culvert			1	51.00
		101	$27,855.05	170	$ 53,511.65

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 508.10	$ 1,289.50

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 2,673.64	
	Amount of overdraft		$ 10,034.36
		1913	1914
	Amount paid in		35,761.82
	Outstanding warrants Nov. 1	500.00	1,148.00
	Outstanding bills Nov. 1	1,550.00	759.00
	Amount of balance Nov. 1		13,527.15
	Amount of overdraft Nov. 1	10,034.36	
		1914	1915
	Estimated amount to be collected		40,800.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	950.00	1,628.00
III.	Repair.		
	Amount spent on road repairs on County Road System		1,143.00
IV.	Culverts Classified as Road Work.		
	Total		
V.	Maintenance of County Road System.		
	No. miles county road system	138.7	138.7
	No. miles regularly dragged		107
	Average number times dragged		10.7
	Average cost per mile dragged, both sides		$ .75
VI.	Permanent Work on County Road System.		
	1913—Permanent grades, 5.5 miles, costing $880.00. Surfaced with 10′ gravel, 4 miles costing $917.00. Paved with 10′ concrete, 1 mile costing $11,500.00.		
	1914—To temporary grade with standard cross section (Class II-B) 12.5 miles costing $2,763.15. Tractor-grader work (Class II-C) 8.5 miles costing $1,523.25. Surfaced with 10′ gravel, 7.66 miles.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	34	72.5
	No. miles staked for grader repair	---	74
	No. miles profile platted	24	65.5
	No. miles grade line approved by Highway Commission	12	57
	No. miles officially approved by Highway Commission	---	40.5
IX.	Total Engineering Cost—Road Construction, etc.	$ 299.00	$ 1,620.65

CHEROKEE COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$14,019.72	$ 11,325.00
	Overdraft Jan. 1		
	Amount collected to Nov. 1	34,346.73	47,643.68
	Amount of balance Nov. 1	23,446.03	10,629.92
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		7,612.00
	Outstanding warrants Nov. 1		1,834.50
		1914	1915
	Estimated bridge funds to be collected	46,767.00	48,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	271.20	2,034.90
	Bridge and culvert equipment on hand Nov. 1	75.00	40.00
III.	Repair.		
	Amount spent repair wood bridges	6,067.28	9,952.14
	Amount spent repair steel bridges, wood floors	7,285.32	6,892.34
	Amount spent in repair concrete bridges	80.00	
IV.	New Construction.		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	18	$ 6,074.80	67	$ 24,569.10
	I-beams, concrete abutments	17	18,425.59		
	Steel truss, concrete floor and abutment	1	3,566.14		
	Circular concrete culvert			1	365.70
	Corrugated iron pipe			2	87.10
	Wood pile with steel I-beam joists and hand rail			1	810.40
	Standard I-beams concrete floor and abutments			9	12,771.72
	Concrete slab			1	2,185.55
	Steel span wood pile abutment			1	278.00
	Steel spans, concrete floor and abutment			2	4,511.94
	I-beam piling with conc. backing and floor			2	2,949.83
		36	$28,066.53	86	$ 48,529.34

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 1,205.20	$ 963.37

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$13,698.45	$ 18,230.56
		1913	1914
	Amount paid in		33,198.97
	Outstanding warrants Nov. 1		949.97
	Outstanding bills Nov. 1	1,268.41	15,000.00
	Amount of balance Nov. 1	18,230.56	30,125.44
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected during		33,000.00
II.	Material and Equipment.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	225.00	1,628.00
III.	Repair.		
	Amount spent on road repairs County Road System	8,211.75	2,039.83
IV.	Culverts Classified as Road Work.		
	Total	619.70	6,042.56
V.	Maintenance of County Road System.		
	No. miles County Road System	148	148
	No. miles regularly dragged	100	105
	Average number of times dragged	12	10.8
	Average cost per mile dragged both sides	$ .80	$ .80
VI.	Permanent Work on County Road System.		
	1914—To permanent grade with standard cross section (Class II-A) 12.1 miles costing $22,560.01.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	34	16.5
	No. miles staked out for grader	--	---
	No. miles profile platted	--	15.5
	No. miles grade line approved by Highway Commission	--	13.5
	No. miles officially approved by Highway Commission	--	---
IX.	Total Engineering Cost—Road Construction, etc.	$ 538.87	$ 1,162.32

CHICKASAW COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1		
	Overdraft Jan. 1	$ 319.57	$ 1,808.16
	Amount collected to Nov. 1	25,236.23	32,227.45
	Amount of balance Nov. 1		
	Overdraft Nov. 1	1,246.92	19,372.11
	Outstanding bills Nov. 1 (Est.)		4,000.00
	Outstanding warrants Nov. 1		4,924.94
		1914	1915
	Estimated bridge funds to be collected	32,703.42	32,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	260.00	279.92
	Bridge and culvert equipment on hand Nov. 1	540.00	662.50
III.	Repair.		
	Amount spent in repair of wood bridges	182.49	
	Amount spent in repair of steel bridges (wood floors)		
	Amount spent in repair of concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	84	$10,019.89	70	$ 12,015.72
	I-beam concrete abutments	13	4,387.49	13	10,353.30
	Circular concrete culverts			2	194.78
	Concrete deck girders	4	4,628.65		
	Wood pile bridge	1	64.87		
	Concrete arch	1	788.00		
	Concrete slab	1	561.60	4	3,693.65
	Steel truss, concrete floors and abutments	1	2,711.00	5	12,731.00
	High truss	1	3,008.00		
	Miscellaneous bridges			2	1,383.54
		106	$26,169.50	96	$ 40,374.99

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 566.00	$ 992.49

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 5,037.50	$ 6,446.54
	Amount of overdraft		
		1913	1914
	Amount paid in	14,759.77	18,986.25
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		
	Amount of balance Nov. 1	6,446.54	3,089.77
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		$ 17,273.43
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	4,459.00	4,859.00
III.	Repair.		
	Amount spent on road repairs on County Road System	8,309.81	8,722.27
IV.	Culverts Classified as Road Work.		
	Total		8,235.53
V.	Maintenance of County Road System.		
	No. miles county road system	154.5	154.5
	No. miles regularly dragged		
	Average number times dragged		
	Average cost per mile dragged, both sides		
VI.	Permanent Work on County Road System.		
	To temporary grade 13.5 miles, costing	$ 998.47	
	1¼ miles surfaced with gravel, costing	508.80	
	To temporary grade standard cross section, (Class II-B) 8¼ miles, costing		$ 1,611.20
	Tractor grader work (Class II-C) 12¼ miles, costing		1,466.41
	Surfaced with 9' gravel, ½ mile, costing		16.70
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	24.5	22
	No. miles staked for grader repair		70
	No. miles profile platted	3	21
	No. miles grade line approved by Highway Commission	3	12
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost	$ 576.00	$ 977.77

CLAY COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$14,306.27	
	Overdraft Jan. 1		$ 2,916.39
	Amount collected to Nov. 1	18,625.87	31,209.25
	Amount of balance Nov. 1	5,268.44	5,390.07
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		20,595.00
	Outstanding warrants Nov. 1		47,421.00
		1914	1915
	Estimated bridge funds to be collected	30,887.28	39,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	2,611.00	3,500.00
	Bridge and culvert equipment on hand Nov. 1	1,285.00	1,025.00
III.	Repair.		
	Amount spent in repair wood bridges		
	Amount spent in repair steel bridges (wood floors)		
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	20	$ 4,221.79	145	$ 50,778.97
	Circular concrete culverts	4	681.27		
	Corrugated pipe culverts			5	2,059.12
	I-beam concrete abutments			8	12,110.56
	Concrete slabs			3	3,023.00
	High trusses			2	9,821.00
		24	$ 4,903.06	163	$ 77,792.65

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 450.00	$ 2,051.29

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance		$ 8,547.74
	Amount of overdraft		
		1913	1914
	Amount paid in		23,431.45
	Outstanding warrants Nov. 1		2,495.47
	Outstanding bills Nov. 1	$ 2,512.71	6,066.00
	Amount of balance Nov. 1	8,547.74	71.41
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		32,275.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	1,900.00	
	Road machinery on hand Nov. 1	1,814.00	3,490.00
III.	Repair.		
	Amount spent on road repairs on County Road System	1,372.15	3,814.51
IV.	Culverts Classified as Road Work.		
	Total	4,000.26	13,334.44
V.	Maintenance of County Road System.		
	No. miles county road system	150	150
	No. miles regularly dragged		150
	Average number of times dragged		10.7
	Average cost per mile dragged, both sides		$ .75
VI.	Permanent Work on County Road System.		
	1913—Permanently graded 7½ miles costing $5,751.89. 23,811 cubic yards earth moved at average cost of 24c. Surfaced with 9' gravel, 7 miles, costing $8,461.05.		
	1914—To permanent grade, standard cross section (Class II-A) 4.15 miles costing $10,431.50. Blade grader work (Class II-C) 2 miles, costing $142.14.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	14	30.5
	No. miles staked for grader repair		
	No. miles profile platted	8	22.5
	No. miles grade line approved by Highway Commission	7	12
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 355.00	$ 1,435.97

CLARKE COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 1,237.22	
	Overdraft Jan. 1		$ 1,751.67
	Amount collected to Nov. 1	20,517.58	18,864.39
	Amount of balance Nov. 1	4,752.23	
	Overdraft Nov. 1		121.01
	Outstanding bills Nov. 1		3,000.00
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	18,442.18	24,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		600.00
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair of wood bridges		5,656.42
	Amount spent in repair of steel bridges with wood floors		3,490.36
	Amount spent in repair of concrete birdges		64.25

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culvert	23	$ 8,700.38	7	$ 2,120.05
	Concrete arch culvert	17	4,353.30		
	Concrete deck girder	1	895.78		
	Head walls	2	179.62		
	Wood pile bridge	1	271.04		
	Concrete arch	1	620.20		
	Concrete slabs	4	4,071.73		
	Steel truss, concrete floor and abutments	1	2,860.31		
	Corrugated pipe				2,726.30
	Miscellaneous culvert			1	51.43
		50	$21,951.76	8	$ 4,900.78

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 731.18	$ 952.88

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 1,763.60	
	Amount of overdraft		$ 3,488.48
		1913	1914
	Amount paid in	$20,713.12	$ 19,730.05
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1	1,709.03	3,600.00
	Amount of balance Nov. 1		
	Amount of overdraft Nov. 1	3,488.48	315.48
		1914	1915
	Estimated amount to be collected	17,431.26	20,400.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		400.00
	Road machinery on hand Nov. 1	515.00	1,450.00
III.	Repair.		
	Amount spent for repairs on County Road System	3,076.17	7,396.41
IV.	Culverts Classified as Road Work	4,000.26	3,074.39
V.	Maintenance of County Road System.		
	No. miles county road system	114	114
	No. miles regularly dragged		90
	Average number of times dragged		12
	Average cost per mile dragged, both sides		$ .70
VI.	Permanent Work on County Road System.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	2	2
	No. miles staked for grader repair		
	No. miles profile platted		
	No. miles grade line approved by Highway Commission		
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost	$ 631.65	$ 631.56

CLINTON COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$22,464.30	$ 20,521.25
	Overdraft Jan. 1		
	Amount collected to Nov. 1	48,315.36	54,752.35
	Amount of balance Nov. 1	29,970.46	10,563.85
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	2,621.78	16,053.18
	Outstanding warrants Nov. 1		34,163.44
		1914	1915
	Estimated bridge funds to be collected	55,383.98	56,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	2,340.00	14,000.00
	Bridge and culvert equipment on hand Nov. 1	100.00	
III.	Repair.		
	Amount spent in repair of wood bridges		3,719.68
	Amount spent in repair of steel bridges, wood floors		6,030.79
	Amount spent in the repair of concrete bridges		811.58

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	3	$ 2,135.59	28	$ 15,049.40
	I-beam on piling	10	3,341.29		
	Abutments	2	1,378.00	2	1,378.00
	Wood pile bridges	13	2,309.81	25	5,114.53
	Concrete arch	1	6,262.65	1	6,262.65
	Concrete slabs	6	7,461.41	11	13,068.01
	Corrugated culverts			209	6,063.94
	Concrete pipe			1	71.30
	I-beam, concrete abutments			18	15,966.56
	Steel truss with concrete floor and abuts.			1	3,521.40
		35	$22,891.75	296	$ 66,495.59

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
--	Salaries, transportation and supplies	$ 1,466.51	$ 3,910.60

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 8,804.55	$ 22,763.55
	Amount of overdraft		
		1913	1914
	Amount paid in	25,837.30	39,977.35
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		10,692.41
	Amount of balance Nov. 1	22,763.55	12,320.99
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		47,500.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	1,400.00	3,595.00
III.	Repair.		
	Amount spent on road repairs on county road system	10,846.00	11,711.29
IV.	Culverts Classified as Road Work.		
	Total		100.00
V.	Maintenance of County Road System.	1913	1914
	No. of miles county road system	195.5	195.5
	No. of miles regularly dragged	100	195.5
	Average number of times dragged		23
	Average cost per mile dragged, both sides	$ .75	$ .75
VI.	Permanent Work on County Road System.		
	Permanently graded 4 miles at cost of	$ 5,854.21	
	Paved 2,600 ft. with 12' macadam at cost of	5,012.61	
	Paved 950 ft. with 15' macadam at cost of	1,644.72	
	Surfaced 4,665 ft. with 12' gravel at cost of	2,309.56	
	To permanent grade with standard cross sec. (Class II-A) 9.6 miles, costing		$ 19,008.81
	Surfaced 6 25 miles with 11' gravel, costing		11,459.01
	Surfaced ¾ miles with macadam at cost of		6,687.08
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	13	63
	No. of miles staked for grader repair		
	No. of miles profile platted	7	19.5
	No. of miles grade line approved by Highway Commission	7	2
	No. of miles officially approved by Highway Commission		
IX.	Total Engineering Cost	$ 643.25	$ 2,983.86

CRAWFORD COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1		$ 1,767.20
	Overdraft Jan. 1	$ 1,390.99	
	Amount collected to Nov. 1	48,633.08	62,642.84
	Amount of balance Nov. 1	5,065.74	9,830.23
	Overdraft Jan. 1		
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		656.50
		1914	1915
	Estimate bridge funds to be collected	59,977.62	29,977.62
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	$ 2,340.00	$ 50.00
	Bridge and culvert equipment on hand Nov. 1	100.00	
III.	Repair.		
	Amount spent in repair of wood bridges	11,363.06	25,245.41
	Amount spent in repair of steel bridges with wood floors		578.22
	Amount spent in repair of concrete bridges		133.00

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	14	$ 3,406.94	32	$ 10,418.32
	Wood pile bridges	38	7,807.47	63	13,477.37
	Steel trusses with concrete floor and abuts.	2	2,982.00	1	2,200.00
	Misc. bridge	1	1,589.21		
	Incased vitrified pipe			1	204.86
	Corrugated pipe			189	8,487.94
	Concrete arch			1	254.63
	Boiler pipe			23	2,242.50
	I-beam concrete abutment			6	8,327.62
	Concrete deck girder			1	1,625.00
	Concrete slab			1	1,634.75
		55	$15,785.62	318	$ 48,872.99

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies		$ 1,987.65

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 4,051.61	$ 14,159.92
	Amount of overdraft		
		1913	1914
	Amount paid in		
	Outstanding warrants Nov. 1		165.16
	Outstanding bills Nov. 1		
	Amount of balance Nov. 1	14,159.92	5,000.00
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		46,178.12
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1		
III.	Repair.		
	Amount spent on repairs to county road system	$ 3,470.66	$ 3,048.94
IV.	Culverts Classified as Road Work	4,315.33	18,906.34
V.	Maintenance of County Road System.		
	No. of miles county road system	149	149
	No. of miles regularly dragged	135	147
	Average number of times dragged	12	31
	Average cost per mile dragged, both sides	$ .75	$ .75
VI.	Permanent Work on County Road System.		
	Permanently graded 2.9 miles	$ 3,305.98	
	To permanent grade with standard cross section (Class II-A) 10.61 miles at cost of		$ 12,907.85
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	15	13
	No. of miles staked for grader repair		
	No. of miles profile platted	15	13
	No. miles grade line approved by Highway Commission	8	19
	No. miles officially approved by Highway Commission		11
IX.	Total Engineering Cost		$ 2,466.33

DALLAS COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 4,397.25	$ 4,960.15
	Overdraft Jan. 1		
	Amount collected to Nov. 1	39,910.98	42,222.37
	Amount of balance Nov. 1	6,908.31	3,786.01
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		577.75
		1914	1915
	Estimated bridge funds to be collected	$40,000.00	$ 50,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		$ 1,500.00
	Bridge and culvert equipment on hand Nov. 1	$ 525.00	450.00
III.	Repair.		
	Amount spent repair wood bridges	4,060.33	1,640.16
	Amount spent in repair steel bridges, wood floors	220.80	
	Amount spent repair concrete bridges	208.24	

		1913			
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete pipe culverts	65	$ 2,605.32	1	$ 31.60
	Concrete box culverts	33	9,968.66	51	17,389.60
	Concrete slabs	2	1,532.67	6	4,546.40
	Miscellaneous culverts	4	671.53		
	Circular concrete culverts			126	9,706.50
	Concrete arch			1	111.65
	Sewer pipe			1	11.80
	Concrete deck girder			1	1,327.99
		104	$14,778.18	187	$ 33,125.54

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Transportation and salaries and supplies		$ 1,884.85

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 2,595.67	$ 9,724.31
		1913	1914
	Amount paid in	$41,601.96	$ 42,409.59
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		3,000.00
	Amount of balance Nov. 1	9,724.31	6,869.65
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		38,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	1,475.00	3,275.00
III.	Repairs.		
	Amount spent on road repairs on County Road System	1,525.80	2,428.93
IV.	Culverts Classified as Road Work.		
	Total		2,423.97
V.	Maintenance of County Road System.		
	No. of miles County Road System	171.5	171.5
	No. of miles regularly dragged	130	159
	Average number times dragged	8	14
	Average cost per mile dragged, both sides	$ .70	$ .75
VI.	Permanent Work on County Road System.		
	Permanently graded 9⅔ miles at cost of	14,618.23	
	Paved 1900′ with 18′ concrete, at cost of	2,175.25	
	To permanent grade with standard cross section (Class II-A) 12.5 miles at cost of		21,106.16
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	15.5	22.5
	No. miles staked for grader repair		
	No. miles profile platted	13	21.5
	No. miles grade line approved by Highway Commission	9.5	26
	No. miles officially approved by Highway Commission		6
IX.	Total Engineering Cost—Road Construction, etc.		$ 1,250.00

DAVIS COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$15,558.06	$ 12,508.89
	Overdraft Jan. 1		
	Amount collected to Nov. 1	21,671.07	24,968.24
	Amount of balance Nov. 1	14,191.15	6,962.33
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	677.78	4,841.61
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	24,191.10	20,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	3,273.82	
	Bridge and culvert equipment on hand Nov. 1	1,326.00	500.00
III.	Repair.		
	Amount spent in repair, wood bridges		1,248.64
	Amount spent in repair, steel bridges (wood floors)		130.69
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts	15	$ 961.78	91	$ 2,860.32
	Concrete pipe culverts	8	193.19		
	Concrete box culverts	14	3,521.20	71	27,867.74
	Boiler pipe culverts	3	338.45	31	2,933.52
	I-beam concrete abutments	8	3,656.65	1	1,316.55
	Steel truss, concrete floor and abutments	1	1,532.23		
	Miscellaneous bridges	16	12,947.39	3	3,127.25
	Circular concrete culverts			5	1,229.57
		65	$23,090.89	205	$ 39,334.95

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 587.10	$ 1,331.79

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$10,162.26	$ 15,741.82
	Amount of overdraft		
		1913	1914
	Amount paid in		20,968.99
	Outstanding warrants, Nov. 1		
	Outstanding bills Nov.1		5,230.38
	Amount of balance Nov. 1	15,741.82	
	Amount of overdraft Nov. 1		2,010.62
		1914	1915
	Estimated amount to be collected		23,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	1,065.00	1,450.00
III.	Repair.		
	Amount spent on road repairs on County Road System	2,147.83	4,842.56
IV.	Culverts Classified as Road Work.		
	Total	1,952.63	21,323.52
V.	Maintenance of County Road System.		
	No. miles County Road System	155.8	155.8
	No. miles regularly dragged	90	150
	Average number times dragged	9	21.8
	Average cost per mile dragged, both sides	$ .50	$ .48
VI.	Permanent Work on County Road System.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed		
	No. miles staked for grader repair		
	No. miles grade line approved by Highway Commission		
	No. miles profile platted		
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 356.90	$ 336.50

DECATUR COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 2,221.81	$ 8,454.26
	Overdraft Jan. 1		
	Amount collected to Nov. 1	18,591.64	21,446.95
	Amount of balance Nov. 1	9,725.49	2,137.52
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		3,120.00
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	16,000.00	22,272.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		2,500.00
	Bridge and culvert equipment on hand Nov. 1	100.00	307.00
III.	Repair.		
	Amount spent in repair wood bridges	5,219.82	12,756.04
	Amount spent in repair steel bridges (wood floors)	785.22	1,941.11
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete pipe culverts	15	$ 1,741.70	17	$ 2,317.46
	Concrete box culverts	8	2,183.94	4	1,271.80
	Wood pile bridges	2	251.59	1	141.29
	Concrete deck girders			1	1,644.00
	Steel truss, concrete floor and abutments			1	1,716.00
		25	$ 4,177.23	24	$ 7,090.55

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 483.25	$ 1,240.00

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 5,873.56	$ 4,187.96
	Amount of overdraft		
		1913	1914
	Amount paid in		19,370.00
	Outstanding warrants Nov. 1		2,110.00
	Outstanding bills Nov. 1		1,000.00
	Amount of balance Nov. 1	4,187.96	1,386.66
	Amount of overdraft		
		1914	1915
	Estimated amount to be collected		21,068.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	500.00	200.00
	Road machinery on hand Nov. 1	500.00	865.00
III.	Repair.		
	Amount spent on road repairs on County Road System	6,473.86	16,329.06
IV.	Culverts Classified as Road Work.		
	Total	3,269.07	
V.	Maintenance of County Road System.		
	No. miles County Road System	152	152
	No. miles regularly dragged	135	152
	Average number times dragged		25
	Average cost per mile dragged, both sides		$ .60
VI.	Permanent Work on County Road System.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	36.5	2
	No. miles staked for grader repair		
	No. miles grade line approved by Highway Com		2
	No. miles profile platted	4	2
	No. miles officially approved by Highway Com		2
IX.	Total Engineering Cost—Road Construction, etc.	$ 667.09	$ 1,050.00

DELAWARE COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$10,115.74	$ 423.42
	Overdraft Jan. 1		
	Amount collected to Nov. 1	32,414.30	41,478.54
	Amount of balance Nov. 1	2,649.13	11,209.52
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1	338.84	5,940.00
		1914	1915
	Estimated bridge funds to be collected	40,000.00	41,500.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,350.00	1,228.85
	Bridge and culvert equipment on hand Nov. 1	50.00	215.00
III.	Repair.		
	Amount spent in repair of wood bridges	3,601.73	3,744.78
	Amount spent in repair of steel bridges with wood floors	61.65	898.59
	Amount spent in repair of concrete bridges		168.03

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts	18	$ 1,911.93		
	Concrete box culverts	29	6,922.97	$ 37	12,077.20
	I-beam concrete abutments	2	2,591.80	1	890.27
	Steel trusses with concrete floor and abuts.	6	15,164.66	3	7,285.46
	Retaining wall			1	79.40
	Wood pile bridges			11	2,035.29
	High truss, concrete floor and abutments			1	5,724.38
		55	$26,591.36	54	$ 28,092.00

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	1,132.83	1,429.49

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 998.60	
	Amount of overdraft		962.42
		1913	1914
	Amount paid in	22,858.17	39,554.21
	Outstanding warrants Nov. 1	5,928.03	1,720.00
	Outstanding bills Nov. 1		
	Amount of overdraft Nov. 1	962.42	
	Amount of balance Nov. 1		1,851.71
		1914	1915
	Estimated amount to be collected		39,500.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		145.00
	Road machinery on hand Nov. 1	657.00	1,210.00
III.	Repair.		
	Amount spent on road repairs on County Road System	3,182.91	2,761.78
IV.	Culverts Classified as Road Work.		
	Total		11,045.59
V.	Maintenance of County Road System.		
	No. of miles County Road System	171.8	171.8
	No. of miles regularly dragged	171.8	160
	Average number of times dragged	15	25
	Average cost per mile dragged, both sides	$ .75	$ .78
VI.	Permanent Work on County Road System.		
	Expended, putting roads to permanent grade	$10,650.80	
	Tractor grader work (Class II-C) 7.5 miles at cost of	905.00	
	3.88 miles surfaced with 16' gravel		2,842.83
	11.38 miles to temporary grade with standard cross section (Class II-B)		11,237.58
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	52.5	32
	No. of miles staked for grader repair		
	No. of miles profile platted	52.5	15
	No. of miles grade line approved by Highway Com	8	5
	No. of miles officially approved by Highway Com		
IX.	Total Engineering Cost	$ 812.13	$ 1,703.38

DES MOINES COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$10,098.73	$ 6,688.78
	Overdraft Jan. 1		
	Amount collected to Nov. 1	15,759.50	17,013.31
	Amount of balance Nov. 1	21,110.11	3,531.56
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		287.42
		1914	1915
	Estimated bridge funds to be collected	16,652.09	14,757.47
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	4,060.34	3,000.00
	Bridge and culvert equipment on hand Nov. 1	1,178.15	1,178.15
III.	Repair.		
	Amount spent in repair wood bridges	135.45	
	Amount spent in repair steel bridges (wood floors)	936.64	
	Amount spent in repair concrete bridges		

		1914	
		No.	Cost
IV.	New Construction.		
	Concrete pipe culverts	4	$ 604.22
	Concrete box culverts	15	3,807.85
	Boiler pipe	93	4,665.71
	Cast iron pipe	3	539.88
	I-Beam concrete abutments	2	1,751.37
	I-Beam on repaired stone abutments	1	396.75
	Beam on pile abutments	1	223.95
	Pony trusses, concrete floor and repair abutments	4	3,960.65
	Old pony trusses rebuilt or pile abutment	2	1,255.94
		125	$ 17,206.32

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 272.58	$ 1,288.30

Roads.

I	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 7,733.63	$ 19,515.03
	Amount of overdraft		
		1913	1914
	Amount paid in		26,658.46
	Outstanding bills Nov. 1		1,000.00
	Outstanding warrants Nov. 1		12,039.16
	Amount of balance Nov. 1	19,515.03	11,069.01
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		25,500.00
		1913	1914
II.	Equipment and Material.		
	Road material on hand Nov. 1	697.00	3,455.26
	Road machinery on hand Nov. 1		
III.	Repair.		
	Amount spent on road repairs on County Road System	7,857.22	2,618.71
IV.	Culverts Classified as Road Work.		
	Total	348.15	5,175.49
V.	Maintenance of County Road System.		
	No. miles county road system	81.5	81.5
	No. miles regularly dragged	---	---
	Average number times dragged	---	---
	Average cost per mile dragged, both sides		
VI.	Permanent Work on County Road System.		
	1914—To permanent grade with standard cross section (Class II-A) 3.6 miles costing		7,789.65
	Tractor grader work (Class II-C) 43.5 miles costing		4,347.90
	Surfaced with 16' clay 1 mile costing		2,999.40
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	4	63
	No. miles staked for grader repair	---	---
	No. miles profile platted	4	23
	No. miles grade line approved by Highway Commission	---	14.5
	No. miles officially approved by Highway Commission	---	3
IX.	Total Engineering Cost—Road Construction, etc.	$ 272.58	$ 2,576.63

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 287.08	$ 7,311.30
	Overdraft Jan. 1		
	Amount collected to Nov. 1	12,972.49	22,362.63
	Amount of balance Nov. 1	7,435.67	355.41
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		9,077.84
	Outstanding warants Nov. 1		3,088.72
	Estimated bridge funds to be collected	1914	1915
II.	Equipment and Material.	22,988.94	23,000.00
	Bridge and culvert material on hand Nov. 1	1913	1914
	Bridge and culvert equipment on hand Nov. 1	315.00	1,320.60
III.	Repair.		25.00
	Amount spent in repair of wood bridges	432.00	3,624.63
	Amount spent in repair of steel bridges with wood floors		891.78
	Amount spent in repair of concrete bridges		786.11

		1914 No.	1914 Cost
IV.	New Construction.		
	Concrete box culverts	61	$ 15,974.25
	Circular concrete culvert	1	140.83
	Concrete arch culvert	6	2,084.72
	Concrete deck girder	1	1,880.00
	Concrete slabs	5	5,677.28
	Steel trusses with concrete floor and abutment	5	11,994.16
		79	$ 37,751.24

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 319.12	$ 1,483.52

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 858.76	$ 7,520.10
	Amount of overdraft		
	Amount paid in	1913	1914
	Outstanding warrants Nov. 1		17,789.48
	Outstanding bills Nov. 1		
	Amount of balance Nov. 1	1,640.73	3,368.76
	Amount of overdraft Nov. 1	7,520.19	298.83
	Estimated amount to be collected	1914	1915
II.	Equipment and Material.		18,096.06
	Road material on hand Nov. 1	1913	1914
	Road machinery on hand Nov. 1		180.00
III.	Repair.		2,118.00
	Amount spent on road repairs on county road system		5,071.81
IV.	Culverts Classified as Road Work.		
	Total	648.44	4,144.43
V.	Maintenance of County Road System.		
	No. of miles county road system	93.3	93.3
	No. of miles regularly dragged	---	93.3
	Average number of times dragged	---	9
	Average cost per mile dragged both sides	$ 1.00	$ .80
VI.	Permanent Work on County Road System.		
	24 miles permanently graded	3,512.31	
	3.3 miles surfaced with 14' gravel	2,228.65	
	8 miles to permanent grade with standard cross section (Class II-A)		
	2,600 feet surfaced with 9' gravel		14,938.09
	45 miles surfaced with 14' gravel		468.72
	.17 miles surfaced with 26' gravel		636.75
VII.	Permanent Work on Township Road System.		468.72
VIII.	Engineering.	1913	1914
	No. of miles surveyed	23	28.5
	No. of miles staked for grader repair	---	---
	No. of miles profile platted	21	28.5
	No. of miles grade line approved by Highway Commis'n	12	4
	No. of miles officially approved by Highway Commis'n	5	12
IX.	Total Engineering Cost	$ 1,396.72	$ 2,624.57

DUBUQUE COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1		$ 718.66
	Overdraft Jan. 1		
	Amount collected to Nov. 1		38,975.28
	Amount of balance Nov. 1		18,234.26
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		38,555.83
	Estimated bridge funds to be collected during	1914	1915
II.	Equipment and Material.		39,400.00
	Bridge and culvert material on hand Nov. 1	1913	1914
	Bridge and culvert equipment on hand Nov. 1		1,000.00
III.	Repair.		100.00
	Amount spent in repair wood bridges	7,818.36	8,389.54
	Amount spent in repair steel bridges (wood floors)	1,176.36	2,655.32
	Amount spent in repair concrete bridges	257.35	303.38

		1914 No.	1914 Cost
IV.	New Construction.		
	Corrugated pipe culverts	12	$ 2,565.00
	Concrete box culverts	22	12,800.50
	Circular concrete culverts	15	2,415.81
	I-beam concrete abutments	12	14,717.00
	Concrete deck girder	1	1,370.00
	Concrete slabs	2	1,480.00
	Steel truss—concrete floor and abutments	3	5,415.73
	Miscellaneous bridge	1	1,042.47
		68	$ 41,806.51

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries and transportation and supplies	$ 940.50	$ 2,978.50

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 16,263.55	
	Amount of overdraft		$ 8,063.17
	Amount paid in	1913	1914
	Outstanding warrants Nov. 1	23,832.88	45,969.54
	Outstanding bills Nov. 1		
	Amount of balance Nov. 1		
	Amount of overdraft Nov. 1	639.00	
	Estimated amount to be collected	1914	1915
II.	Equipment and Material.		38,940.00
	Road material on hand Nov. 1	1913	1914
	Road machinery on hand Nov. 1	3,330.00	2,385.00
III.	Repair.		
	Amount spent on road repairs on County Road System	5,632.98	14,099.82
IV.	Culverts Classified as Road Work.		
	Total	1,845.91	8,463.00
V.	Maintenance of County Road System.		
	No. of miles County Road System	167.8	167.8
	No. of miles regularly dragged	77	77
	Average number of times dragged	6	13.5
	Average cost per mile dragged (both sides)	$ .80	$ .80
VI.	Permanent Work on County Road System.		
	Permanently graded, 4 miles costing	446.40	
	Tractor grader work (Class II-C) 43.5 miles costing		4,347.90
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	21	27
	No. of miles staked for grader repair	---	---
	No. of miles profile platted	11.5	18
	No. of miles grade line approved by Highway Commission		10
	No. of miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.		$ 3,790.78

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 8,963.49	$ 23,122.45
	Overdraft Jan. 1		
	Amount collected to Nov. 1	18,695.70	15,297.86
	Amount of balance Nov. 1	22,906.24	26,676.87
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		300.00
		1914	1915
	Estimated bridge funds to be collected	15,000.00	16,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	600.00	1,000.00
	Bridge and culvert equipment on hand Nov. 1	600.00	
III.	Repair.		
	Amount spent in repair wood bridges	700.00	
	Amount spent in repair steel bridges (wood floors)	531.43	3,337.05
	Amount spent in repair concrete bridges		

		1914 No.	1914 Cost
IV.	New Construction.		
	219′ concrete girder	1	$ 15,000.00
	64′ concrete girder	1	2,853.00
	30′ concrete girder	1	1,633.00
	12′x16′ slab (hand rail not on)	1	886.74
	Concrete box culverts	11	4,922.55
	Concrete circular culverts	14	1,545.19
	14′x10′ timber bridge	1	175.00
	Corrugated iron culverts	20	500.00
		50	$ 27,015.48

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 150.00	$ 1,775.75

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 3,044.16	$ 7,989.69
	Amount of overdraft		
		1913	1914
	Amount paid in	14,520.51	19,331.37
	Oustanding warrants Nov. 1		
	Outstanding bills Nov. 1		5,000.00
	Amount of balance Nov. 1	7,989.69	4,879.31
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		19,800.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	1,488.16	4,355.00
III.	Repair.		
	Amount spent on road repairs on County Road System	3,277.02	5,002.78
IV.	Culverts Classified as Road Work.		
	Total		2,962.32
V.	Maintenance of County Road System.		
	No. miles county road system	103.5	103.5
	No. miles regularly dragged	50	90
	Average number times dragged	12	15
	Average cost per mile dragged, both sides	$ .65	$ .70
VI.	Permanent Work on County Road System.		
	Permanently graded 14 miles costing	1,411.08	
	To permanent grade with standard cross section (Class II-A) 8 miles costing		9,069.42
	Surfaced with gravel 2 miles costing		1,697.11
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	26.5	35
	No. miles staked for grader repair		12
	No. miles profile platted	22.5	37
	No. miles grade line approved by Highway Commission	3	13
	No. miles officially approved by Highway Commission		10
IX.	Total Engineering Cost—Road Construction, etc.	$ 1,443.14	$ 1,752.75

FAYETTE COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 757.52	$ 1,317.92
	Amount collected to Nov. 1	42,426.10	54,408.01
	Amount of balance Nov. 1	1,417.66	15,985.68
	Outstanding bills Nov. 1		35,000.00
	Outstanding warrants Nov. 1	5,935.00	4,177.05
		1914	1915
	Estimated bridge funds to be collected	54,676.83	56,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,600.00	400.00
	Bridge and culvert equipment on hand Nov. 1	400.00	500.00
III.	Repair.		
	Amount spent in repair wood bridges	12,256.40	7,657.06

		1913 No.	1913 Cost	1914 No.	1914 Cost
IV.	New Construction.				
	Concrete pipe culvert	1	$ 73.50		
	Concrete box culverts	51	9,555.97	100	$ 13,898.30
	Boiler pipe culvert	1	189.78		
	I-Beam concrete abutments	4	2,981.60	5	4,417.64
	Abutments	3	2,422.49		
	Concrete arches	2	1,356.66		
	Concrete slab	1	129.45		
	High truss	1	2,506.33		
	Circular concrete culverts			2	316.68
	Concrete deck girders			3	4,577.00
	Concrete through girders			5	7,502.75
	Concrete arch bridges			1	1,924.00
	Concrete slab bridges			6	5,322.22
	Corrugated pipe culverts				11,149.05
		64	$19,215.78	122	$ 49,107.64

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 630.35	$ 1,057.10

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$13,669.58	$ 11,167.00
	Amount of overdraft		
		1913	1914
	Amount paid in	28,499.55	36,422.64
	Outstanding warrants Nov. 1	5,437.27	
	Outstanding bills Nov. 1	10,000.00	10,000.00
	Amount of balance Nov. 1	11,167.00	
	Amount of overdraft Nov. 1		7.17
		1914	1915
	Estimated amount to be collected		44,600.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	4,755.00	3,284.00
	Road machinery on hand Nov. 1		
III.	Repair.		
	Amount spent on road repairs on county road system	2,435.28	2,227.03
IV.	Culverts Classified as Road Work.		
	Total	12,330.02	21,062.73
V.	Maintenance of County Road System.		
	No. miles county road system	202	202
	No. miles regularly dragged	170	202
	Average number times dragged	8	18
	Average cost per mile dragged, both sides	$ .50	$ .55
VI.	Permanent Work on County Road System.		
	Permanently graded 10⅝ miles costing	12,835.97	
	To permanent grade with standard cross section (Class II-A) 10.62 miles costing		16,639.93
	To temporary grade with standard cross section (Class II-B) 10.5 miles costing		3,602.78
	Tractor grader work (Class II-C) 6.75 miles costing		828.72
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	25	14.5
	No. miles profile platted	20	18.5
	No. miles grade line approved by Highway Commission	16	25
IX.	Total Engineering Cost—Road Construction, etc.	$ 1,033.84	$ 1,690.35

FLOYD COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 1,783.38	
	Amount collected to Nov. 1		$ 41,683.83
	Amount of balance Nov. 1	90.37	11,824.69
	Outstanding bills Nov. 1	5,134.76	14,892.83
	Outstanding warrants Nov. 1	4,187.00	45,595.60
		1914	1915
	Estimated bridge funds to be collected	40,403.09	41,113.44
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	286.00	824.38
	Bridge and culvert equipment on hand Nov. 1	484.00	1,005.00
III.	Repair.		
	Amount spent in repairing wood bridges and placing corrugated culverts	5,228.23	9,241.36

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe	11	$ 652.92	75	$ 2,597.38
	Concrete pipe culverts	2	63.32		
	Box culverts			144	22,587.22
	Concrete box culverts	80	11,397.48		
	Concrete slabs	11	7,834.32	8	6,414.79
	Concrete through girders	1	2,250.00	5	7,943.76
	Concrete deck girders			2	2,453.00
	Miscellaneous culvert	1	166.34		
		106	$ 22,364.38	234	$ 41,996.15

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 906.00	$ 1,618.91

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 2,669.61	$ 286.46
		1913	1914
	Amount paid in	7,930.10	26,090.70
	Outstanding warrants Nov. 1		14,463.94
	Outstanding bills Nov. 1		2,410.59
	Amount of balance Nov. 1	286.46	233.05
		1914	1915
	Estimated amount to be collected		27,138.08
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		149.50
	Road machinery on hand Nov. 1	3,278.00	4,365.00
III.	Repair.		
	Amount spent on road repairs on the county road system	2,091.27	1,060.60
IV.	Culverts Classified as Road Work.		
	Total	4,028.94	11,953.74
V.	Maintenance of County Road System.		
	No. miles county road system	138	138
	No. miles regularly dragged	92	138
	Average number of times dragged		21.6
	Average cost per mile dragged both sides	$ .725	$ .734
VI.	Permanent Work on County Road System.		
	Permanently graded 1.6 miles, costing	2,464.08	
	Tractor grader work (Class II-C), 60 miles costing		5,160.00
	Surfaced with 10' gravel 2.45 miles costing		586.22
	To temporary grade with standard cross section (Class II-B), 5.75 miles costing		2,861.40
VII.	Permanent Work on Township Road System.		
	Tractor grader work (Class II-C):		
	Budd Twp.—17 miles at cost of		435.00
	Pleasant Grove Twp.—13.5 miles		725.23
	Riverton		853.00
	Scott—1.5 miles		190.00
VIII.	Engineering.	1913	1914
	No. miles surveyed	33.0	
	No. miles staked for grader repair		60
	No. miles profile platted	2.7	18
	No. miles grade line approved by Highway Commission	2.7	16.8
	No. miles officially approved by Highway Commission	1.55	
IX.	Total Engineering Cost	$ 652.03	$ 821.94

FRANKLIN COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 7,583.76	$ 5,554.25
	Overdraft Jan. 1		
	Amount collected to Nov. 1	25,407.88	31,548.80
	Amount of balance Nov. 1	7,990.45	3,431.30
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	1,625.00	1,000.00
	Outstanding warrants Nov. 1	199.10	54.99
		1914	1915
	Estimated bridge funds to be collected		32,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	6,805.00	5,150.00
	Bridge and culvert equipment on hand Nov. 1	1,090.00	832.00
III.	Repair.		
	Amount spent in repair wood bridges		4,083.58
	Amount spent in repair steel bridges, wood floors		432.00
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	18	$ 3,716.17	56	$ 12,630.29
	Corrugated pipe culverts			3	95.10
	Circular concrete culvert			1	86.00
	I-Beam concrete abutments			3	7,139.12
	Concrete deck girder			1	1,202.00
	Wood pile bridges			2	351.72
	Miscellaneous bridges			9	795.45
		18	$ 3,716.17	75	$ 22,299.68

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 1,078.67	$ 1,728.79

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 4,806.77	$ 12,684.47
	Amount of overdraft		
		1913	1914
	Amount paid in	19,227.66	23,393.46
	Outstanding warrants Nov. 1	668.51	747.49
	Outstanding bills Nov. 1	1,500.00	2,000.00
	Amount of balance Nov. 1	12,684.47	
	Amount of overdraft		4,084.64
		1914	1915
	Estimated amount to be collected		25,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		4,207.42
	Road machinery on hand Nov. 1		6,500.00
III.	Repair.		
	Amount spent on road repairs on county road system		2,035.75
IV.	Culverts Classified as Road Work.		
	Total	1,466.66	4,207.42
V.	Maintenance of County Road System.		
	No. miles county road system	178.5	178.5
	No. miles regularly dragged		
	Average number times dragged		6.6
	Average cost per mile dragged, both sides	$ .70	$ .70
VI.	Permanent Work on County Road System.		
	To temporary grade with standard cross section (Class II-B), 27.12 miles costing		17,797.60
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	38	75
	No. miles staked for grader repair		
	No. miles profile platted	38	50
	No. miles grade line approved by Highway Commission	23	8
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 1,701.33	$ 3,775.68

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 483.38	$ 1,082.59
	Overdraft Jan. 1		
	Amount collected to Nov. 1 (Incl. bond)	130,729.86	33,824.40
	Overdraft Nov. 1		
	Amount of balance Nov. 1		
	Outstanding bills Nov. 1	779.66	6,555.62
	Outstanding warrants Nov. 1		52,540.64
	Estimated bridge funds to be collected	1914	1915
II.	Equipment and Material.	32,000.00	36,000.00
	Bridge and culvert material on hand Nov. 1	1913	1914
	Bridge and culvert equipment on hand Nov. 1	2,000.00	7,000.00
III.	Repair.		350.00
	Amount spent in repair of wood bridges		
	Amount spent in repair of steel bridges with wood floors		
	Amount spent in repairing concrete bridges		

		1914	
		No.	Cost
IV.	New Construction.		
	Concrete pipe culverts	17	$ 1,653.79
	Concrete box culverts	27	19,062.23
	Wood pile bridge	1	216.30
	Steel truss, concrete floor and abutments	7	24,113.09
		52	$ 45,045.41

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 716.80	$ 1,164.99

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance		
	Amount of overdraft		$ 13,415.81
		1913	1914
	Amount paid in		25,085.68
	Outstanding bills Nov. 1		1,032.48
	Outstanding warrants Nov. 1		1,032.48
	Amount of balance Nov. 1	$13,415.81	4,406.00
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		27,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	75.00	280.00
III.	Repair.		
	Amount spent for repairs on county road system		5,046.75
IV.	Culverts Classified as Road Work.		
	Total		6,209.64
V.	Maintenance of County Road System.		
	No. miles in county road system	143	143
	No. miles regularly dragged		100
	Average number of times dragged		1
	Average cost per mile dragged both sides		$ 1.00
VI.	Permanent Work on County Road System.		
	To temporary grade with standard cross section (Class II-B), 6.75 miles costing		2,572.74
	Tractor grader work (Class II-C), 25.25 miles costing		1,399.90
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed		10
	No. miles staked for grader repair		
	No. miles profile platted		
	No. miles grade line approved by Highway Commission		2
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost		$ 609.01

GREENE COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1		$ 4,399.27
	Overdraft Jan. 1	$ 640.62	
	Amount collected to Nov. 1	32,811.71	24,915.12
	Amount of balance Nov. 1		
	Overdraft Nov. 1		1,930.60
	Outstanding bills Nov. 1		825.37
	Outstanding warrants Nov. 1		1,541.74
		1914	1915
	Estimated amount to be collected	24,255.98	34,644.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	2,944.80	3,318.08
	Bridge and culvert equipment on hand Nov. 1	892.00	809.00
III.	Repair.		
	Amount spent repair wood bridges	2,122.28	864.12
	Amount spent repair steel bridges (wood floors)		301.79
	Amount spent repair concrete bridges		62.50

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts	10	$ 643.94		
	Concrete box culverts	21	8,701.46	28	$ 10,504.82
	Concrete pipe culverts	6	312.90		
	Circular concrete culverts			60	5,484.87
	Concrete arch			1	6,176.85
	Steel truss, concrete floor and abutments	1	2,750.00		
	Concrete slabs			2	2,204.30
	Miscellaneous culverts			25	768.07
		38	$12,408.30	116	$ 25,138.91

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 871.77	$ 1,365.28

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 8,834.90	
	Amount of overdraft		
		1913	1914
	Amount paid in		$ 39,527.46
	Outstanding warrants Nov. 1		7,136.81
	Outstanding bills Nov. 1		4,729.68
	Amount of balance Nov. 1		936.62
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		$ 30,163.31
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	436.00	1,021.00
III.	Repair.		
	Amount spent on road repairs county road system		472.35
IV.	Culverts Classified as Road Work.		
	Total	4,125.80	1,393.81
V.	Maintenance of County Road System.		
	No. miles county road system	132.5	132.5
	No. miles regularly dragged		132.5
	Average number times dragged		5.25
	Average cost per mile dragged both sides		$ .70
VI.	Permanent Work on County Road System.		
	To permanent grade and standard cross section (Class II-A), 24.8 miles costing		20,919.72
VII.	Permanent Work on Township Road System.		
	To permanent grade and standard cross section (Class II-A), 5.42 miles costing		4,435.29
VIII.	Engineering.	1913	1914
	No. miles surveyed	56.5	39
	No. miles staked for grader repair		
	No. miles profile platted	30	44
	No. miles grade line approved by Highway Commission	8	26
	No. miles officially approved by Highway Commission	4	51
IX.	Total Engineering Cost—Construction, etc.	$ 883.04	$ 3,942.07

GRUNDY COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 4,022.96	$ 1,638.08
	Overdraft Jan. 1		
	Amount collected to Nov. 1	28,849.75	37,963.79
	Amount of balance Nov. 1	1,638.08	
	Overdraft Nov. 1		610.59
	Outstanding bills Nov. 1		7,500.00
	Outstanding warrants Nov. 1	2,025.60	854.70
		1914	1915
	Estimated bridge funds to be collected	38,281.64	40,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	2,000.00	1,400.00
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair of wood bridges		7,658.05
	Amount spent in repair of steel bridges with wood floors		
	Amount spent in repair of concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete pipe culvert	1	$ 98.20		
	Concrete box culverts	55	9,101.40	111	$ 29,832.92
	Concrete arch culvert	1	150.38		
	Concrete through girder			1	2,078.00
	I-Beam concrete abutments	5	8,782.28	2	2,645.94
	Steel trusses, concrete floor and abutments	2	5,426.96	1	6,247.00
	Concrete slabs	11	5,284.71	10	6,875.58
	Miscellaneous culvert	1	393.57		
		76	$29,237.50	126	$ 47,179.44

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 1,551.05	$ 2,294.34

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 2,293.76	$ 4,099.44
	Amount of overdraft		
		1913	1914
	Amount paid in	14,068.31	31,195.53
	Outstanding warrants Nov. 1	37.00	
	Outstanding bills Nov. 1	300.00	500.00
	Amount of balance Nov. 1	4,099.44	4,390.53
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		31,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	385.00	5,180.81
III.	Repair.		
	Amount spent on road repairs on county road system	7,167.78	7,451.41
IV.	Culverts Classified as Road Work.		
	Total		12,449.33
V.	Maintenance of County Road System.		
	No. miles county road system	153.5	153.5
	No. miles regularly dragged		153.5
	Average number times dragged		17
	Average cost per mile dragged both sides	$ .75	$ .75
VI.	Permanent Work on County Road System		
	Permanently graded, 6 miles costing	3,159.14	
	Tractor grader work (Class II-C), forty-two miles, costing		3,071.55
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	26	12
	No. of miles staked for grader repair		
	No. miles profile platted	3	10
	No. miles grade line approved by Highway Comm'ssion	1	
	No. miles officially approved by Highway Commission		3
IX.	Total Engineering Cost	$ 623.30	$ 1,713.35

GUTHRIE COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 6,260.96	$ 61.37
	Overdraft Jan. 1		
	Amount collected to Nov. 1	26,675.55	33,631.58
	Amount of balance Nov. 1	15,786.86	2,778.01
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	2,880.00	7,286.00
	Outstanding warrants Nov. 1		5,674.87
		1914	1915
	Estimated bridge funds to be collected during	30,000.00	34,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	48.75	15.00
	Bridge and culvert equipment on hand Nov. 1	10.75	25.00
III.	Repair.		
	Amount spent in repair wood bridges	8,451.65	8,032.17
	Amount spent in repair steel bridges (wood floors)	742.11	44.25
	Amount spent in repair concrete bridges		4.00

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts	20	$ 979.14		
	Concrete pipe culverts	2	393.00	8	$ 1,087.71
	Concrete box culverts	19	8,573.42	19	12,271.85
	Circular concrete culverts			12	1,514.28
	Boiler pipe	2	326.10		
	Sewer pipe culvert			1	65.00
	Wood pile bridges	9	1,169.51		
	Head walls			10	1,325.91
	Steel truss, concrete floor and abutment	1	1,746.13		
		53	$13,187.30	45	$ 16,264.75

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 595.09	$ 954.03

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$11,428.73	$ 20,294.16
	Amount of overdraft		
		1913	1914
	Amount paid in	25,593.90	35,504.17
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		
	Amount of balance Nov. 1	20,294.16	2,894.88
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected	28,100.00	35,500.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	1,659.75	2,900.00
III.	Repair.		
	Amount spent on repair county road system	9,825.65	17,392.83
IV.	Culverts Classified as Road Work.		
	Total		4,000.00
V.	Maintenance of County Road System.		
	No. miles county road system	196	196
	No. miles regularly dragged		196
	Average number of times dragged		15.1
	Average cost per mile dragged both sides	$ .80	$ .80
VI.	Permanent Work on County Road System.		
	Permanently graded, 4.4 miles costing	7,203.21	
	Garves' Hill cut down at cost of	2,486.00	
	Grading and surfacing with gravel, 3.5 miles, costing	1,510.69	
	To permanent grade with standard cross section (Class II-A), .34 miles costing		191.00
	Spent on surfacing with 12' gravel		969.80
	Retaining wall work cemetery at cost of		1,083.75
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	5.3	2
	No. miles staked for grader repair		
	No. miles profile platted	5.3	2
	No. miles grade line approved by Highway Commission	5.3	
	No. miles officially approved by Highway Commission	.4	
IX.	Total Engineering Cost—Road Construction, etc.	$ 520.43	$ 858.57

HAMILTON COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1		$ 8,594.88
	Overdraft Jan. 1		
	Amount collected to Nov. 1	$ 28,065.02	36,192.43
	Amount of balance Nov. 1	10,295.58	17,562.85
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		302.31
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	37,967.46	38,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	900.00	1,800.00
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair of wood bridges	2,489.27	3,487.92
	Amount spent in repair of steel bridges with wood floors		500.00
	Amount spent in repair of concrete bridges	255.40	

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe	1	$ 42.33		
	Concrete box culverts			27	$ 20,000.59
	I-Beam on piling	3	1,871.34		
	Concrete through girder			1	1,598.00
	Wood pile bridge	1	80.62		
	Concrete slab			1	762.00
		5	$ 1,995.29	29	$ 22,360.59

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies		$ 3,000.54

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$12,253.03	$ 19,192.67
	Amount of overdraft		
		1913	1914
	Amount paid in		44,035.11
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		1,093.80
	Amount of balance Nov. 1	19,192.67	14,270.94
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		41,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	6,706.57	11,556.00
III.	Repair.		
	Amount spent on road repairs on county road system	840.46	1,533.54
IV.	Culverts Classified as Road Work.		
	Total	936.88	11,436.52
V.	Maintenance of County Road System.		
	No. of miles county road system	177	177
	No. of miles regularly dragged	62	160
	Average number of times dragged	10	15.4
	Average cost per mile dragged both sides	$ .75	$ .75
VI.	Permanent Work on County Road System.		
	12 miles to permanent grade with standard cross section (Class II-A)		8,562.25
	25.5 miles to temporary grade with standard cross section (Class II-B)		3,018.57
	Tractor grader work (Class II-C) 20.5 miles		1,432.76
VII	Permanent Work on Township Road System.		
	Tractor grader work (Class II-C) 7.5 miles		370.00
VIII	Engineering.	1913	1914
	No. of miles surveyed	23	62.8
	No. of miles staked for grader repair		
	No. of miles profile platted	14	42.5
	No. miles grade line approved by Highway Commission		29
	No. of miles officially approved by Highway Commission		34
IX.	Total Engineering Cost	$ 654.16	$ 3,614.95

HANCOCK COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 4,438.36	$ 2,090.23
	Overdraft Jan. 1		
	Amount collected to Nov. 1	25,334.78	33,202.58
	Amount to balance Nov. 1	5,730.84	798.20
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		3,100.00
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected during	23,721.08	26,828.60
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov.1	3,000.00	4,973.70
	Bridge and culvert equipment on hand Nov. 1	597.51	523.50
III.	Repair.		
	Amount spent in repair wood bridges	7,586.53	1,247.67
	Amount spent in repair steel bridges, wood floors		215.35
	Amount spent in repair concrete bridges		303.10

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	1	$ 191.10	31	$ 7,568.44
	Circular concrete culverts	4	484.47	29	4,724.14
	Abutments	4	1,850.07	3	911.29
	Wood pile bridges	21	5,875.73	8	2,310.35
	Concrete arch culverts			12	2,115.00
	Concrete deck griders			2	2,400.00
	Concrete arch bridges			3	3,231.00
	Concrete slabs			2	1,907.00
		30	$ 8,401.37	93	$ 25,167.22

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 251.25	$ 800.00

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 8,074.56	$ 11,858.41
	Amount of overdraft		
		1913	1914
	Amount paid in	21,321.26	32,019.76
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		3,000.00
	Amount of balance Nov. 1	11,858.41	12,485.07
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected during		32,025.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	1,043.00	2,895.00
	Road machinery on hand Nov. 1		
III.	Repair.		
	Amount spent on road repair on County Road System	3,862.85	1,894.75
IV.	Culverts Classified as Road Work.		
	Total	1,000.00	1,000.00
V.	Maintenance of County Road System.		
	No. miles in County Road System	151	151
	No. miles regularly dragged	104	120
	Average number times dragged	10	16.6
	Average cost per mile dragged both sides	$ .83	$ .774
VI.	Permanent Work on County Road System.		
	Permanently graded, 6 miles at cost of	1,156.46	
	Spent surfacing with gravel		4,069.40
	To temporary grade with standard cross section (Class II-B) 27.12 miles at cost of		15,670.98
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	19	43
	No. miles staked for grader repair		
	No. miles profile platted	17	25
	No. miles grade line approved by Highway Commission	16	16
	No. miles officially approved by Highway Commission		16
IX.	Total Engineering Cost—Road Construction, etc.	$ 502.50	$ 1,961.35

HARDIN COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 6,243.80	$ 4,815.82
	Overdraft Jan. 1		
	Amount collected to Nov. 1	29,950.70	48,638.11
	Amount of balance Nov. 1	4,422.96	4,443.73
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	2,881.91	1,586.96
	Outstanding warrants Nov. 1		368.04
		1914	1915
	Estimated bridge funds to be collected	45,000.00	48,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	5,000.00	8,010.15
	Bridge and culvert equipment on hand Nov. 1	1,116.00	1,854.55
III.	Repair.		
	Amount spent in repair wood bridges	14,530.49	6,798.72
	Amount spent in repair steel bridges (wood floors)	323.10	4,454.95
	Amount spent in repair concrete bridges		312.67

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe	1	$ 16.47		
	Concrete box culverts	3	879.90	16	$ 1,861.70
	Circular concrete culvert	1	273.62		
	Concrete arch culverts	36	7,684.97	110	18,185.59
	Retaining wall	1	472.85		
	Concrete arch bridges	2	6,425.00		
	Concrete slab bridges	1	499.50		
	Concrete slabs			5	1,889.18
	I-beam concrete abutment			1	505.22
	Miscellaneous culverts			2	312.67
		45	$16,252.31	134	$ 22,844.36

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 1,988.72	$ 1,947.83

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 578.28	$ 8,611.08
	Amount of overdraft		
		1913	1914
	Amount paid in		32,748.88
	Outstanding warrants Nov. 1		570.00
	Outstanding bills Nov. 1	356.75	5,871.58
	Amount of balance Nov. 1	8,611.08	
	Amount of overdraft Nov. 1		392.52
		1914	1915
	Estimated amount to be collected		34,000.00
II.	Equipment and Material.	1913	1914
	Amount spent on road repairs on county road system	670.00	4,170.00
III.	Repair.		
	Amount spent on road repairs on County Road System	2,271.20	6,448.64
IV.	Culverts Classified as Road Work.		
	Total	1,546.26	16,497.54
V.	Maintenance of County Road System.		
	No. miles County Road System	173.8	173.8
	No. of miles regularly dragged	158	168
	Average number times dragged	10	19.72
	Average cost per mile dragged, both sides	$ .75	$ .75
VI.	Permanent Work on County Road System.		
	To permanent grade and standard cross section (Class II-A) 6.6 miles at cost of		9,513.98
	Tractor-grader work (Class II-C) 45 miles costing		4,449.42
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	82	40
	No. miles staked for grader repair		50
	No. miles profile platted		10
	No. miles approved (grade line) by Highway Commission		15
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 694.90	$ 4,885.65

HARRISON COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$13,233.78	
	Overdraft Jan. 1		$ 3,785.93
	Amount collected to Nov. 1	25,182.89	46,845.58
	Amount of balance Nov. 1		
	Overdraft Nov. 1	4,705.55	7,578.89
	Outstanding bills Nov. 1		2,500.00
	Outstanding warrants Nov. 1	57.17	
		1914	1915
	Estimated bridge fund to be collected	49,168.23	48,226.65
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	2,080.00	200.00
	Bridge and culvert equipment on hand Nov. 1	125.00	2,000.00
III.	Repair.		
	Amount spent repair wood bridges		29,570.13
	Amount spent repair steel bridges (wood floors)		2,989.46
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	4	$ 2,217.40	5	$ 5,480.00
	Circular concrete culvert	1	490.74		
	Wood box culverts	5	368.49		
	Boiler pipe	1	195.00		
	Wood pile bridges	8	975.33	20	3,185.50
	Concrete arch	1	2,044.00		
	Steel trusses on piling	21	12,354.11		
	Concrete deck girder			1	2,304.37
	Steel truss with concrete floor and abutm'ts			1	4,538.30
		41	$18,645.07	17	$ 15,518.97

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 650.75	$ 1,515.22

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 4,493.95	$ 6,575.20
	Amount of overdraft		
		1913	1914
	Amount paid in	19,323.75	36,916.58
	Outstanding warrants Nov. 1		5,000.00
	Outstanding bills Nov. 1		13,429.70
	Amount of balance Nov. 1	6,575.20	
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		37,935.99
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	980.00	1,100.00
	Road machinery on hand Nov. 1		
III.	Repair.		
	Amount spent on road repairs on County Road System		23,845.72
IV.	Culverts Classified as Road Work.		
	Total		12,062.48
V.	Maintenance of County Road System.		
	No. miles County Road System	168	168
	No. miles regularly dragged	151	168
	No. times dragged (average)	6	
	Average cost per mile dragged, both sides	$ .50	$ .60
VI.	Permanent Work on County Road System.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed		6.5
	No. miles staked for grader repair		6.5
	No. of miles profile platted		3.5
	No. miles grade line approved by Highway Commission		3.5
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Construction, etc.	$ 344.05	$ 743.24

HENRY COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 1,595.67	$ 1,011.17
	Overdraft Jan. 1		
	Amount collected to Nov. 1	27,879.43	29,528.29
	Amount of balance Nov. 1	6,889.30	
	Overdraft Nov. 1		5,290.34
	Outstanding bills Nov. 1	2,995.85	100.00
	Outstanding warrants Nov. 1	146.50	5,099.25
		1914	1915
	Estimated bridge funds to be collected	28,000.00	15,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	710.00	800.00
	Bridge and culvert equipment on hand Nov. 1	845.00	2,140.00
III.	Repair.		
	Amount spent in repair wood bridges Amount spent in repair steel bridges (wood floors) Amount spent in repair concrete bridges		4,963.62

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe	44	$ 3,158.45	65	$ 5,013.13
	Concrete box culverts	47	4,919.08	81	13,355.67
	I-beam concrete abutments	1	306.60	6	5,180.31
	Steel girders	2	2,308.50		
	Concrete slab	1	433.70		
	Steel trusses, concrete floor and abutments	2	2,453.80	2	3,804.80
	Circular concrete culverts			8	1,153.19
	Sewer pipe culvert			1	16.25
	Concrete deck girder			1	1,747.92
	Miscellaneous bridge			1	12.80
		97	$13,580.13	165	$ 30,284.10

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 930.00	

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance		$ 546.18
	Amount of overdraft	$ 1,476.54	
		1913	1914
	Amount paid in		25,274.53
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		500.00
	Amount of balance Nov. 1	546.18	6,233.33
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		25,500.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	4,525.02	2,050.00
	Road machinery on hand Nov. 1		
III.	Repair.		
	Amount spent on road repairs on County Road System	7,601.15	3,500.00
IV.	Culverts Classified as Road Work.		
	Total	4,288.06	4,000.00
V.	Maintenance of County Road System.		
	No. miles County Road System	132.3	132.3
	No. miles regularly dragged	127.5	127.5
	Average number times dragged	9	23.7
	Average cost per mile dragged, both sides	$ 1.04	
VI.	Permanent Work on County Road System.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	49	44
	No. miles staked for grader repair		
	No. miles profile platted		50
	No. miles grade line approved by Highway Commission		3
	No. miles officially approved by Highway Commission		1
IX.	Total Engineering Cost—Road Construction, etc.	$ 591.67	$ 545.30

HOWARD COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 3,762.56	$ 13,611.69
	Overdraft Jan. 1		
	Amount collected to Nov. 1	23,486.27	27,284.74
	Amount of balance Nov. 1	21,675.42	
	Overdraft Nov. 1		6,443.98
	Outstanding bills Nov. 1	244.90	6,370.00
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	28,000.00	28,541.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	947.00	750.00
	Bridge and culvert equipment on hand Nov. 1	950.00	1,130.00
III.	Repair.		
	Amount spent in repair wood bridges	1,730.73	644.00
	Amount spent in repair steel bridges (wood floors)		812.01
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts	4	$ 321.87	4	$ 191.00
	Concrete box culverts	30	6,162.38	113	26,131.66
	1 concrete thru girders	1	1,650.00	2	3,160.00
	Concrete slabs	2	3,250.00		
	Circular concrete culverts			50	5,059.09
	I-beams with concrete floor and abutments			3	2,995.00
	Wood pile bridges			3	1,410.00
	Concrete slab bridges			7	9,199.00
	Steel trusses with concrete floor and abut.			5	12,121.00
		37	$11,384.25	187	$ 60,266.75

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 950.54	$ 2,098.00

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 3,566.62	$ 3,800.77
	Amount of overdraft		
		1913	1914
	Amount paid in		19,351.96
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		300.00
	Amount of balance Nov. 1	3,800.77	6,376.77
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		21,095.31
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	545.00	3,855.00
III.	Repair.		
	Amount spent on road repairs on County Road System		1,904.47
IV.	Culverts Classified as Road Work.		
	Total	2,596.96	
V.	Maintenance of County Road System.		
	No. miles County Road System	122.3	122.3
	No. miles regularly dragged	50	122.3
	Average number times dragged		12
	Average cost per mile dragged, both sides	$ .60	$ .75
VI.	Permanent Work on County Road System.		
	Permanently graded, 1.25 miles, costing	2,540.90	
	To temporary grade with standard cross section (Class II-B) 4.36 miles, costing		5,159.92
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	11.5	5
	No. miles staked for grader repair		27
	No. miles profile platted	8	2
	No. miles grade line approved by Highway Commission	7	5
	No. miles officially approved by Highway Commission	2	4
IX.	Total Engineering Cost—Road Construction, etc.	$ 460.60	$ 1,095.00

HUMBOLDT COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 597.97	$ 2,362.75
	Overdraft Jan. 1		
	Amount collected to Nov. 1	24,503.07	20,840.63
	Amount of balance Nov. 1	2,405.74	14,627.59
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	300.00	6,000.00
	Outstanding warrants Nov. 1	16,718.44	14,703.41
		1914	1915
	Estimated bridge funds to be collected	33,923.34	34,182.91
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,150.00	100.00
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair wood bridges	2,272.04	800.00
	Amount spent in repair steel bridges (wood floors)	1,804.55	1,000.00
	Amount spent in repair concrete bridges	40.00	310.00

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe	1	$ 100.00		
	Concrete pipe culvert	1	77.91		
	Concrete box culverts	15	4,068.61	30	$ 8,971.17
	I-beam concrete abutments	7	6,939.87	1	1,145.00
	Steel trusses, concrete floor and abutments	2	4,820.81	1	2,235.00
	High steel truss	1	13,854.75		
	Concrete slab			1	1,003.25
	Miscellaneous culverts		356.22		
		27	$30,218.16	33	$ 12,354.42

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 495.60	$ 791.50

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$12,795.23	$ 20,377.92
	Amount of overdraft		
		1913	1914
	Amount paid in		48,202.57
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		14,000.00
	Amount of balance Nov. 1	20,377.92	12,335.12
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		26,509.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	1,945.00	1,635.00
III.	Repair.		
	Amount spent on road repairs on County Road System	391.23	
IV.	Culverts Classified as Road Work.		
	Total	280.41	
V.	Maintenance of County Road System.		
	No. miles County Road System	129	129
	No. miles regularly dragged	129	129
	Average number of times dragged	11	15
	Average cost per mile dragged, both sides	$ .77	$ .75
VI.	Permanent Work on County Road System.		
	Permanently graded 63 miles, costing	$ 3,173.66	
	To permanent grade and standard cross section (Class II-A) 10.87 miles, costing		20,468.50
	Tractor grader work (Class II-C) 70.6 miles, costing		8,963.25
	Surfaced with 12' gravel, 1.25 miles, costing		777.58
VII.	Permanent Work on Township Road System.		
	Tractor grader work (Class II-C) 16 miles, costing		4,718.08
VIII.	Engineering.	1913	1914
	No. miles surveyed	15	28.25
	No. miles staked for grader repair		
	No. miles profile platted	15	28.25
	No. miles grade line approved by Highway Commission	11.5	23.25
	No. miles officially approved by Highway Commission		4
IX.	Total Engineering Cost—Road Construction, etc.	$ 463.56	$ 1,740.25

IDA COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$19,270.45	$ 16,605.23
	Overdraft Jan. 1		
	Amount collected to Nov. 1	24,116.43	35,685.67
	Amount of balance Nov. 1	16,956.84	14,003.81
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		7,806.66
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	34,986.94	29,480.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	120.00	2,488.40
	Bridge and culvert equipment on hand Nov. 1	125.00	615.00
III.	Repair.		
	Amount spent in repair of wood bridges	3,160.31	9,960.03
	Amount spent in repair of steel bridges with wood floors		299.20
	Amount spent in the repair of concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	4	$ 1,492.75	41	$ 20,783.70
	Concrete arch	1	12,031.00		
	Concrete slabs	4	3,121.68	6	9,457.57
	Steel trusses, concrete floor and abutments	2	3,638.86	4	5,410.28
	I-Beam pile abutment	1	1,274.53		
	Corrugated pipe culverts				6,618.44
		12	$21,558.82	51	$ 42,269.99

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 768.50	$ 932.21

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 2,112.70	$ 5,989.56
	Amount of overdraft		
		1913	1914
	Amount paid in	8,526.13	20,950.18
	Outstanding bills Nov. 1	400.00	3,004.83
	Outstanding warrants Nov. 1		
	Amount of balance Nov. 1	5,989.56	7,190.46
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		19,372.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	350.00	1,875.00
III.	Repair.		
	Amount spent on road repairs on the county road system	698.34	1,584.24
IV.	Culverts Classified as Road Work.		
	Total	7,956.82	15,703.36
V.	Maintenance of County Road System.		
	No. miles county road system	132	132
	No. miles regularly dragged	---	123
	Average number of times dragged		22
	Average cost per mile dragged both sides		$ .75
VI.	Permanent Work on County Road System.		
	Permanently graded 1,400 ft. costing	$ 1,518.00	
	Tractor grader work (Class II-C) 49 miles costing		2,415.73
	Spent on permanent grading		2,204.81
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	8	---
	No. of miles staked for grader repair	---	49
	No. miles profile platted	2	6
	No. miles grade line approved by Highway Commission	---	---
	No. miles officially approved by Highway Commission	---	---
IX.	Total Engineering Cost	$ 313.69	$ 958.45

IOWA COUNTY.

Bridges

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1		$ 1,337.82
	Overdraft Jan. 1	$ 3,942.71	
	Amount collected to Nov. 1	37,999.65	46,682.02
	Amount of balance Nov. 1		13,876.73
	Overdraft Nov. 1	8,542.42	
	Outstanding bills Nov. 1	3,207.58	1,589.14
	Outstanding warrants Nov. 1	8,542.42	379.00
		1914	1915
	Estimated bridge funds to be collected	46,722.00	49,500.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	7,270.71	6,551.54
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair wood bridges	7,434.71	8,671.49
	Amount spent in repair steel bridges (wood floors)	5.85	108.00
	Amount spent in repair concrete bridges		173.37

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	24	$ 9,852.54	49	$ 21,406.78
	I-Beam concrete abutments	10	7,397.10	14	12,221.34
	Concrete slab	1	859.64		
	Steel trusses, concrete floor and abutments	3	5,837.41		
	Miscellaneous bridges	9	10,480.93		
	Wood pile bridges			2	790.93
	Corrugated pipe culverts				9,007.82
		47	$34,427.62	65	$ 43,426.87

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies	$ 511.84	$ 1,338.17

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 6,043.23	
	Amount of overdraft		$ 38.76
		1913	1914
	Amount paid in	11,003.10	36,740.08
	Outstanding warrants Nov. 1	286.54	3,856.02
	Outstanding bills Nov. 1		3,450.00
	Amount of balance Nov. 1	2,693.01	95.08
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		36,600.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	693.25	5,305.00
III.	Repair.		
	Amount spent on road repairs on County Road System	1,856.98	5,647.30
IV.	Culverts Classified as Road Work.		
	Total	5,804.26	9,008.32
V.	Maintenance of County Road System.		
	No. of miles county road system	171	171
	No. miles regularly dragged	155	171
	Average number times dragged	11	20
	Average cost per mile dragged, both sides	$ .80	$ .80
VI.	Permanent Work on County Road System.		
	Permanently graded 42 miles costing	4,606.26	
	To permanent grade with standard cross section (Class II-A) 9.45 miles costing		24,922.50
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	43.5	122
	No. miles staked for grader repair		
	No. miles profile platted	28.5	74
	No. miles grade line approved by Highway Commission	4	23
	No. miles officially approved by Highway Commission		
	Total Engineering Cost—Road Construction, etc	$ 979.82	$ 2,329.07

JACKSON COUNTY.

Bridges

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1		$ 289.17
	Overdraft Jan. 1		
	Amount collected to Nov. 1		25,702.44
	Amount of balance Nov. 1		2,258.96
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		16,000.00
	Outstanding warrants Nov. 1		18,932.96
		1914	1915
	Estimated bridge funds to be collected		40,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		800.00
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair of wood bridges		
	Amount spent in repair of steel bridges with wood floors		
	Amount spent in repair of concrete bridges		
IV.	New Construction.		

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies		$ 2,689.35

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 2,894.93	$ 6,469.58
	Amount of overdraft		
		1913	1914
	Amount paid in	12,736.09	30,020.04
	Outstanding warrants Nov. 1		3,385.52
	Outstanding bills Nov. 1		11,000.00
	Amount of balance Nov. 1	6,469.58	692.92
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		29,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		800.00
	Road machinery on hand Nov. 1		3,148.00
III.	Repair.		
	Amount spent on repairs on county road system		16,240.10
IV.	Culverts Classified as Road Work.		
V.	Maintenance of County Road System.		
	No. of miles of county road system	162	162
	No. of miles regularly dragged	---	---
	Average number of times dragged	---	---
	Average cost per mile dragged both sides		
VI.	Permanent Work on County Road System.		
	Spent on permanent grading		2,418.13
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	---	---
	No. of miles staked for grader repair work	---	---
	No. of miles profile platted	---	---
	No. of miles grade line approved by Highway Commis'n	---	---
	No. of miles officially approved by Highway Commis'n	---	---
IX.	Total Engineering Cost		$ 1,569.65

JASPER COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$23,944.80	$ 2,561.32
	Overdraft Jan. 1		
	Amount collected to Nov. 1	41,247.94	55,284.08
	Amount of balance Nov. 1	22,577.60	351.58
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		1,488.00
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected during	46,045.32	62,200.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	2,588.00	6,500.00
	Bridge and culvert equipment on hand Nov. 1	722.00	778.00
III.	Repair.		
	Amount spent in repair wood bridges	1,195.78	2,872.00
	Amount spent in repair steel bridges (wood floors)		
	Amount spent in repair concrete bridges		590.28

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	41	$13,820.77	39	$ 16,937.21
	Concrete deck girder	1	1,162.00		
	Wood pile bridges	2	586.20		
	Concrete arch bridges	2	3,937.72		
	Concrete slab bridges	3	3,265.72		
	Boiler pipe			13	2,410.94
	Retaining wall			1	358.55
	Concrete slabs			2	4,388.74
		49	$22,772.41	55	$ 24,095.44

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies	$ 475.00	$ 1,910.00

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 5,909.43	$ 16,523.50
	Amount of overdraft		
		1913	1914
	Amount paid in	23,211.89	46,903.04
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		
	Amount of balance Nov. 1	16,523.50	12,783.01
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		47,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	6,990.90	
	Road machinery on hand Nov. 1	5,536.80	4,936.00
III.	Repair.		
	Amount spent on road repairs on County Road System	1,852.04	4,509.35
IV.	Culverts Classified as Road Work		
	Total		12,724.00
V.	Maintenance of County Road System.		
	No. of miles county road system	204.8	204.8
	No. of miles regularly dragged	204.8	204.8
	Average number of times dragged	12	20
	Average cost per mile dragged, both sides	$ .60	$ .70
VI.	Permanent Work on County Road System.		
	Permanently graded 1.3 miles costing	11,185.65	
	To permanent grade and standard cross section (Class II-A) 4.5 miles costing		7,155.45
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	34	22
	No. of miles staked for grader repair	---	---
	No. of miles profile platted	15	19
	No. miles grade line approved by Highway Commission	5	---
	No. miles officially approved by Highway Commission	2	---
IX.	Total Engineering Cost—Road Construction, etc.	$ 980.80	$ 2,125.00

JEFFERSON COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 866.08	
	Overdraft Jan. 1		$ 6,067.95
	Amount collected to Nov. 1	19,542.79	33,290.33
	Amount of balance Nov. 1		
	Overdraft Nov. 1		5,449.73
	Outstanding bills Nov. 1		5,752.80
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	32,166.66	35,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		1,963.74
	Bridge and culvert equipment on hand Nov. 1	460.00	497.00
III.	Repair.		
	Amount spent in repair wood bridges		1,061.24
	Amount spent in repair steel bridges, wood floors	3,319.02	3,308.15
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts	1	$ 375.13	172	$ 4,598.24
	Concrete box culverts	16	4,347.98	66	17,189.95
	Concrete pipe culverts			15	1,109.56
	Circular concrete culvert			1	70.36
	I-Beams on piling			6	1,997.17
	I-Beam concrete abutments			3	1,770.02
	Abutment			1	1,101.96
	Wood pile bridges			9	1,092.47
	Concrete slab			1	1,516.12
		17	$ 4,723.11	275	$ 30,445.85

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies	$ 702.65	$ 1,524.12

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 1,583.05	$ 4,982.46
	Amount of overdraft		
		1913	1914
	Amount paid in		
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1	4,521.05	3,081.35
	Amount of balance Nov. 1	4,982.46	930.06
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		23,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	2,362.87	
	Road machinery on hand Nov. 1	2,486.02	3,069.67
III.	Repair.		
	Amount spent on road repairs, on county road system		1,778.60
IV.	Culverts Classified as Road Work.		
	Total		6,055.95
V.	Maintenance of County Road System.		
	No. miles county road system	135.3	135.3
	No. miles regularly dragged	---	135.3
	Average number times dragged	---	35
	Average cost per mile dragged, both sides		$ .60
VI.	Permanent Work on County Road System.		
	To temporary grade with standard cross section (Class II-B) 12.5 miles costing		3,103.37
	Tractor grader work (Class II-C) 4.25 miles costing		438.45
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	52	3.5
	No. miles staked for grader repair		30
	No. miles profile platted	12	
	No. miles grade line approved by Highway Commission		
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 688.15	$ 865.64

JOHNSON COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$10,083.43	
	Overdraft Jan. 1		$ 1,971.61
	Amount collected to Nov. 1	35,814.00	34,142.65
	Amount of balance Nov. 1	10,505.76	1,943.30
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		176.85
	Outstanding warrants Nov. 1		14,610.68
		1914	1915
	Estimated funds to be collected during	34,638.47	50,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	4,237.35	3,462.85
	Bridge and culvert equipment on hand Nov. 1	150.00	200.00
III.	Repair.		
	Amount spent in repair wood bridges	3,955.89	1,344.60
	Amount spent in repair steel bridges (wood floors)	384.14	12,566.78
	Amount spent in repair concrete bridges	134.14	

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete pipe culverts	5	$ 248.85		
	Concrete box culverts	59	13,974.50	116	$ 24,114.15
	I-Beam concrete abutments	13	7,614.63	17	9,026.11
	Steel trusses concrete floor and abutments	6	11,362.63	1	705.67
	Corrugated pipe culverts			2	125.30
	Circular concrete culverts			2	288.61
	Boiler pipe culverts			2	126.20
		83	$33,200.01	140	$ 34,386.04

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies	$ 794.62	$ 1,294.81

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 3,804.19	$ 8,259.09
	Amount of overdraft		
		1913	1914
	Amount paid in		27,177.57
	Outstanding warrants Nov. 1		1,869.00
	Outstanding bills Nov. 1		
	Amount of balance Nov. 1	8,259.09	3,355.38
		1914	1915
	Estimated amount to be collected		37,500.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	83.76	102.80
	Road machinery on hand Nov. 1	80.00	1,540.00
III.	Repair.		
	Amount spent on road repairs on County Road System	3,371.68	31,233.87
IV.	Culverts Classified as Road Work.		
	Total	4,999.39	28,897.67
V.	Maintenance of County Road System.		
	No. of miles county road system	157	157
	No. of miles regularly dragged	90	140
	Average number of times dragged	10	21
	Average cost per mile dragged, both sides	$ .70	$ .75
VI.	Permanent Work on County Road System.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	54.3	62
	No. of miles staked for grader repair	---	---
	No. of miles profile platted	46.8	85
	No. miles grade line approved by Highway Commission	---	65
	No. miles officially approved by Highway Commission	---	---
IX.	Total Engineering Cost—Construction, etc.	$ 953.95	$ 2,985.19

JONES COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 1,062.48	$ 1,092.81
	Overdraft Jan. 1		
	Amount collected to Nov. 1	31,900.65	33,624.28
	Amount of balance Nov. 1	1,062.48	
	Overdraft Nov. 1		593.65
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		1,565.00
		1914	1915
	Estimated bridge funds to be collected during	34,644.81	36,696.38
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		160.26
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair wood bridges	9,734.48	5,312.68
	Amount spent in repair steel bridges (wood floors)		132.30
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	I-Beam concrete abutments	5	$ 3,935.90	5	$ 7,391.39
	Circular concrete culverts	6	595.00		
	Concrete box culverts	23	5,589.00	41	10,541.31
	Steel trusses, concrete floor and abutments			2	3,590.00
	Boiler pipe culvert			1	267.00
	Wooden bridges			7	2,105.00
		34	$15,119.90	56	$ 23,894.70

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies	$ 500.00	$ 1,078.00

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 1,815.19	$ 7,955.47
	Amount of overdraft		
		1913	1914
	Amount paid in		30,803.62
	Outstanding warrants Nov. 1	329.75	562.52
	Outstanding bills Nov. 1		
	Amount of balance Nov. 1	7,955.47	3,800.93
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		29,500.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		50.00
	Road machinery on hand Nov. 1		1,158.69
III.	Repair.		
	Amount spent on road repairs on County Road System	14,642.60	13,145.25
IV.	Culverts Classified as Road Work.		
	Total	821.34	5,042.10
V.	Maintenance of County Road System.		
	No. miles county road system	181	181
	No. miles regularly dragged	180	179
	Average number times dragged	5	5
	Average cost per mile dragged, both sides	$ .72	$ .70
VI.	Permanent Work on County Road System.		
	Permanently graded 2.5 miles costing	3,785.65	
	To permanent grade with standard cross section 2.83 miles costing		5,560.80
	Surfaced with 12' macadam .42 miles costing		701.35
	Paved with 16' concrete .06 mile costing		868.12
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	60	36
	No. miles staked for grader repair		
	No. miles profile platted	12	28
	No. miles grade line approved by Highway Commission	5	4
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 626.12	$ 800.00

KEOKUK COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 2,221.68	$ 916.09
	Overdraft Jan. 1	42,811.56	38,468.89
	Amount collected to Nov. 1	6,229.11	
	Amount of balance Nov. 1		4,180.24
	Overdraft Nov. 1	3,927.30	6,000.00
	Outstanding bills Nov. 1	4,766.76	12,087.59
	Outstanding warrants Nov. 1	1914	1915
	Estimated bridge funds to be collected during	38,527.57	43,798.73
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	6,132.62	7,703.55
	Bridge and culvert equipment on hand Nov. 1	1,305.00	2,918.00
III.	Repair.		
	Amount spent in repair wood bridges	10,684.01	
	Amount spent in repair steel bridges (wood floors)		15,208.04
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts	116	$ 2,021.03		
	Concrete box culverts	16	6,547.83	29	$ 11,229.92
	Masonry arch culvert	1	217.41		
	Cast iron pipe	18	714.80		
	I-Beam concrete abutments	3	4,884.62	1	1,750.00
	Steel trusses, concrete floor and abutments	2	3,646.75	1	3,861.77
	Incased vitrified pipe			1	131.52
	Concrete pipe culverts			104	15,708.99
	Wood pile bridge			1	159.71
	Steel truss, wood floor and concrete abutm't			1	1,516.85
		156	$18,032.44	138	$ 34,358.76

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 840.50	$ 1,533.88

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 4,790.76	$ 2,073.11
	Amount of overdraft		
		1913	1914
	Amount paid in		33,274.95
	Outstanding warrants Nov. 1		5,132.97
	Outstanding bills Nov. 1		
	Amount of balance Nov. 1	2,073.11	700.00
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		36,291.89
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	3,600.00	3,867.40
III.	Repair.		
	Amount spent on road repairs county road system	2,258.81	7,771.85
IV.	Culverts Classified as Road Work.		
V.	Maintenance of County Road System.		
	No. miles county road system	167.8	167.8
	No. miles regularly dragged	160	167.8
	Average number times dragged	9	21.6
	Average cost per mile dragged both sides	$ .68	$ .65
VI.	Permanent Work on County Road System.		
	Permanently graded 2.39 miles costing	9,077.64	
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	23.6	11
	No. miles staked for grader repair	61	32
	No. miles profile platted	23.6	7
	No. miles grade line approved by State Highway Commission	6	5
	No. miles officially approved by State Highway Commission		2
IX.	Total Engineering Cost—Road Construction, etc.	$ 403.65	$ 1,205.00

KOSSUTH COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 2,402.59	$ 4,823.38
	Overdraft Jan. 1		
	Amount collected to Nov. 1	40,841.17	55,616.40
	Amount of balance Nov. 1	16,762.06	4,015.44
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	15,557.67	6,000.00
	Outstanding warrants Nov. 1	60,738.22	946.67
		1914	1915
	Estimated bridge funds to be collected	55,887.17	57,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		2,000.00
	Bridge and culvert equipment on hand Nov. 1		300.00
III.	Repair.		
	Amount spent in repair wood bridges, wood floors	7,020.00	
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe culvert	1	$ 47.40		
	Concrete box culverts	29	10,114.36	32	$ 16,311.58
	Concrete deck girders	3	9,439.11	8	22,715.21
	Concrete slab bridges	4	4,237.47		
	Concrete slabs			8	9,160.24
	Steel truss on piles			3	962.00
	Miscellaneous bridges			5	622.62
		37	$23,838.34	56	$ 49,771.65

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 895.86	$ 1,284.00

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$16,878.61	$ 28,666.87
	Amount of overdraft		
		1913	1914
	Amount paid in	34,482.52	57,603.51
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		
	Amount of balance Nov. 1	28,666.87	1,558.77
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		58,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1		4,960.00
III.	Repair.		
	Amount spent on road repairs on County Road System	2,979.71	1,969.55
IV.	Culverts Classified as Road Work.		
	Total		
V.	Maintenance of County Road System.		
	No. miles county road system	265	265
	No. miles regularly dragged	186	250
	Average number of times dragged	12	
	Average cost per mile dragged, both sides	$ .90	$ .75
VI.	Permanent Work on County Road System.		
	Spent on permanent grading	21,836.58	
	Spent for surfacing	682.15	
	To permanent grade and standard cross section (Class II-A) 37 miles costing		33,826.94
	Tractor grader work (Class II-C) 33 miles costing		6,976.11
	Surfaced with 9′ gravel 5 miles at cost of		840.75
	Surfaced with 20′ gravel, 1 mile, cost to county of		70.70
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	12	80
	No. miles staked for grader repair		
	No. miles profile platted	5	45
	No. miles grade line approved by Highway Commission		
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.		$ 3,007.18

LINN COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 888.27	$ 2,225.24
	Overdraft Jan. 1		
	Amount collected to Nov. 1	36,621.34	32,526.68
	Amount of balance Nov. 1	7,031.61	2,387.34
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		4,400.00
	Outstanding warrants Nov. 1		6,320.05
		1914	1915
	Estimated bridge funds to be collected	30,447.13	35,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		5,000.00
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair of wood bridges		2,850.00
	Amount spent in repair of steel bridges, wood floors	10,664.00	1,528.62
	Amount spent in repair of concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated iron pipe culverts	8	$ 314.41	20	$ 1,406.71
	Circular concrete culverts	24	1,827.97	17	1,433.26
	Concrete box culverts	104	16,747.84	150	26,067.62
	I-Beam concrete abutments	1	750.00	7	7,136.97
	Concrete deck girder	1	1,842.00		
	Concrete slabs	3	3,087.00		
	Steel trusses, concrete floor and abutments	6	19,230.49	4	7,037.75
		147	$43,799.71	198	$ 43,082.31

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies	$ 1,633.00	$ 2,164.21

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 8,314.75	$ 6,639.42
	Amount of overdraft		
		1913	1914
	Amount paid in	24,600.83	62,068.17
	Outstanding warrants Nov. 1	4,471.44	9,178.80
	Outstanding bills Nov. 1	1,824.23	2,200.00
	Amount of balance Nov. 1	6,639.42	1,806.17
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		50,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	410.00	4,105.00
III.	Repair.		
	Amount spent on road repairs on county road system	7,449.22	16,735.98
IV.	Culverts Classified as Road Work.		
	Total	11,487.18	27,000.00
V.	Maintenance of County Road System.		
	No. miles county road system	219.3	219.3
	No. miles regularly dragged	---	180
	Average number of times dragged	---	23
	Average cost per mile dragged both sides		$ .60
VI.	Permanent Work on County Road System.		
	Permanently graded 2.3 miles costing	$ 6,530.55	
	Surfaced with 16' gravel 7,740' costing	2,413.85	
	To permanent grade with standard cross section (Class II-A) 2.94 miles, costing		7,602.35
	Surfaced with 16' macadam .63 mile costing		3,645.97
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	41	13.25
	No. of miles staked for grader repair	---	---
	No. miles profile platted	5	13.25
	No. miles grade line approved by Highway Commission	---	8.5
	No. miles officially approved by Highway Commission	---	---
IX.	Total Engineering Cost	$ 1,089.35	$ 1,686.80

LEE COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 3,475.66	$ 1,375.60
	Overdraft Jan. 1		
	Amount collected to Nov. 1	28,667.11	26,918.99
	Amount of balance Nov. 1	1,375.60	11,043.67
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		5,064.21
	Outstanding warrants Nov. 1		1,011.51
		1914	1915
	Estimated bridge funds to be collected	21,000.00	33,868.90
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		3,285.00
	Bridge and culvert equipment on hand Nov. 1	150.00	657.90
III.	Repair.		
	Amount spent in repair wood bridges		90.00
	Amount spent in repair steel bridges, wood floors		33.35
	Amount spent in repair concrete bridges		12.00

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	5	$ 2,762.41	4	$ 1,068.71
	Boiler pipe			266	15,733.24
	Concrete slab			1	1,655.09
	Steel trusses, concrete floor and abutments			3	4,542.87
		5	$ 2,762.41	274	$ 23,399.31

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies	$ 2,902.66	$ 2,412.42

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$16,025.75	$ 9,858.62
	Amount of overdraft		
		1913	1914
	Amount paid in	15,288.68	33,144.00
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		1,136.40
	Amount of balance Nov. 1	9,858.62	7,677.96
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		41,434.56
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	1,750.00	6,718.00
III.	Repair.		
	Amount spent on road repairs on county road system		3,284.53
IV.	Culverts Classified as Road Work.		
	Total		17,999.19
V.	Maintenance of County Road System.		
	No. miles county road system	150	150
	Number miles regularly dragged		150
	Average number times dragged		28.3
	Average cost per mile dragged, both sides		$ .35
VI.	Permanent Work on County Road System.		
	Tractor grader work (Class II-C) 110 miles costing		3,943.11
VII.	Permanent Work on Township Road System.		
	450' surfaced with 34' macadam with concrete curb and gutters		
VIII.	Engineering.	1913	1914
	No. miles surveyed	83	5
	No. miles staked for grader repair		
	No. miles profile platted	67	2
	No. miles grade line approved by Highway Commission		3
	No. miles officially approved by Highway Commission		3
IX.	Total Engineering Cost—Road Construction, etc.		$ 2,052.77

LOUISA COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 3,129.75	
	Overdraft Jan. 1		$ 5,454.35
	Amount collected to Nov. 1	19,934.33	23,518.85
	Amount of balance Nov. 1		785.08
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		1,000.00
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	23,491.85	20,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,200.00	2,255.46
	Bridge and culvert equipment on hand Nov. 1	400.00	390.00
III.	Repair.		
	Amount spent in repair wood bridges		1,360.03
	Amount spent in repair steel bridges (wood floors)		2,720.16
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe	8	$ 895.61		
	Concrete pipe culverts			8	$ 698.74
	Corrugated pipe culverts	2	279.60		
	Concrete box culverts	14	4,673.14	39	10,576.89
	Circular concrete culverts	2	421.55	21	2,811.31
	Concrete arch culverts	3	441.48	6	853.62
	Boiler pipe culverts	4	143.23	1	223.62
	I-Beams on piling	2	296.94		
	I-Beams concrete abutments	10	5,669.93	4	1,030.06
	Abutment			1	98.75
		45	$12,821.48	75	$ 16,292.98

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies	$ 721.00	$ 1,014.79

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 4,182.29	$ 5,330.99
	Amount of overdraft		
		1913	1914
	Amount paid in		18,267.19
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		12,000.00
	Amount of balance Nov. 1	5,330.99	
	Amount of overdraft Nov. 1		1,509.69
		1914	1915
	Estimated amount to be collected		23,115.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	288.00	3,959.00
III.	Repair.		
	Amount spent on road repairs on county road system		5,766.95
IV.	Culverts Classified as Road Work.		
	Total		6,727.42
V.	Maintenance of County Road System.		
	No. miles county road system	109	109
	No. miles regularly dragged		108
	Average number times dragged		15
	Average cost per mile dragged, both sides		$ .89
VI.	Permanent Work on County Road System.		
	Permanently graded, 1.25 miles costing	2,665.66	
	To permanent grade with standard cross section, 1.75 miles costing		5,150.49
	Paved with 16' concrete 1.37 miles costing		11,847.42
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	13.6	10.3
	No. miles staked for grader repair		
	No. miles grade line approved by Highway Commission	13.6	10.6
	No. miles profile platted	5	10.3
	No. miles officially approved by Highway Commission		12.1
IX.	Total Engineering Cost—Road Construction, etc.	$ 790.00	$ 1,558.92

LUCAS COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 718.35	$ 6,721.77
	Overdraft Jan. 1		
	Amount collected to Nov. 1	20,637.27	24,445.46
	Amount of balance Nov. 1	7,797.49	
	Overdraft Nov. 1		4,554.20
	Outstanding bills Nov. 1		1,800.00
	Outstanding warrants Nov. 1		26.77
		1914	1915
	Estimated bridge funds to be collected during	20,000.00	19,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	75.00	
	Bridge and culvert equipment on hand Nov. 1	150.00	
III.	Repair.		
	Amount spent in repair of wood bridges		262.06
	Amount spent in repair of steel bridges with wood floors		426.13
	Amount spent in repair of concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete pipe culverts	44	$ 2,504.01		
	Concrete box culverts	68	10,347.79	89	$ 20,883.19
	Circular concrete culverts			130	9,425.62
	Cast iron pipe	2	93.20	25	1,412.70
		114	$12,945.00	244	$ 31,721.51

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies	$ 687.70	$ 1,226.00

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 5,892.27	$ 8,478.34
	Amount of overdraft		
		1913	1914
	Amount paid in		25,271.48
	Outstanding warrants Nov. 1		2,910.94
	Outstanding bills Nov. 1		
	Amount of balance Nov. 1	8,478.34	
	Amount of overdraft Nov. 1		1,940.48
		1914	1915
	Estimated amount to be collected		28,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	1,175.00	1,202.00
III.	Repair.		
	Amount spent on road repairs on county road system	5,526.40	12,341.04
IV.	Culverts Classified as Road Work.		
	Total	11,932.25	6,744.54
V.	Maintenance of County Road System.		
	No. of miles county road system	136	136
	No. of miles regularly dragged	125	136
	Average number of times dragged	9	12
	Average cost per mile dragged, both sides	$ .50	$ .50
VI.	Permanent Work on County Road System.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed		
	No. of miles staked for grader repair		
	No. of miles profile platted		
	No. of miles grade line approved by Highway Commis'n		
	No. of miles officially approved by Highway Commis'n		
IX.	Total Engineering Cost	$ 340.00	$ 642.50

LYON COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 5,658.66	$ 4,467.27
	Overdraft Jan. 1		
	Amount collected to Nov. 1	30,294.61	34,878.55
	Amount of balance Nov. 1	13,689.28	3,399.89
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected during	34,700.00	26,064.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	140.40	
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair wood bridges		
	Amount spent in repair steel bridges (wood floors)		
	Amount spent in repair concrete bridges		

		1913	
		No.	Cost
IV.	New Construction.		
	Concrete box culverts	57	$ 15,465.82
	Concrete arch culverts	3	477.51
	I-Beam concrete abutments	4	3,730.38
	Concrete deck girders	2	2,680.06
	Concrete arch bridges	2	1,555.57
	Concrete slab bridge	1	1,039.35
	Miscellaneous bridge	1	948.96
		70	$ 25,897.65

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 866.50	$ 1,472.56

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 507.60	$ 16,550.47
	Amount of overdraft		
		1913	1914
	Amount paid in	12,638.76	33,282.73
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		18,100.00
	Amount of balance Nov. 1	16,550.47	18,218.45
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		35,064.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	5,694.84	5,123.00
III.	Repair.		
	Amount spent on road repairs on county road system	3,530.71	3,360.00
IV.	Culverts Classified as Road Work.		
	Total		19,847.45
V.	Maintenance of County Road System.		
	No. miles county road system	188.5	188.5
	No. miles regularly dragged		160
	Average number times dragged		12
	Average cost per mile dragged, both sides	$ .70	$ .72
VI.	Permanent Work on County Road System.		
	1913—5 miles of road put to permanent grade.		
	To temporary grade with standard cross section (Class II-B) 5 miles costing		1,604.73
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	10	9
	No. miles staked for grader repair		17
	No. miles profile platted	10	9
	No. miles grade line approved by Highway Commission	10	
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.		$ 991.73

MADISON COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 726.38	$ 2,966.81
	Overdraft Jan. 1		
	Amount collected to Nov. 1	49,350.44	35,982.23
	Amount of balance Nov. 1	8,289.83	4,712.78
	Overdraft Nov. 1		742.78
	Outstanding bills Nov. 1	274.81	45.25
	Outstanding warrants Nov. 1	1914	1915
	Estimated bridge funds to be collected	35,885.96	31,782.16
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	6,058.48	5,607.80
	Bridge and culvert equipment on hand Nov. 1	1,030.00	1,505.00
III.	Repair.		
	Amount spent in repair wood bridges		3,331.12
	Amount spent in repair steel bridges (wood floors)		371.33
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culvert	1	$ 168.81		
	Concrete box culverts	19	3,877.04	35	$ 9,399.04
	Masonry arch culvert			1	151.46
	Boiler pipe culverts	3	1,072.37	2	559.09
	Wood pile bridge	1	141.13	1	127.91
	I-Beam concrete abutment			1	1,419.49
	Miscellaneous bridge	1	253.30		
	Concrete box culverts			6	5,601.46
	Steel spans			2	12,174.50
		25	$ 5,512.65	48	$ 29,432.89

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 669.22	$ 1,024.10

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 2,938.00	$ 1,505.98
	Amount of overdraft		
		1913	1914
	Amount paid in	11,255.62	29,357.95
	Outstanding warrants Nov. 1	274.81	
	Outstanding bills Nov. 1	3,386.57	929.39
	Amount of balance Nov. 1	1,505.98	
	Amount of overdraft Nov. 1		468.27
		1914	1915
	Estimated amount to be collected		19,641.05
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	874.17	1,300.00
	Road machinery on hand Nov. 1		
III.	Road Repairs.		
	Amount spent on road repairs on county road system	6,626.78	20,429.16
IV.	Culverts Classified as Road Work.		
	Total	2,739.99	7,138.66
V.	Maintenance of County Road System.		
	No. miles county road system	162	162
	No. miles regularly dragged		162
	Average number times dragged		
	Average cost per mile dragged, both sides		
VI.	Permanent Work on County Road System.		
	Permanently graded 1.3 miles costing	1,346.94	
	To permanent grade and standard cross section (Class II-A), 1.48 miles costing		1,656.65
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	1.3	1.5
	No. miles staked for grader repair	1.3	1.5
	No. miles grade line approved by Highway Commission	1.3	1.5
	No. miles profile platted		1.5
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 278.44	$ 886.58

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1		
	Overdraft Jan. 1		
	Amount collected to Nov. 1	$22,364.55	
	Amount of balance Nov. 1	41,990.82	$ 52,246.60
	Overdraft Nov. 1		17,474.79
	Outstanding bills Nov. 1	6,406.35	
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	52,045.44	53,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,380.00	3,500.00
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair of wood bridges		24,159.19
	Amount spent in repair steel bridges, (wood floors)		3,217.15
	Amount spent in repair concrete bridges		1,979.22

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	23	$12,752.88	46	$ 27,445.51
	Boiler pipe culverts	3	595.95	12	1,583.62
	Circular concrete culvert			1	28.67
	I-Beam concrete abutment	1	1,833.07	4	2,674.42
	Abutment	1	1,400.94		
	Concrete slab bridges	4	4,710.92	2	2,068.27
	Miscellaneous bridge	1	1,975.26		
		33	$23,269.02	65	$ 33,800.49

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 1,123.00	$ 1,456.11

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 8,504.87	$ 17,474.79
	Amount of overdraft		
		1913	1914
	Amount paid in	20,276.29	35,596.80
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1	23.50	
	Amount of balance Nov. 1	17,474.79	2,851.20
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		37,700.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	1,150.00	2,875.00
	Road machinery on hand Nov. 1		
III.	Repair.		
	Amount spent on road repairs on county road system	4,000.00	13,362.84
IV.	Culverts Classified as Road Work.		
	Total	1,046.16	8,052.74
V.	Maintenance of County Road System.		
	No. miles county road system	131.8	131.8
	No. miles regularly dragged	100	127
	Average number times dragged	14	
	Average cost per mile dragged, both sides	$ .80	$ .80
VI.	Permanent Work on County Road System.		
	To permanent grade and standard cross section (Class II-A) 2 miles costing		2,812.00
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	59	11
	No. miles staked for grader repair		2
	No. miles grade line approved by Highway Commission	8	2
	No. miles profile platted		2
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 1,505.00	$ 1,052.86

MARION COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 471.16	
	Overdraft Jan. 1		$ 499.75
	Amount collected to Nov. 1	32,470.44	42,145.14
	Amount of balance Nov. 1	1,172.85	18.00
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	1,600.00	14,000.00
	Outstanding warrants Nov. 1	16,459.86	80,087.56
		1914	1915
	Estimated bridge funds to be collected during	46,989.88	43,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,000.00	3,225.00
	Bridge and culvert equipment on hand Nov. 1	400.00	350.00
III.	Repair.		
	Amount spent in repair wood bridges	15,641.98	9,812.77
	Amount spent in repair steel bridges, (wood floors)		1,000.00
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	20	$ 8,336.53	94	$ 43,174.11
	I-Beam on piling	1	530.74		
	Boiler pipe culvert			1	214.53
	I-Beams on concrete abutments	1	1,274.36	4	5,225.22
	Wood pile bridges	2	426.05		
	Steel truss on piling	1	386.37		
	Steel truss on concrete floor and abutments			1	7,162.06
		25	$10,954.05	100	$ 55,775.92

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 910.00	$ 1,770.23

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 865.40	$ 4,075.16
	Amount of overdraft		
		1913	1914
	Amount paid in	17,794.95	32,796.69
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1	2,000.00	3,500.00
	Amount of balance Nov. 1	4,075.16	6,925.75
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected in		33,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	1,300.00	1,855.00
III.	Repair.		
	Amount spent on road repairs on county road system	5,086.41	21,487.69
IV.	Culverts Classified as Road Work.		
	Total	7,562.93	6,625.41
V.	Maintenance of County Road System.		
	No. of miles county road system	166.8	166.8
	No. of miles regularly dragged	160	166.8
	Average number of times dragged	8	10
	Average cost per mile dragged, both sides (per round trip)	$ .50	$ .75
VI.	Permanent Work on County Road System.		
	To temporary grade, part of work shown below but done in 1913	1,057.50	
	To temporary grade with standard cross section (Class (Class II-B), 2.73 miles costing		1,080.45
	Cutting down two hills costing		1,411.33
	Total on 4 sections of road		2,491.78
VII.	Permanent Work on Township Road System.		
	None.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	15	2.75
	No. miles staked for grader repair		
	No. miles profile platted	4.4	3.25
	No. miles grade line approved by Highway Commission	4.4	1
	No. miles officially approved by Highway Commission		5.75
IX.	Total Engineering Cost—Road Construction, etc.	$ 403.65	$ 1,205.00

MARSHALL COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 8,214.05	$ 97.80
	Overdraft Jan. 1		
	Amount collected to Nov. 1	28,758.80	46,289.06
	Amount of balance Nov. 1	97.80	
	Overdraft Nov. 1		49.92
	Outstanding bills Nov. 1	2,500.00	270.00
	Outstanding warrants	8,211.96	93.00
	Estimated bridge funds to be collected during	1914	1915
II.	Equipment and Material.	45,106.41	45,088.00
	Bridge and culvert material on hand Nov. 1	1913	1914
III.	Bridge and culvert equipment on hand Nov. 1	2,700.00	975.11
	Repair.	1,470.00	1,392.00
	Amount spent in repair wood bridges		
	Amount spent in repair steel bridges, (wood floors)		
	Amount spent in repair concrete bridges		8,490.51

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	16	$ 8,228.00	21	$ 10,424.38
	Corrugated pipe culverts				4,400.33
	Concrete deck girders	7	23,527.10	3	12,579.75
	Concrete arch bridge	1	1,698.00		
	Concrete arch culvert			1	423.20
	Head walls			4	1,083.58
	Concrete slab			1	1,461.24
	Steel truss, concrete floor and abutments			1	3,220.00
		24	$33,453.10	31	$ 33,592.48

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 2,153.25	$ 1,529.10

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$12,592.68	$ 3,679.40
	Amount of overdraft		
		1913	1914
	Amount paid in		38,234.17
	Outstanding warrants Nov. 1	1,547.80	1,600.00
	Outstanding bills Nov. 1	3,860.01	150.00
	Amount of balance Nov. 1	3,679.40	
	Amount of overdraft Nov. 1		2,100.00
	Estimated amount to be collected	1914	1915
II.	Equipment and Material.		42,000.00
	Road material on hand Nov. 1	1913	1914
	Road machinery on hand Nov. 1		
III.	Repair.	3,920.00	7,380.00
	Amount spent on road repairs on county road system		
IV.	Culverts Classified as Road Work.	3,800.00	9,722.86
	Total		
V.	Maintenance of County Road System.	3,100.00	7,580.00
	No. miles county road system		
	No. of miles regularly dragged	187.8	187.8
	Average number of times dragged	80	107
	Average cost per mile dragged, both sides	5	12
VI.	Permanent Work on County Road System.	$ .50	$ 1.26
	Permanently graded 1.6 miles costing		
	To permanent grade and standard cross section (Class II-A) 3.68 miles costing	7,230.00	
VII.	Permanent Work on Township Road System.		11,669.44
VIII.	Engineering.		
	No. of miles surveyed	1913	1914
	No. of miles staked for grader repair		97
	No. miles grade line approved by Highway Commission		
	No. of miles profile platted		5
	No. miles officially approved by Highway Commission		70
IX.	Total Engineering Cost—Road Construction, etc.	$ 1,350.00	$ 1,975.58

MITCHELL COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 212.46	$ 341.02
	Overdraft Jan. 1		
	Amount collected to Nov. 1	26,392.83	22,162.35
	Amount of balance Nov. 1	341.02	
	Overdraft Nov. 1		824.27
	Outstanding bills Nov. 1	6,579.74	3,950.82
	Outstanding warrants Nov. 1	5,806.30	6,348.61
		1914	1915
	Estimated bridge funds to be collected	21,965.77	36,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	900.00	1,000.00
III.	Bridge and culvert equipment on hand Nov. 1	400.00	1,015.00
	Repair.		
	Amount spent in repair wood bridges and culverts; steel bridges, (wood floors)	7,857.93	4,436.72
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts	1	$ 145.00	8	$ 410.36
	Concrete box culverts	74	11,494.47	84	14,898.00
	I-Beams on concrete	3	1,893.98		
	I-Beam concrete abutment			5	4,357.19
	Concrete through girder	1	1,544.25		
	Abutment			1	330.16
	Concrete arch bridge	1	3,819.00		
	Head wall			1	57.62
	Concrete slab bridges	6	4,190.90	1	1,029.79
	Steel trusses, concrete floor and abutments	2	4,301.15		
		88	$27,388.75	100	$ 21,083.12

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 865.00	$ 1,675.00

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 1,443.36	
	Amount of overdraft		$ 1,025.31
		1913	1914
	Amount paid in		25,082.57
	Outstanding warrants Nov. 1	205.78	1,176.88
	Outstanding bills Nov. 1		2,358.08
	Amount of balance Nov. 1		103.19
	Amount of overdraft Nov. 1	1,025.31	
		1914	1915
	Estimated amount to be collected		21,094.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	4,975.00	4,160.00
III.	Repair.		
	Amount spent on road repairs on county road system	2,118.51	6,264.87
IV.	Culverts Classified as Road Work.		
	Total	4,310.24	16,185.22
V.	Maintenance of County Road System.		
	No. miles county road system	126	126
	No. miles regularly dragged		108
	Average number times dragged		8
	Average cost per mile dragged, both sides		$ .75
VI.	Permanent Work on County Road System.		
	Permanently graded 1,500 feet, costing		1,344.15
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	32	
	No. miles staked for grader repair	50	45
	No. miles grade line approved by Highway Commission		
	No miles profile platted	32	
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	585.00	560.00

MILLS COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Overdraft Jan. 1	$ 4,789.19	$ 18,492.93
	Amount collected to Nov. 1	27,531.14	32,152.88
	Overdraft Nov. 1	9,805.43	16,574.94
	Outstanding bills Nov. 1		1,201.32
	Estimated bridge funds to be collected during	1914	1915
II.	Equipment and Material.	32,118.19	33,249.22
	Bridge and culvert material on hand Nov. 1	1913	1914
	Bridge and culvert equipment on hand Nov. 1	9,860.00	7,632.73
III.	Repair.	312.00	300.00
	Amount spent in repair wood bridges	4,457.89	7,728.42
	Amount spent in repair steel bridges (wood floors)	825.71	1,633.48

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased corrugated pipe	1	$ 325.14		
	Concrete box culverts	5	3,246.77	10	6,013.86
	Boiler pipe culverts (with bulkheads)	2	1,329.05	3	881.14
	Wood pile bridges	1	447.21	21	4,599.80
	Concrete slab bridges	2	1,781.69	5	2,764.80
	Concrete pipe culverts	29	1,716.52	12	1,297.73
	Corrugated pipe culverts	27	1,234.08	67	3,517.11
	Boiler pipe culverts	18	2,521.85	46	4,327.10
	Circular concrete culvert			1	126.88
	Wood bridges, 30′ I-beam panel			3	2,461.60
		85	$12,612.31	168	$ 25,990.02

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 618.73	$ 1,192.41

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 6,965.75	$ 11,592.43
	Amount paid in	1913	1914
	Outstanding bills Nov. 1		21,299.42
	Amount of balance Nov. 1		3,145.39
	Estimated amount to be collected	11,592.43	4,609.23
II.	Equipment and Material.	1914	1915
	Road machinery on hand Nov. 1		21,188.55
III.	Repair.	1913	1914
	Amount spent on road repairs on county road system	159.60	1,284.00
IV.	Culverts Classified as Road Work.		
	Total	2,921.04	1,666.19
V.	Maintenance of County Road System.		
	No. miles county road system	851.29	11,184.88
	No. miles regularly dragged	110	110
	Average number of times dragged	96	110
	Average cost per mile dragged, both sides	10	13.7
VI.	Permanent Work on County Road System.	$ .50	$ .59½
	Permanently graded 1.1 miles costing	3,065.45	
	Temporary grade with standard cross section (Class II-B) 24.50 miles at a cost of		10,534.33
VII.	Permanent Work on Township Road System.		
	Silver Creek Twp. ¼ mile	630.10	
	Indian Creek Twp. ¼ mile	609.98	
	Anderson Twp. ¼ mile	458.25	
	Center Twp. ⅛ mile	121.75	
	Rawles Twp. ⅛ mile	253.00	
		$ 2,073.08	
	Straightening roads and making fills.		
	Center Twp., temporary grade with standard cross sections, 2 miles		618.86
VIII.	Engineering.	1913	1914
	No. of miles surveyed	6	24
	No. miles grade line approved by Highway Commission	6	3
	No. of miles profile platted	6	15
	No. miles officially approved by Highway Commission	4	2
IX.	Total Engineering Cost—Road Construction, etc.	$ 403.65	$ 1,205.00

MONONA COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 682.53	$ 199.08
	Overdraft Jan. 1		
	Amount collected to Nov. 1	29,293.86	43,377.22
	Amount of balance Nov. 1	1,649.66	1,841.41
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		1,100.00
		1914	1915
	Estimated bridge funds to be collected	40,000.00	42,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		1,785.00
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair of wood bridges	8,931.32	7,163.59
	Amount spent in repair of steel bridges with wood floors		
	Amount spent in repair of concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	1	$ 389.51	21	$ 6,284.31
	I-Beams on piling	5	2,340.42	5	2,375.45
	I-Beam concrete abutment	1	888.60		
	Steel trusses on piling	6	7,545.63		
	Steel trusses, concrete floor and abutments	2	3,238.27		
	Corrugated pipe culverts			91	4,624.42
	Boiler pipe culverts			41	3,663.05
	Wood pile bridge			1	350.00
	Steel truss, wood floor and W. P. abut'nts			1	1,097.73
		15	$14,402.43	160	$ 18,394.96

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 325.50	$ 931.43

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 1,115.85	$ 6,202.35
	Amount of overdraft		
	Amount paid in	1913	1914
	Outstanding warrants Nov. 1	12,477.65	27,799.28
	Outstanding bills Nov. 1		
	Amount of balance Nov. 1	6,202.35	
	Amount of overdraft Nov. 1		1,667.62
		1914	1915
	Estimated amount to be collected		30,668.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	1,340.00	5,444.00
III.	Repair.		
	Amount spent on repairs to county road system	4,534.00	4,391.50
IV.	Culverts Classified as Road Work		25,268.87
V.	Maintenance of County Road System.		
	No. of miles county road system	155	155
	No. of miles regularly dragged	155	155
	Average number of times dragged	15	18.9
	Average cost per mile dragged, both sides	$ .80	$ .80
VI.	Permanent Work on County Road System.		
	Permanently graded 1.8 miles costing	1,447.00	
	To permanent grade with standard cross section (Class II-A) 1.83 miles costing		3,309.50
	Tractor grader work (Class II-C) 81.6 miles costing		3,272.05
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	9	39
	No. of miles staked for grader repair	---	---
	No. of miles profile platted	9	16
	No. of miles grade line approved by Highway Commis'n	4	3
	No. of miles officially approved by Highway Commis'n	---	---
IX.	Total Engineering Cost	$ 686.00	$ 1,785.11

MONROE COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1		$ 1,511.94
	Overdraft Jan. 1	$ 5,383.29	
	Amount collected to Nov. 1	20,141.08	19,296.62
	Amount of balance Nov. 1	1,511.94	6,998.27
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	2,000.00	500.00
	Outstanding warrants Nov. 1		
	Estimated bridge funds to be collected	1914	1915
II.	Equipment and Material.	19,084.84	20,000.00
	Bridge and culvert material on hand Nov. 1	1913	1914
	Bridge and culvert equipment on hand Nov. 1	1,483.00	1,200.00
III.	Repair.		10.00
	Amount spent in repair wood bridges	10,699.65	6,097.69
	Amount spent in repair steel bridges (wood floors)	392.50	1,070.31
	Amount spent in repair concrete bridges	863.50	1,144.52

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Wood pile bridges	4	$ 742.36	4	$ 1,148.77
	Concrete slab bridges	3	2,262.02		
	High truss	1	2,262.02		
	Concrete box culverts			4	2,601.43
	I-Beam concrete abutments			2	2,064.85
		8	$ 5,266.40	10	$ 5,815.05

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies	$ 700.00	$ 630.95

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 1,197.37	$ 3,136.34
	Amount of overdraft		
	Amount paid in	1913	1914
	Outstanding warrants Nov. 1		18,884.64
	Outstanding bills Nov. 1	1,000.00	2,000.00
	Amount of balance Nov. 1	3,136.34	
	Amount of overdraft		2,753.72
	Estimated amount to be collected	1914	1915
II.	Equipment and Material.		17,500.50
	Road material on hand Nov. 1	1913	1914
	Road machinery on hand Nov. 1	900.00	
III.	Repair.	3,685.00	3,508.00
IV.	Culverts Classified as Road Work.		
	Total	9,840.11	3,060.79
V.	Maintenance of County Road System.		
	No. miles county road system	6,656.24	17,263.21
	No. miles regularly dragged	144.5	144.5
	Average number times dragged	140	144.5
	Average cost per mile dragged, both sides	9	22
VI.	Permanent Work on County Road System.	$ .75	$ .75
	Permanently graded .38 mile costing		
	Permanently graded 500 feet, work donated.	300.00	
	To permanent grade with standard cross section (Class II-A) .53 mile costing		
VII.	Permanent Work on Township Road System.		1,069.50
VIII.	Engineering.	1913	1914
	No. miles surveyed	10	30
	No. miles staked for grader repair	---	---
	No. miles profile platted	---	24
	No. miles grade line approved by Highway Commis'n	---	5
	No. miles officially approved by Highway Commis'n	---	1
IX.	Total Engineering Cost—Road Construction, etc.	$ 520.00	$ 1,534.45

MONTGOMERY COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 7,530.15	
	Overdraft Jan. 1		$ 2,670.63
	Amount collected to Nov. 1	29,852.60	36,237.12
	Amount to balance Nov. 1	4,282.13	
	Overdraft Nov. 1		453.82
	Outstanding bills Nov. 1		6,555.28
	Outstanding warrants Nov. 1		7,764.65
	Estimated bridge funds to be collected during	1914	1915
II.	Equipment and Material.	36,000.00	37,000.00
	Bridge and culvert material on hand Nov. 1	1913	1914
	Bridge and culvert equipment on hand Nov. 1	7,470.40	1,862.34
III.	Repair.	5,130.00	4,659.68
	Amount spent in repair wood bridges		
	Amount spent in repair steel bridges, wood floors		17,776.11
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts	13	$ 604.85	5	$ 316.11
	Concrete pipe culverts	106	12,779.28	166	9,517.56
	Concrete box culverts	10	5,965.30	16	8,927.42
	I-Beam concrete abutments	2	3,111.81	8	6,596.98
	Concrete deck girder	1	2,619.15		
	Steel girder	1	1,849.99		
	Steel trusses on piling	3	4,606.87		
	Steel trusses, concrete floor and abutments	2	6,009.22	1	1,066.85
		138	$37,546.47	196	$ 26,424.92

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies	$ 1,275.00	$ 1,912.07

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 8,730.46	
	Amount of overdraft		
	Amount paid in	13,120.84	$ 23,083.67
	Outstanding warrants Nov. 1		11,656.91
	Outstanding bills Nov. 1	5,456.61	7,536.28
	Amount of balance Nov. 1	7,432.95	
	Amount of overdraft Nov. 1		106.57
	Estimated amount to be collected during	1914	1915
II.	Equipment and Material.		26,500.00
	Road material on hand Nov. 1	1913	1914
	Road machinery on hand Nov. 1	545.00	2,085.99
III.	Repair.		2,208.00
	Amount spent on road repairs on county road system	5,345.15	2,424.87
IV.	Culverts Classified as Road Work.		
	Total	14,246.45	11,211.17
V.	Maintenance of County Road System.		
	No. miles county road system	125	125
	No. miles regularly dragged	125	125
	Average number times dragged	11	20
	Average cost per mile dragged, both sides	$ .70	$ .70
VI.	Permanent Work on County Road System.		
	To permanent grade and standard cross section (Class II-A) 1.74 miles costing		4,816.47
	Tractor-grader work (Class II-C) 68.5 miles costing		4,295.05
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	---	27
	No. miles staked for grader repair	---	---
	No. miles profile platted	---	20
	No. miles grade line approved by Highway Commis'n	---	6
	No. miles officially approved by Highway Commis'n	---	---
IX.	Total Engineering Cost—Road Construction, etc.	$ 545.00	$ 1,381.86

MUSCATINE COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 4,798.41	$ 2,249.12
	Overdraft Jan. 1		
	Amount collected to Nov. 1	19,085.37	29,526.05
	Amount of balance Nov. 1	9,374.27	3,685.31
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		3,406.21
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	29,413.88	36,806.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	255.75	731.84
	Bridge and culvert equipment on hand Nov. 1	392.50	
III.	Repair.		
	Amount spent in repair wood bridges	5,502.27	3,831.49
	Amount spent in repair steel bridges (wood floors)	1,104.03	2,416.61
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	23	$ 9,622.20	51	$ 17,025.48
	Steel girder	1	5,358.60		
	Wood pile bridges	2	670.20		
	Boiler pipe, corrugated and concrete pipe		5,954.25		
	Material on hand		112.70		
	Corrugated pipe culvert				5,741.79
	Concrete pipe culverts			41	5,899.44
	Boiler pipe culverts				1,751.67
	Concrete culverts uncompleted			11	2,138.98
	Work from 1913				32.46
		26	$21,717.95	106	$ 33,610.42

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction. Salaries, transportation and supplies	$ 1,368.46	$ 2,069.80

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 1,955.24	$ 11,644.11
	Amount of overdraft		
		1913	1914
	Amount paid in	11,669.19	27,757.59
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		2,179.10
	Amount of balance Nov. 1	11,644.11	6,288.59
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		29,014.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	163.75	5,085.29
	Road machinery on hand Nov. 1	3,539.38	5,787.57
III.	Repair.		
	Amount spent on road repairs on county road system	9,100.29	13,392.90
IV.	Culverts Classified as Road Work.		
	Total	135.2	135.2
V.	Maintenance of County Road System.	100	135.2
	No. miles county road system	12	19
	No. miles regularly dragged	$ .75	$ .75
	Average number of times dragged		
	Average cost per mile dragged, both sides	2,597.00	
VI.	Permanent Work on County Road System.		
	Permanently graded 1.25 miles, costing		400.00
	Spent, completing permanent grading which was started in 1913		
	Paved 2,180 feet with 16' concrete		
VII.	Permanent Work on Township Road System.		387.92
	1,775 cu. yds., Lake Township		231.30
	1,865 cu. yds., Goshen Township		842.27
	4,159 cu. yds., 76 Township		
	Total		$ 1,461.49
VIII.	Engineering.	1913	1914
	No. miles surveyed	2.25	37
	No. miles staked for grader repair		39
	No. miles profile platted	2.25	30
	No. miles grade line approved by Highway Commission	1.25	20.5
	No. miles officially approved by Highway Commission	1.25	1
IX.	Total Engineering Cost—Road Construction, etc.	$ 450.00	$ 1,568.72

O'BRIEN COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$11,243.98	$ 4,348.81
	Amount collected to Nov. 1	29,133.60	33,693.07
	Amount of balance Nov. 1	4,348.79	9,402.88
	Outstanding bills Nov. 1		6,794.85
		1914	1915
	Estimated funds to be collected during	35,000.00	47,400.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,092.33	3,728.18
	Bridge and culvert equipment on hand Nov. 1	150.00	1,187.85
III.	Repair.		
	Amount spent in repair wood bridges		1,165.51

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe	10	$ 657.09		
	Corrugated pipe culverts	65	3,712.11	71	$ 2,240.56
	Concrete box culverts	27	9,225.18	87	26,801.79
	Concrete arch culverts	5	2,863.15	3	98.85
	I-Beam, concrete abutments	6	5,787.85	3	3,368.21
	Concrete deck girder	1	1,738.00	1	2,260.03
	Concrete slabs	2	2,992.00		
	Steel trusses with concrete floor and abut.	4	7,013.56	2	4,642.73
	Sewer pipe culverts			2	142.85
	Concrete pipe culverts			8	335.35
	Wood box culvert			1	22.24
	Retaining wall			1	158.44
	Miscellaneous culverts			2	81.65
		120	$33,988.94	181	$ 40,102.70

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction. Salaries, transportation and supplies	$ 749.47	$ 1,277.59

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 6,353.90	$ 13,923.06
		1913	1914
	Amount paid in	11,206.46	36,122.81
	Outstanding bills Nov. 1	1,900.00	5,740.00
	Outstanding warrants Nov. 1		
	Amount of balance Nov. 1	13,923.06	9,557.05
		1914	1915
	Estimated amount to be collected		35,332.00
II.	Equipment and Material.	1913	1914
	Road machinery on hand Nov. 1	1,960.00	9,789.05
III.	Repair.		
	Amount spent on road repairs on County Road System	1,097.19	1,109.80
IV.	Culverts Classified as Road Work.		
	Total		12,126.77
V.	Maintenance of County Road System.		
	No. of miles County Road System	186	186
	No. of miles regularly dragged		163
	Average number of times dragged		16.6
	Average cost per mile dragged, both sides		$ .75
VI.	Permanent Work on County Road System.		
	Permanently graded one-half mile, costing	953.00	
	To permanent grade with standard cross section (Class II-A) 3.37 miles, costing		3,994.50
	To temporary grade with standard cross section (Class II-B) 2.6 miles, costing		1,341.35
	Tractor-grader work (Class II-C) 71.4 miles, costing		5,363.00
VII.	Permanent Work on Township Road System.		
	To temporary grade with standard cross section (Class II-B) 4.45 miles, costing	1,887.30	
	Tractor-grader work (Class II-C) 30 miles, costing		2,373.95
VIII.	Engineering.	1913	1914
	No. of miles surveyed	14	37.5
	No. of miles staked for grader repair		103
	No. of miles profile platted	2	37.5
	No. miles grade line approved by Highway Commission	2	30
IX.	Total Engineering Cost—Road Construction, etc.	$ 86.50	$ 1,627.59

OSCEOLA COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 5,966.64	
	Overdraft Jan. 1		5,271.81
	Amount collected to Nov. 1	11,955.88	18,390.06
	Amount of balance Nov. 1	2,405.66	5,169.06
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	2,000.00	17,500.00
	Outstanding warrants Nov. 1		8,000.00
		1914	1915
	Estimated bridge funds to be collected during	19,500.00	27,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	800.00	2,000.00
	Bridge and culvert equipment on hand Nov. 1	225.00	700.00
III.	Repair.		
	Amount spent on repair wood bridges	3,064.82	2,964.57
	Amount spent in repair steel bridges (wood floors)		5,116.90
	Amount spent in repair concrete bridges		191.40

		1914	
		No.	Cost
IV.	New Construction.		
	Concrete pipe culvert	1	$ 45.90
	Concrete box culverts	82	25,133.22
	Circular concrete culverts	8	753.27
	Concrete deck girders	2	4,215.21
		93	$ 30,147.60

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies	$ 360.00	$ 490.00

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 4,065.32	$ 9,852.34
	Amount of overdraft		
		1913	1914
	Amount paid in		21,247.12
	Outstanding bills Nov. 1		6,000.00
	Overdraft Nov. 1		
	Amount of balance Nov. 1	9,852.34	1,278.69
	Amount of overdraft Nov. 1		
		1914	1915
	Amount estimated to be collected during		23,200.06
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	1,076.00	2,760.00
III.	Repair.		
	Amount spent on road repairs on County Road System	1,205.95	1,244.13
IV.	Culverts Classified as Road Work.		
	Total	125.00	
V.	Maintenance of County Road System.		
	No. miles County Road System	132	132
	No. miles regularly dragged	120	110
	Average number times dragged	5	21
	Average cost per mile dragged, both sides	$ .70	$ .75
VI.	Permanent Work on County Road System.		
	Permanently graded 5 miles, costing	1,821.91	
	To permanent grade with standard cross section (Class II-A) 3 miles, costing		1,460.75
	Tractor-grader work (Class II-C) 39 miles, costing		4,823.37
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	18	61.75
	No. of miles staked for grader repair		
	No. of miles profile platted	8	3.5
	No. miles grade line approved by Highway Commission	8	3.5
	No. miles officially approved by Highway Commission		3.5
IX.	Total Engineering Cost—Road Construction, etc.	$ 342.53	$ 666.41

PAGE COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$34,002.61	$ 43,081.03
	Overdraft Jan. 1	40,766.38	50,749.45
	Amount collected to Nov. 1		
	Amount of balance Nov. 1	34,896.83	23,855.94
	Overdraft Nov. 1	7,359.94	8,944.47
	Outstanding bills Nov. 1	1,043.12	8,788.53
	Outstanding warrants Nov. 1	1914	1915
	Estimated bridge funds to be collected during	47,500.00	51,000.00
		1913	1914
II.	Equipment and Material.		
	Bridge and culvert material on hand Nov. 1	3,500.00	1,250.00
	Bridge and culvert equipment on hand Nov. 1	300.00	500.00
III.	Repair.		
	Amount spent in repair wood bridges	24,405.21	17,746.89
	Amount spent in repair steel bridges (wood floors)		
	Amount spent in repair concrete bridges		

		1914	
		No.	Cost
IV.	New Construction.		
	Corrugated pipe culverts	55	$ 1,612.28
	Concrete box culverts	36	23,672.28
	Boiler pipe culverts	53	3,398.16
	Concrete pipes	12	764.00
	Wood pile bridge	1	562.28
	Steel trusses on pile	3	1,632.92
	High trusses on pile	5	5,146.01
	Miscellaneous bridge	1	
	Vitrified pipe	85	294.53
	Vitrified pipe	251	1,051.71
	Total	502	$ 38,134.17

V.	Engineering on Bridge and Culvert Repair and Construction.	1913	1914
	Salaries, transportation and supplies	$ 735.82	$ 1,243.58

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$14,179.78	$ 26,052.36
	Amount of overdraft		
		1913	1914
	Amount paid in	27,586.64	37,738.96
	Outstanding bills Nov. 1	4,680.93	5,336.10
	Outstanding warrants Nov. 1	408.40	1,357.60
	Amount of balance Nov. 1	26,052.36	1,160.00
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		36,250.00
		1913	1914
II.	Equipment and Material.		
	Road material on hand Nov. 1	1,200.00	1,000.00
	Road machinery on hand Nov. 1	1,515.00	2,425.00
III.	Repairs.		
	Amount spent on road repairs county road system	184.35	4,331.59
IV.	Culverts Classified as Road Work.		
	Total	3,897.28	13,949.66
V.	Maintenance of County Road System.		
	No. miles County Road System	174	174
	No. miles regularly dragged	149	166
	Average number times dragged	7.7	8.4
	Average cost per mile, dragged both sides	$ .60	$ .75
VI.	Permanent Work on County Road System.		
	Spent on permanent improvement of roads		30,118.25
VII.	Permanent Work on Township Road System.		
	Spent on permanent improvements of roads		4,401.69
VIII.	Engineering.	1913	1914
	No. miles surveyed	6.75	23.25
	No. miles staked for grader repair		
	No. miles profile platted	5.50	8
	No. miles grade line approved by Highway Commission		
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Construction, etc.	$ 400.26	$ 1,377.41

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 1,041.07	
	Overdraft Jan. 1		$ 1,278.37
	Amount collected to Nov. 1	21,320.32	19,477.23
	Amount of balance Nov. 1	4,424.91	1,235.55
	Outstanding bills Nov. 1	1,840.35	3,694.00
	Outstanding warrants Nov. 1	411.97	162.19
	Estimated bridge funds to be collected during	1914	1915
II.	Equipment and Material.	20,000.00	26,500.00
	Bridge and culvert material on hand Nov. 1	1913	1914
	Bridge and culvert equipment on hand Nov. 1	1,363.43	450.00
III.	Repairs.	125.00	250.00
	Amount spent in repair wood bridges		3,211.31

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts	2	$ 161.39	39	$ 1,087.22
	Concrete pipe culvert	1	42.83		
	Concrete box culverts	2	1,098.00	24	9,236.10
	Steel girders	8	5,437.08		
	Wood pile bridges	6	2,725.99		
	Steel trusses with concrete floor and abut...	2	2,106.91		
	Circular concrete culverts			7	932.64
	I-beam, concrete abutment and floor			1	999.00
	Abutment			1	1,366.83
	Concrete slab bridges			3	3,215.00
	Steel trusses, concrete floor			3	5,183.39
	Steel trusses, wood floors			5	6,053.63
	Steel girders, wood floor, concrete abutments			3	2,680.99
		21	$11,572.20	86	$ 30,754.80

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction.		
	Salaries, transportation and supplies	$ 489.38	$ 448.14

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$12,195.75	$ 16,212.20
		1913	1914
	Amount paid in	29,233.42	22,890.86
	Outstanding bills Nov. 1	4,500.00	2,500.00
	Outstanding warrants Nov. 1	4,373.43	2,046.98
	Amount of balance Nov. 1	16,212.20	621.89
		1914	1915
	Estimated amount to be collected		26,100.00
II.	Equipment and Material.	1913	1914
	Road machinery on hand Nov. 1	2,325.00	3,965.00
III.	Road Repair.		
	Amount spent on road repairs on County Road System	2,129.00	1,277.27
IV.	Culverts Classified as Road Work.		
	Total	414.67	5,552.48
V.	Maintenance of County Road System.		
	No. miles County Road System	162	162
	No. miles regularly dragged	90	162
	Average number of times dragged	10	22
	Average cost per mile dragged, both sides	$ .75	$ .70
V.	Maintenance of County Road System.		
	Permanent grade 6.3 miles, costing	5,706.61	
	To permanent grade with standard cross section (Class II-A) 24.27 miles, costing		27,381.58
	Surfaced 3 miles with 9' gravel, at cost of		136.45
VII.	Permanent Work on Township Road System.		
	To temporary grade with standard cross section (Class II-B) 1 mile, costing		524.25
VIII.	Engineering.	1913	1914
	No. miles surveyed	43.75	22
	No. miles grade line approved by Highway Commission	19.5	45
	No. miles grade line approved by Highway Commission	16	30.25
	No. of miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 908.97	$ 2,023.79

PLYMOUTH COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 3,564.96	$ 4,726.50
	Overdraft Jan. 1		
	Amount collected to Nov. 1	37,227.11	34,374.13
	Amount of balance Nov. 1	9,173.13	1,734.34
	Overdraft Nov. 1		7,400.09
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1	5,354.95	6,019.87
		1914	1915
	Estimated bridge funds to be collected during	54,800.00	55,039.08
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,583.85	3,200.00
	Bridge and culvert equipment on hand Nov. 1		
III.	Repairs.		
	Amount spent in repair wood bridges		2,919.00
	Amount spent in repair of steel bridges (wood floor)		
	Amount spent in repair of concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts	34	$ 778.24		
	Concrete box culverts	7	2,845.74	53	$ 27,111.66
	I-beam, concrete abutments	1	955.57	6	9,768.59
	Wood pile bridges	34	7,506.41	47	10,797.48
	Concrete slab bridges	1	1,030.83	3	4,827.02
	Steel trusses, concrete floor and abutments	1	436.08	4	12,394.53
	High trusses, concrete floor and abutments	3	11,210.92		
	Retaining wall			1	624.19
		81	$24,763.79	114	$ 65,023.47

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 902.65	$ 1,778.54

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 4,312.36	$ 4,973.93
	Amount of overdraft		
		1913	1914
	Amount paid in		48,972.54
	Outstanding bills Nov. 1		17,412.97
	Outstanding warrants Nov. 1		
	Amount of balance Nov. 1	4,973.93	20,760.07
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		46,376.90
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	3,969.00	4,265.00
III.	Repairs.		
	Amount spent on road repairs on County Road System	5,995.97	11,895.00
IV.	Culverts Classified as Road Work.		
	Total		25,701.28
V.	Maintenance of County Road System.		
	No. of miles county road system	208.5	208.5
	No. of miles regularly dragged		175
	Average number of times dragged		6
	Average cost per mile dragged, both sides		$ .75
VI.	Permanent Work on County Road System.		
	Permanently graded 1.1 miles, costing	1,176.30	
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	43.75	10
	No. of miles staked for grader repair		
	No. of miles profile platted		20
	No. miles grade line approved by Highway Commission		
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost	$ 664.11	$ 1,171.34

POCAHONTAS COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 3,449.09	$ 1,581.40
	Amount collected to Nov. 1	30,203.72	40,483.37
	Amount of balance Nov. 1	4,210.59	17,406.03
	Outstanding bills Nov. 1		8,465.00
	Outstanding warrants Nov. 1	10,693.03	254.26
		1914	1915
	Estimated funds to be collected during	35,996.33	40,983.37
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	3,791.45	3,835.51
III.	Repairs.		
	Amount spent in repair wood bridges	5,231.38	5,988.20
	Amount spent in repair steel bridges (wood floors)	257.06	1,026.23

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	I-Beam concrete floor and abutments	2	$ 2,807.62	1	$ 1,211.32
	Concrete box culverts			4	818.56
	Wood pile bridge			1	288.20
	I-Beam wood floor and concrete abutments	2	2,010.61		
	Steel trusses, concrete floor and abutments	1	2,853.29	2	4,414.50
	Steel trusses, wood floor and concrete abutments	14	20,511.47	3	3,524.05
		19	$28,182.99	11	$ 10,256.63

V.	Engineering on Bridge and Culvert Repair and Construction	1915	1914
	Salaries, transportation and supplies	$ 372.00	$ 816.44

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 7,294.12	$ 12,266.66
		1913	1914
	Amount paid in	12,614.28	41,319.69
	Outstanding bills Nov. 1		5,000.00
	Amount of balance Nov. 1	12,266.66	13,166.78
		1914	1915
	Estimated amount to be collected		40,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		125.68
	Road machinery on hand Nov. 1	5,735.80	9,078.00
III.	Repairs.		
	Amount spent on road repairs on county road system	728.28	793.41
IV.	Culverts Classified as Road Work.		
	Total		3,031.99
V.	Maintenance of County Road System.		
	No. of miles county road system	168.5	168.5
	No. of miles regularly dragged	93	101
	Average number of times dragged	6.8	16.3
	Average cost per mile dragged (both sides)	$ .78	$ .72
VI.	Permanent Work on County Road System.		
	Permanently graded (Class II-A) 4.6 miles costing	4,776.15	
	Tractor grader work (Class II-C) 3.75 miles, costing	305.20	
	Permanently graded (Class II-A) 6.6 miles, costing		5,613.09
	To temporary grade with standard cross section, (Class II-B) 39.5 miles, costing		7,092.68
	Tractor grader work (Class II-C) 46.5 miles, costing		5,268.40
	Surfaced 2.75 miles with 12' gravel at cost of		1,693.99
VII.	Permanent Work on Township Road System.		
	Permanently graded (Class II-A) 1 mile.		
	Surfaced 1.75 miles with 14' crushed limestone at cost of	1,600.00	
	To temporary grade with standard cross section (Class II-B) 11 miles, costing		1,900.00
	Tractor grader work (Class II-C) 29.5 miles.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	54.25	34.75
	No. of miles staked for grader repair	6	133.75
	No. of miles profile platted	17.25	14
	No. of miles grade line approved by Highway Commis'n	15	18
	No. of miles officially approved by Highway Commis'n	1	9
IX.	Total Engineering Cost—Road Construction, etc.	$ 1,564.71	$ 3,596.90

POLK COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$14,568.43	
	Overdraft Jan. 1		2,951.52
	Amount collected to Nov. 1	32,527.64	$4,831.00
	Amount of balance Nov. 1		473.00
	Overdraft Nov. 1	1,821.62	
	Outstanding warrants Nov. 1		87,373.00
		1914	1915
	Estimated bridge funds to be collected	$4,400.00	35,500.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		1,500.00
	Bridge and culvert equipment on hand Nov. 1		25.00
III.	Repairs.		
	Amount spent in repair wood bridges	7,263.01	7,277.82
	Amount spent in repair steel bridges, wood floors	1,622.28	3,727.43

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	8	$ 6,687.00	25	$ 14,808.75
	Corrugated pipe culverts			107	4,338.90
	Concrete arch culverts	7	8,289.00	8	13,600.25
	Concrete deck girders	3	4,292.00	5	19,370.54
	Through girder	1	2,490.00		
	Boiler pipe culverts			23	1,943.14
	Concrete arch bridges	4	10,110.00	11	25,701.62
	Concrete slab bridges	6	7,688.00	18	23,146.02
	Head wall			1	300.00
	Steel truss, concrete floor and abutments	1	2,885.35		
		30	$42,381.35	198	$103,299.22

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 742.11	$ 3,059.35

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 4,305.30	$ 21,338.31
		1913	1914
	Amount paid in	29,720.10	66,615.95
	Amount of balance Nov. 1	21,338.31	
	Amount of overdraft Nov. 1		3,800.00
		1914	1915
	Estimated amount to be collected		63,800.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		300.00
	Road machinery on hand Nov. 1		825.00
III.	Repairs.		
	Amount spent on road repairs on county road system	18,892.53	26,216.88
IV.	Culverts Classified as Road Work.		
	Total		12,191.08
V.	Maintenance of County Road System.		
	No. miles county road system	180	180
	Average cost per mile dragged, both sides	$ .75	$ .85
VI.	Permanent Work on County Road System.		
	Permanently graded 2.75 miles costing	7,204.79	
	To permanent grade with standard cross section (Class II-A) 9.1 miles costing		25,018.81
	Blade grader work (Class II-C) 1.25 miles costing		75.75
	Surfaced 3.48 miles with 16' gravel costing		1,889.66
	Surfaced .63 miles with 20' gravel costing		608.50
	Surfaced 1.25 miles with 12' cinders costing		655.40
	Surfaced .75 miles with 16' gravel and cinders costing		1,035.21
VII.	Permanent Work on Township Road System.	1913	1914
VIII.	Engineering.		
	No. miles surveyed	65	41.5
	No. miles profile platted	20	41
	No. miles grade line approved by Highway Commis'n	9	41
	No. miles officially approved by Highway Commission		8
IX.	Total Engineering Cost—Road Construction, etc.	$ 1,113.15	$ 4,397.38

POTTAWATTAMIE COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 5,408.17	$ 12,207.29
	Overdraft Jan. 1		
	Amount collected to Nov. 1	66,702.62	66,408.64
	Amount of balance Nov. 1		13,868.25
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		509.84
	Outstanding warrants Nov. 1		50,656.53
		1914	1915
	Estimated bridge funds to be collected	67,588.99	68,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	869.98	4,793.33
	Bridge and culvert equipment on hand Nov. 1	869.98	1,264.35
III.	Repairs.		
	Amount spent in repair wood bridges	13,889.89	26,898.63
	Amount spent in repair steel bridges (wood floors)	487.64	731.14
	Amount spent in repair concrete bridges	743.60	

		1914 No.	1914 Cost
IV.	New Construction.		
	Corrugated pipe culverts	239	$ 11,110.96
	Concrete pipe culverts	138	21,032.38
	Concrete box culverts	31	30,687.43
	Boiler pipe culverts	61	11,219.75
	Retaining wall	1	1,388.71
	Head walls	3	329.75
	Wood pile bridges	35	10,200.66
	Steel trusses, concrete floor and abutments	5	17,310.49
	High truss	1	6,756.48
	Slab bridges, concrete	3	4,763.37
	Deck girder, concrete	1	4,564.64
	Vitrified pipe culverts	9	657.43
		527	$120,022.05

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 298.78	$ 2,175.67

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$10,211.42	$ 1,552.27
	Amount of overdraft		
		1913	1914
	Amount paid in	56,803.88	75,803.17
	Outstanding bills Nov. 1		10,468.60
	Outstanding warrants Nov. 1		38,433.32
	Amount of balance Nov. 1	1,552.27	2,295.10
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		42,349.56
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	39.00	
	Road machinery on hand Nov. 1	1,166.00	2,050.00
III.	Road Repair.		
	Amount spent on road repairs on county road system	29,916.54	21,922.15
IV.	Culverts Classified as Road Work.		
	Total	4,842.90	39,052.95
V.	Maintenance of County Road System.		
	No. miles county road system	254	280
	No. miles regularly dragged	248	280
	Average number times dragged	10	
	Average cost per mile dragged, both sides	$ .75	$ .75
VI.	Permanent Work on County Road System.		
	To permanent grade with standard cross section (Class II-A) 2.25 miles costing		9,871.37
	Paved .3 mile with 20′ concrete at cost of		6,459.60
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	35	48
	No. miles staked for grader repair		
	No. miles profile platted	13	23
	No. miles grade line approved by Highway Commission	3	
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc	$ 553.25	$ 3,619.47

POWESHIEK COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 1,026.83	$ 179.08
	Amount collected to Nov. 1	39,233.95	51,512.39
	Amount of balance Nov. 1	16,903.48	12,746.51
	Outstanding bills Nov. 1	18,243.18	8,000.00
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	51,857.07	50,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	414.50	500.00
	Bridge and culvert equipment on hand Nov. 1		
III.	Repairs.		
	Amount spent in repair of wood bridges	1,936.05	12,059.97
	Amount spent in repair of steel bridges with wood floors		
	Amount spent in repair of concrete bridges		

		1913 No.	1913 Cost	1914 No.	1914 Cost
IV.	New Construction.				
	I-Beam with concrete abutments	1	$ 1,053.00	9	$ 9,543.05
	Steel girders	2	3,201.00		
	Concrete arch bridges	1	1,836.89	1	1,820.00
	Corrugated pipe culverts			21	496.73
	Concrete box culverts			6	6,060.00
	Concrete arch culvert			1	1,540.00
	Boiler pipe culverts			2	256.18
	Cast iron pipe			11	435.30
	Steel trusses, concrete floor and abutments			11	22,191.50
	High trusses, concrete floor and abutments			2	14,721.60
	Miscellaneous culverts			2	18.77
		4	$ 6,090.89	66	$ 57,083.13

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 441.84	$ 1,088.00

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 3,784.38	$ 9,623.82
		1913	1914
	Amount paid in	22,741.56	37,471.22
	Outstanding bills Nov. 1		8,000.00
	Outstanding warrants Nov. 1		3,812.74
	Amount of balance Nov. 1	9,623.82	1,814.43
		1914	1915
	Estimated amount to be collected		36,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	414.50	
	Road machinery on hand Nov. 1	1,505.00	2,561.00
III.	Repairs.		
	Amount spent on road repairs on county road system	7,393.76	4,412.56
IV.	Culverts Classified as Road Work.		
	Total	2,011.58	11,217.44
V.	Maintenance of County Road System.		
	No. of miles in county road system	138.3	138.3
	No. of miles regularly dragged	138.3	138.3
	Average number of times dragged		12
	Average cost per mile dragged, both sides	$ .68	$ .80
VI.	Permanent Work on County Road System.		
	Permanently graded 4.1 miles costing	8,481.62	
	To permanent grade with standard cross section (Class II-A) 11 miles costing		20,826.04
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	9	14
	No. of miles staked for grader repair		
	No. of miles profile platted	7	14
	No. of miles grade line approved by Highway Commis'n		5
	No. of miles officially approved by Highway Commis'n		
IX.	Total Engineering Cost	$ 485.35	$ 1,328.08

RINGGOLD COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 5,987.82	
	Overdraft Jan. 1		$ 6,214.91
	Amount collected to Nov. 1	13,300.56	24,489.31
	Amount of balance Nov. 1		5,778.51
	Overdraft Nov. 1	1,128.50	
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1		741.00
		1914	1915
	Estimated bridge funds to be collected	22,000.00	28,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	7,000.00	1,700.00
	Bridge and culvert equipment on hand Nov. 1	150.00	800.00
III.	Repairs.		
	Amount spent in repair wood bridges		3,500.00
	Amount spent in repair steel bridges (wood floors)		
	Amount spent in repair concrete bridges		

		1914	
		No.	Cost
IV.	New Construction.		
	Concrete box culverts	55	$ 8,332.32
	I-Beams, concrete abutments	5	2,130.75
		60	$ 10,463.07

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 1,105.00	$ 1,725.00

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 5,493.76	$ 13,657.94
	Amount of overdraft		
		1913	1914
	Amount paid in	10,572.30	22,531.16
	Outstanding bills Nov. 1		1,200.00
	Outstanding warrants Nov. 1		
	Amount of balance Nov. 1	13,657.94	
	Amount of overdraft Nov. 1		960.70
		1914	1915
	Estimated amount to be collected		20,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	350.00	3,390.00
III.	Repairs.		
	Amount spent on road repairs on county road system		200.00
IV.	Culverts Classified as Road Work.		
	Total	1,597.12	6,910.00
V.	Maintenance of County Road System.		
	No. miles county road system	183	183
	No. miles regularly dragged	100	125
	Average number times dragged	20	15
	Average cost per mile dragged, both sides	$ .50	$ .50
VI.	Permanent Work on County Road System.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	25	
	No. miles staked for grader repair		
	No. miles profile platted		
	No. miles grade line approved by Highway Commission		
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 400.00	$ 1,200.00

SAC COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Overdraft Jan. 1	$ 1,580.27	$ 10,563.94
	Amount collected to Nov. 1	33,819.00	44,382.18
	Amount of balance Nov. 1	6,828.97	1,661.30
	Outstanding bills Nov. 1		8,000.00
	Outstanding warrants Nov. 1		366.09
		1914	1915
	Estimated bridge funds to be collected	44,271.73	45,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	12,206.20	7,184.28
	Bridge and culvert equipment on hand Nov. 1	197.00	212.00
III.	Repairs.		
	Amount spent in repair wood bridges	3,927.90	3,532.02
	Amount spent in repair steel bridges (wood floors)	2,596.21	1,955.50
	Amount spent in repair concrete bridges	495.82	119.84

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe	140	$ 6,352.04	92	$ 5,050.05
	Corrugated pipe culverts	12	339.61	60	1,440.64
	Concrete pipe culverts	4	156.06		
	Concrete box culverts	75	13,743.47	64	13,842.50
	Concrete arch culverts			27	1,686.16
	I-Beams, concrete abutments	8	4,287.90	6	4,412.37
	I-Beams on pilings			5	1,047.36
	Concrete arch bridge	1	14,840.05		
	Wood pile bridge			1	551.84
	Steel trusses, concrete floor and abutments	1	762.00	3	3,985.31
		241	$40,481.13	258	$ 32,016.23

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 1,171.10	$ 1,322.79

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 1,801.93	
	Amount of overdraft		4,326.41
		1913	1914
	Amount paid in	13,061.36	33,928.13
	Outstanding bills Nov. 1	9,300.00	5,000.00
	Outstanding warrants Nov. 1	800.00	264.30
	Amount of overdraft Nov. 1	4,326.41	2,891.15
		1914	1915
	Estimated amount to be collected	33,000.00	34,000.00
II.	Equipment and Material.	1913	1914
	Road machinery on hand Nov. 1	1,085.00	944.00
III.	Repairs.		
	Amount spent on road repairs on county road system	1,706.93	2,120.69
IV.	Culverts Classified as Road Work.		
	Total	9,000.00	
V.	Maintenance of County Road System.		
	No. miles county road system	148	148
	No. miles regularly dragged	140	145
	Average number times dragged	10	15
	Average cost per mile dragged, both sides	$ .75	$ .75
VI.	Permanent Work on County Road System.		
	Permanently graded 7 miles costing	8,326.50	
	Surfaced 5600 feet with 8' gravel at cost of	420.25	
	To permanent grade with standard cross section (Class II-A) 15.4 miles at cost of		16,767.92
	Tractor grader work (Class II-C) 13.25 miles costing		2,423.41
	Surfaced 2.6 miles with 9' gravel at cost of		876.35
VII.	Permanent Work on Township Road System.		
	To permanent grade 1.75 miles costing	1,025.00	
	To temporary grade with standard cross section (Class II-B) 1.25 miles costing		514.00
VIII.	Engineering.	1913	1914
	No. miles surveyed	21	74
	No. miles profile platted	12.5	35
	No. miles grade line approved by Highway Commission	9.5	29
IX.	Total Engineering Cost—Road Construction, etc.	$ 580.28	$ 1,384.87

SCOTT COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1		$ 921.71
	Overdraft Jan. 1	$ 1,431.99	
	Amount collected to Nov. 1	31,713.37	41,685.49
	Amount of balance Nov. 1	12,181.79	155.15
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1	148.62	185.12
		1914	1915
	Estimated amount to be collected	41,924.68	41,138.56
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,778.74	923.77
	Bridge and culvert equipment on hand Nov. 1	325.00	1,000.00
III.	Repairs.		
	Amount spent repair wood bridges	981.01	4,224.83
	Amount spent repair steel bridges, wood floors	717.41	845.23
	Amount spent repair concrete bridges		778.34

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Sheet metal culverts	38	$ 2,938.07		
	Concrete pipe culverts			2	$ 81.90
	Wood pile bridges	6	1,350.54	4	597.37
	Concrete box culverts	7	2,463.90	23	9,044.26
	Boiler pipe culverts			21	1,610.75
	Steel truss bridge	1	3,605.00	1	3,249.00
	Concrete slab bridges	1	1,143.00	3	3,481.15
	Concrete arch bridges			3	7,840.35
	Steel trusses, concrete floor and abutments			2	6,037.37
	Miscellaneous culvert			1	47.45
		53	$11,500.51	60	$ 31,989.60

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 1,090.89	$ 2,698.00

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 4,503.77	$ 21,910.13
	Amount of overdraft		
		1913	1914
	Amount paid in	33,268.91	33,182.49
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		182.19
	Amount of balance Nov. 1	22,021.89	11,039.20
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected during		23,428.35
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		300.00
	Road machinery on hand Nov. 1	1,215.00	4,665.00
III.	Repair.		
	Amount spent road repairs county road system	5,542 65	5,826.14
IV.	Culverts Classified as Road Work.		
	Total		2,201.08
V.	Maintenance of County Road System.		
	No. miles county road system	135.8	135.8
	No. miles regularly dragged	94	135.8
	Average number times dragged	4	14
	Average cost per mile dragged, both sides	$ .70	$ .85
VI.	Permanent Work on County Road System.		
	Permanently graded .5 miles costing	3,427.46	
	Surfaced .5 miles with gravel costing	1,239.00	
	To permanent grade with standard cross section (Class II-A) 1.5 miles costing		3,012.79
	Surfaced 10.8 miles with 12 ft. gravel at cost of		13,353.47
VII.	Permanent Work on Township Road System.		
	2 miles of road permanently graded.		
	4 miles of road re-surfaced.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	6	55
	No. miles staked for grader repair		
	No. miles profile platted	2.5	34
	No. miles grade line approved by Highway Commission	2.5	4.5
	No. miles officially approved by Highway Commission	2	2
IX.	Total Engineering Cost—Road Construction, etc.	$ 725.02	$ 2,250.78

SIOUX COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 9,048.39	$ 12,666.09
	Overdraft Jan. 1		
	Amount collected to Nov. 1	23,503.92	26,399.54
	Amount of balance Nov. 1		7,317.89
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		4,190.68
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected during	26,865.08	27,194.56
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		
	Bridge and culvert equipment on hand Nov. 1		35.00
III.	Repair		
	Amount spent in repair wood bridges		
	Amount spent in repair steel bridges (wood floors)		15,687.00
	Amount spent in repair concrete bridges		699.12

		1914	
		No.	Cost
IV.	New Construction.		
	Concrete box culverts	99	$ 24,110.46
	Concrete deck girder	1	1,143.95
	Wood pile bridges	11	3,662.05
		111	$ 28,916.46

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies		$ 1,287.60

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 7,800.30	$ 6,995.30
	Amount of overdraft		
		1913	1914
	Amount paid in	12,609.84	36,411.66
	Outstanding bills Nov. 1	2,670.37	7,803.28
	Outstanding warrants Nov. 1		
	Amount of balance Nov. 1	6,995.30	20,429.51
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected during		36,927.53
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	4,200.00	
III.	Road Repair.		
	Amount spent on road repairs on county road system	7,337.14	2,250.36
IV.	Culverts Classified as Road Work.		
	Total	671.77	13,132.54
V.	Maintenance of County Road System.		
	No. miles county road system	216	216
	No. of miles regularly dragged	216	216
	Average number of times dragged	12	16
	Average cost per mile dragged, both sides	$ .65	$ .75
VI.	Permanent Work on County Road System.		
	To temporary grade with standard cross section (Class II-B) miles costing		1,481.11
	Tractor grader work (Class II-C) 61 miles costing		3,960.18
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	16	16
	No. of miles staked for grader repair		77
	No. of miles profile platted	14	4
	No. of miles grade line approved by Highway Commis'n	6	2.5
	No. of miles officially approved by Highway Commis'n		
IX.	Total Engineering Cost—Road Construction, etc.		$ 701.88

SHELBY COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 3,608.13	$ 475.98
	Overdraft Jan. 1		
	Amount collected to Nov. 1	36,481.46	47,404.30
	Amount of balance Nov. 1		5,360.87
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		15,000.00
	Outstanding warrants Nov. 1	25,461.95	11,226.11
		1914	1915
	Estimated bridge funds to be collected during	47,945.43	47,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	400.00	75.80
	Bridge and culvert equipment on hand Nov. 1	7,553.79	
III.	Repair.		
	Amount spent in repair wood bridges	21.25	3,114.80
	Amount spent in repair steel bridges (wood floors)	1,668.61	1,317.96

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts	97	$ 5,443.77	232	$ 9,837.12
	Concrete pipe culverts	31	4,243.69	44	3,333.86
	Concrete box culverts	3	1,987.14	3	2,128.00
	Boiler pipe culverts	4	457.25	88	12,476.79
	Wood pile bridges	55	17,152.04	27	9,407.20
	Steel trusses, concrete floor and abutments	4	10,382.36	1	4,923.11
	Circular concrete culverts			3	78.54
	Sewer pipe culvert			1	6.75
	Head wall			1	118.90
	Miscellaneous culverts			3	37.50
		194	$37,666.25	403	$ 42,347.77

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 1,240.90	$ 1,331.57

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 9,153.54	$ 4,423.34
	Amount of overdraft		
		1913	1914
	Amount paid in	24,349.08	49,354.49
	Outstanding bills Nov. 1	7,705.87	8,000.00
	Outstanding warrants Nov. 1		355.99
	Amount of balance Nov. 1	4,423.34	8,209.15
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		36,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	700.00	952.85
III.	Repair.		
	Amount spent on road repairs on county road system	6,277.88	6,595.56
IV.	Culverts Classified as Road Work.		
	Total	7,591.01	27,600.29
V.	Maintenance of County Road System.		
	No. miles county road system	157	157
	No. miles regularly dragged		157
	Average number times dragged		23
	Average cost per mile dragged, both sides		$ .75
VI.	Permanent Work on County Road System.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed		10
	No. miles profile platted		10
IX.	Total Engineering Cost—Road Construction, etc	$ 346.69	$ 1,226.98

STORY COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 2,882.56	$ 10,271.33
	Overdraft Jan. 1		
	Amount collected to Nov. 1	42,211.06	43,860.80
	Amount of balance Nov. 1	16,860.45	14,556.97
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		456.00
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	42,000.00	38,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	3,000.00	5,000.00
	Bridge and culvert equipment on hand Nov. 1	850.00	500.00
III.	Repair.		
	Amount spent in repair wood bridges		
	Amount spent in repair steel bridges (wood floors)		3,700.00
	Amount spent in repair concrete bridges	390.00	17.00

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe	44	$ 4,266.34	51	$ 4,884.05
	Concrete box culverts	24	5,666.49	85	29,088.42
	Concrete arch bridges	5	11,911.10	1	1,760.00
	Corrugated pipe culverts				2,255.00
	Circular concrete culverts			2	225.00
	Concrete deck girder			1	1,570.00
	Abutment			1	601.95
	Wood pile bridges			2	210.35
	Concrete slab bridges			3	4,533.40
		73	$21,843.93	146	$ 45,128.17

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 944.43	$ 1,970.35

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$20,256.17	$ 24,969.58
	Amount of overdraft		
		1913	1914
	Amount paid in	19,803.47	45,395.20
	Outstanding bills Nov. 1	5,242.33	7,854.00
	Outstanding warrants Nov. 1	5,574.50	
	Amount of balance Nov. 1	24,969.58	26,278.36
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected	38,000.00	44,905.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	5,000.00	8,915.00
III.	Repair.		
	Amount spent on road repairs on county road system	1,026.00	2,044.80
IV.	Culverts Classified as Road Work.		
	Total		11,415.00
V.	Maintenance of County Road System.		
	No. miles county road system	135	133
	No. miles regularly dragged		133
	Average number times dragged		15
	Average cost per mile dragged, both sides		$ .75
VI.	Permanent Work on County Road System.		
	Permanently graded 1.3 miles costing	2,814.42	
	Lincoln Highway graded across county.		
	To permanent grade with standard cross section (Class II-A) 17.75 miles costing		23,563.53
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	11.5	37.5
	No. miles staked for grader repair	40	150
	No. miles profile platted	11.5	30
	No. miles grade line approved by Highway Commission	6.75	20.5
	No. miles officially approved by Highway Commission		20.5
IX.	Total Engineering Cost—Road Construction, etc	$ 756.58	$ 2,822.42

TAMA COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1		$ 17,880.08
	Overdraft Jan. 1	$ 5,052.12	
	Amount collected to Nov. 1	48,839.12	
	Amount of balance Nov. 1		3,270.54
	Overdraft Nov. 1		4,000.00
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated amount to be collected	54,712.67	60,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		554.40
III.	Repair.		
	Amount spent repair wood bridges	15,424.69	10,295.80
	Amount spent repair steel bridges (wood floors)		129.50
	Amount spent in repair concrete bridges	526.00	213.43

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Corrugated pipe culverts		$ 750.00		$ 4,190.46
	Concrete box culverts	97	18,433.74	96	31,944.34
	Stone culverts	3	542.70		
	Steel trusses, concrete floor and abutment	4	11,159.63	7	16,907.36
	I-Beam, concrete floor and abutment	7	10,824.23		
	Circular concrete culvert			1	108.62
	I-Beams, concrete abutment			8	8,343.72
	Head walls			4	294.79
	Miscellaneous culvert			1	189.99
		111	$41,710.30	117	$ 61,980.28

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 687.08	$ 1,780.80

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 2,516.28	$ 2,085.23
	Amount of overdraft		
		1913	1914
	Amount paid in	53,419.86	35,120.95
	Outstanding bills Nov. 1		5,500.00
	Outstanding warrants Nov. 1		573.00
	Amount of balance Nov. 1	2,085.23	
	Amount of overdraft Nov. 1		15,708.99
		1914	1915
	Estimated amount to be collected		50,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	4,000.00	3,005.00
III.	Repair.		
	Amount spent on road repairs county road system	6,708.99	10,322.18
IV.	Culverts Classified as Road Work.		
	Total	6,625.15	7,072.25
V.	Maintenance of County Road System.		
	No. miles county road system	207	207
	No. miles regularly dragged		
	Average number times dragged		10
	Average cost per mile dragged both sides		$ .80
VI.	Permanent Work on County Road System.		
	Permanently graded 7⅞ miles costing	17,177.11	
	To permanent grade with standard cross section (Class II-A) 7.42 miles costing		17,120.89
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	37	22
	No. miles staked for grader		
	No. miles profile platted	5	20.75
	No. miles grade line approved by Highway Commission		.75
	No. miles officially approved by Highway Commission		8.5
IX.	Total Engineering Cost—Construction, etc.	$ 973.00	$ 1,385.20

TAYLOR COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 2,222.05	$ 5,267.09
	Overdraft Jan. 1	30,373.45	35,181.01
	Amount collected to Nov. 1		45.40
	Amount of balance Nov. 1	4,466.69	
	Overdraft Nov. 1	336.50	
	Outstanding bills Nov. 1		890.04
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated amount to be collected	35,853.75	36,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	6,000.00	6,500.00
	Bridge and culvert equipment on hand Nov. 1	125.00	300.00
III.	Repair.		
	Amount spent in repair wood bridges	3,877.00	10,037.05
	Amount spent in repair steel bridges (wood floors)		
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	58	$12,549.74	42	$ 9,857.30
	Wood pile bridges	3	387.21	2	154.99
	I-Beam concrete abutment			1	1,194.53
	Concrete slab bridge			1	352.77
	Steel trusses with concrete floor and abut's			7	10,583.29
	Miscellaneous culverts			2	242.24
		61	$12,936.95	55	$ 22,385.12

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies		$ 1,345.30

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$14,439.25	$ 5,711.25
	Amount of overdraft		
		1913	1914
	Amount paid in	21,069.24	26,144.54
	Outstanding bills Nov. 1		3,883.00
	Outstanding warrants Nov. 1		132.10
	Amount of balance Nov. 1	5,711.25	
	Amount of overdraft Nov. 1		5,127.08
		1914	1915
	Estimated amount to be collected		25,878.09
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		800.00
	Road machinery on hand Nov. 1	1,500.00	
III.	Repair.		
	Amount spent on road repairs on county road system	2,600.00	6,783.70
IV.	Culverts Classified as Road Work.		
	Total		14,727.22
V.	Maintenance of County Road System.		
	No. miles county road system	172	172
	No. miles regularly dragged	100	130
	Average number times dragged		27
	Average cost per mile dragged, both sides		$ .60
VI.	Permanent Work on County Road System.		
	Permanently graded 5 miles at cost of	$10,561.11	
VII.	Permanent Work on Township Road System.		
	Spent on permanent grading		612.21
VIII.	Engineering.	1913	1914
	No. miles surveyed	10	4
	No. miles staked for grader repair		
	No. miles profile platted	5	
	No. miles grade line approved by Highway Commission	4	
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.		$ 942.00

UNION COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 1,440.12	$ 1,002.12
	Overdraft Jan. 1		
	Amount collected to Nov. 1	23,592.30	22,292.79
	Amount of balance Nov. 1		15,513.40
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		140.00
	Outstanding warrants Nov. 1	58,920.97	*
		1914	1915
	Estimated bridge funds to be collected during	29,869.54	23,578.06
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	3,137.65	1,651.22
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent repair wood bridges		3,151.26
	Amount spent repair steel bridges (wood floors)		939.04
	Amount spent repair concrete bridges		249.90

*Outstanding warrants taken up by $60,000 bond issue.

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete pipe culverts	46	$ 3,948.62	74	$ 3,289.87
	Concrete box culverts	1	242.63	7	6,044.00
	Steel trusses with concrete floor and abut's	2	5,738.10		
	Corrugated pipe culverts			7	374.58
	Concrete arch culverts	22	15,226.72	2	242.14
	Sewer pipe culvert			1	27.98
	Miscellaneous culvert			1	136.84
		71	$25,156.68	92	$ 10,115.41

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 1,425.28	$ 1,448.65

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 2,888.60	$ 14,419.41
	Amount of overdraft		
		1913	1914
	Amount paid in	15,912.70	21,154.20
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		
	Amount of balance Nov. 1	14,419.40	6,448.05
	Amount of overdraft		
		1914	1915
	Estimated amount to be collected		23,915.34
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		260.72
	Road machinery on hand Nov. 1		1,811.00
III.	Repair.		
	Amount spent on road repairs county road system	6,819.43	9,787.10
IV.	Culverts Classified as Road Work.		
	Total	5,008.00	21,234.48
V.	Maintenance of County Road System.		
	No. miles county road system	152	152
	No. miles regularly dragged		
	Average number times dragged		6.7
	Average cost per mile dragged both sides		$ .60
VI.	Permanent Work on County Road System.		
	To temporary grade with standard cross section (Class II-B) mile costing		70.00
VII.	Permanent Work on Township Road System.		
VIII	Engineering.	1913	1914
	No. miles surveyed	2.75	2
	No. miles staked for grader repair		
	No. miles profile platted	2.75	
	No. miles grade line approved by Highway Commission	1.25	
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost	$ 257.26	$ 1,448.65

VAN BUREN COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 1,851.70	$ 4,528.09
	Overdraft Jan. 1		
	Amount collected to Nov. 1	19,693.81	20,934.90
	Amount of balance Nov. 1	6,513.63	1,283.96
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1	492.35	5,683.34
		1914	1915
	Estimated amount to be collected	20,800.00	21,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	776.00	2,099.72
	Bridge and culvert equipment on hand Nov. 1		1,999.76
III.	Repair.		
	Amount spent in repair wood bridges	4,641.32	335.29
	Amount spent in repair steel bridges (wood floors)		10,523.48
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	20	$ 3,143.40	37	$ 11,229.93
	Concrete slab bridges	2	400.40		
	Corrugated pipe culverts			176	5,247.15
	Circular concrete culverts			7	1,298.67
	Masonry arch culvert			1	192.28
	Boiler pipe culverts			82	7,253.80
	I-Beam concrete abutment			1	1,046.42
	Retaining wall			1	315.00
		22	$ 3,543.80	305	$ 26,583.25

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 623.00	$ 1,350.00

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 2,217.23	$ 1,699.50
	Amount of overdraft		
		1913	1914
	Amount paid in	12,889.29	21,904.57
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		4,973.86
	Amount of balance Nov. 1	1,699.50	1,964.64
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		18,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	776.00	
	Road machinery on hand Nov. 1	6,475.00	4,360.00
III.	Repair.		
	Amount spent on road repairs on county road system	9,547.94	6,879.65
IV.	Culverts Classified as Road Work.		
	Total	2,788.05	12,733.65
V.	Maintenance of County Road System.		
	No. miles county road system	132.8	132.8
	No. miles regularly dragged	108	132.8
	Average number times dragged	4	14
	Average cost per mile dragged, both sides	$ .65	$ 1.18
VI.	Permanent Work on County Road System.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed		
	No. miles staked for grader repair		
	No. miles profile platted		
	No. miles grade line approved by Highway Commission		
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 462.00	$ 423.00

WAPELLO COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 1,310.60	
	Overdraft Jan. 1		$ 1,284.68
	Amount collected to Nov. 1	34,947.38	23,499.60
	Amount of balance Nov. 1		11,989.53
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		9,098.43
	Outstanding warrants Nov. 1		32,897.61
		1914	1915
	Estimated bridge funds to be collected	21,619.48	18,833.55
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,300.00	277.20
	Bridge and culvert equipment on hand Nov. 1	495.00	465.00
III.	Repair.		
	Amount spent in repair wood bridges	530.43	945.63
	Amount spent in repair steel bridges (wood floors)	44.91	4,134.77
	Amount spent in repair concrete bridges		647.25

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	23	$12,627.39	32	$ 16,482.67
	Boiler pipe culvert	1	454.26		
	Concrete slab bridges	2	1,842.66		
	Steel trusses with concrete floor and abut's	2	2,826.21		
	I-Beam concrete abutments			4	4,116.21
		28	$17,750.52	36	$ 20,598.88

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 520.00	$ 1,142.00

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 6,181.15	
	Amount of overdraft		$ 4,000.00
		1913	1914
	Amount paid in	18,456.79	
	Outstanding bills Nov. 1	3,450.00	7,512.18
	Amount of balance Nov. 1		
	Outstanding warrants Nov. 1		7,529.00
	Amount of overdraft Nov. 1	4,000.00	2,076.43
		1914	1915
	Estimated amount to be collected		23,500.23
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	4,142.00	3,785.00
III.	Repair.		
	Amount spent on road repairs on county road system	7,507.53	30,481.27
IV.	Culverts Classified as Road Work.		
	Total	1,062.55	
V.	Maintenance of County Road System.		
	No. miles county road system	121.8	121.8
	No. miles regularly dragged	121.8	121.8
	Average number times dragged	15	2
	Average cost per mile dragged, both sides	$ .60	$ .55
VI.	Permanent Work on County Road System.		
	To permanent grade with standard cross section (Class II-A) .31 mile costing		405.95
VII.	Permanent Work on Township Road System.		
	To permanent grade with standard cross section (Class II-A) .15 mile costing		580.00
VIII.	Engineering.	1913	1914
	No. miles surveyed		16
	No. miles staked for grader repair		
	No. miles profile platted		16
	No. miles grade line approved by Highway Commission		11
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 250.00	$ 935.61

WARREN COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 9,877.03	$ 7,884.27
	Overdraft Jan. 1		
	Amount collected to Nov. 1	20,704.05	32,953.42
	Amount of balance Nov. 1	7,815.51	17,647.41
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		5,800.00
	Outstanding warrants Nov. 1		64.02
		1914	1915
	Estimated bridge funds to be collected	28,000.00	28,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		6,000.00
	Bridge and culvert equipment on hand Nov. 1		500.00
III.	Repair.		
	Amount spent in repair wood bridges		4,102.04
	Amount spent in repair steel bridges, wood floors		2,542.32
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	14	$ 7,523.55	26	$ 9,711.70
	Corrugated pipe culverts			148	4,070.92
	Circular concrete culverts			66	4,312.41
	Sewer pipe culverts			5	571.78
	Head wall			1	176.88
	Wood pile bridges			46	7,819.15
		14	$ 7,523.55	292	$ 26,662.84

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 765.00	$ 2,084.85

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 8,390.81	$ 14,337.53
	Amount of overdraft		
		1913	1914
	Amount paid in	12,879.02	33,535.25
	Outstanding bills Nov. 1	8,545.17	4,200.00
	Amount of balance Nov. 1	14,337.53	6,032.29
	Outstanding warrants Nov. 1	22.50	46.84
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		33,500.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		478.00
	Road machinery on hand Nov. 1	300.00	2,528.00
III.	Repair.		
	Amount spent on road repairs on county road system	4,526.00	4,054.65
IV.	Culverts Classified as Road Work.		
	Total	2,713.06	5,869.08
V.	Maintenance of County Road System.		
	No. miles county road system	170	170
	No. miles regularly dragged	125	125
	Average number times dragged		
	Average cost per mile dragged, both sides	$ 1.05	
VI.	Permanent Work on County Road System.		
	Spent on permanent grading		2,139.45
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed		1
	No. miles staked for grader repair		
	No. miles profile platted		1
	No. miles grade line approved by Highway Commission		1
	No. miles officially approved by Highway Commission		1
IX.	Total Engineering Cost—Road Construction, etc.		$ 152.75

WASHINGTON COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$ 3,637.60	
	Overdraft Jan. 1		$ 4,884.67
	Amount collected to Nov. 1	32,749.20	41,092.46
	Amount of balance Nov. 1		4,680.98
	Overdraft Nov. 1	4,884.67	
	Outstanding bills Nov. 1		4,642.00
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	41,264.54	41,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		1,433.70
	Bridge and culvert equipment on hand Nov. 1		1,100.00
III.	Repair.		
	Amount spent in repair wood bridges	15,305.19	6,324.48
	Amount spent in repair steel bridges (wood floors)		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Incased vitrified pipe culverts	17	$ 1,410.83		
	Concrete box culverts	40	15,582.06	29	$ 10,777.76
	Circular concrete culverts	2	261.10	2	265.62
	Boller pipe culverts	36	1,438.81		
	I-Beam concrete abutments	5	4,608.73	4	4,676.74
	Abutments	5	2,664.75	3	2,441.18
	Concrete deck girder			1	3,774.00
	Head walls			2	479.34
	Miscellaneous culvert			1	207.40
		105	$25,966.28	42	$ 22,622.04

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 646.67	$ 853.95

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 5,334.73	$ 8,636.80
		1913	1914
	Amount paid in	13,774.62	44,592.49
	Outstanding bills Nov. 1		
	Amount of balance Nov. 1	5,812.71	
	Outstanding warrants Nov. 1		
	Amount of overdraft Nov. 1		1.98
		1914	1915
	Estimated amount to be collected		600.00
II.	Equipment and Material.	1913	1914
	Road machinery on hand Nov. 1	2,800.00	7,000.00
III.	Repair.		
	Amount spent on road repairs on county road system		4,217.72
IV.	Culverts Classified as Road Work.		
	Total	3,637.60	4,418.74
V.	Maintenance of County Road System.		
	No. miles county road system	177	177
	No. miles regularly dragged		172
	Average number times dragged		22.5
	Average cost per mile dragged, both sides		$ .80
VI.	Permanent Work on County Road System.		
	To permanent grade with standard cross section (Class II-A) 3.58 miles costing		21,126.45
VII.	Permanent Work on County Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed	129	37.5
	No. miles staked for grader repair	35	37
	No. miles profile platted	74	30.5
	No. miles grade line approved by Highway Commission	1	10
IX.	Total Engineering Cost—Road Construction, etc.	$ 994.71	$ 1,280.97

WAYNE COUNTY.

Bridges.

I.	Bridge Fund.	1913	1914
	Balance on hand Jan. 1	$25,408.82	$ 27,440.82
	Overdraft Jan. 1		
	Amount collected to Nov. 1	27,303.02	12,928.35
	Amount of balance Nov. 1		4,577.11
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		5,246.40
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	18,926.00	12,500.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		2,628.57
	Bridge and culvert equipment on hand Nov. 1	150.00	375.00
III.	Repair.		
	Amount spent in repair wood bridges		2,099.64
	Amount spent in repair steel bridges (wood floors)		1,049.82
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	7	$ 1,842.95	51	$ 23,051.81
	Concrete pipe culverts with head walls			12	1,265.79
	Steel truss, wood floor, concrete abutments			1	1,201.51
	Cast iron culverts			15	1,684.58
	Corrugated pipe culverts			100	6,623.72
	Concrete pipe culverts			43	2,187.14
	Cast iron pipe culverts			115	5,979.88
		7	$ 1,842.95	337	$ 41,994.43

V.	Engineering on Bridge and Culvert Repair and Construction	1913	1914
	Salaries, transportation and supplies	$ 651.84	$ 871.80

Roads.

I.	County Road Fund.	Jan. 1-13	Nov. 1-13
	Amount of balance	$ 6,167.75	$ 5,129.30
	Amount of overdraft		
		1913	1914
	Amount paid in	10,935.20	23,218.79
	Outstanding bills Nov. 1		2,192.87
	Amount of balance Nov. 1	5,129.30	
	Outstanding warrants Nov. 1		
	Amount of overdraft Nov. 1		465.40
		1914	1915
	Estimated amount to be collected		24,500.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	233.00	1,570.00
III.	Repair.		
	Amount spent on road repairs on county road system		7,036.73
IV.	Culverts Classified as Road Work.		
	Total		14,520.34
V.	Maintenance of County Road System.		
	No. miles county road system	167	167
	No. miles regularly dragged		167
	Average number times dragged		13
	Average cost per mile dragged, both sides	$ 1.00	$ 1.00
VI.	Permanent Work on County Road System.		
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. miles surveyed		6.5
	No. miles staked for grader repair		63
	No. miles profile platted		1.5
	No. miles grade line approved by Highway Commission		
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 651.84	$ 871.70

WINNEBAGO COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 6,395.20	
	Overdraft Jan. 1		
	Amount collected to Nov. 1	10,644.80	$ 14,100.16
	Amount of balance Nov. 1	8,064.49	6,241.91
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		5,000.00
	Outstanding warrants Nov. 1	1,450.52	
		1914	1915
	Estimated bridge funds to be collected	15,000.00	16,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	2,297.05	1,470.00
	Bridge and culvert equipment on hand Nov. 1	2,297.05	1,470.00
III.	Repair.		
	Amount spent in repair of wood bridges	1,084.72	2,517.09
	Amount spent in repair steel bridges with wood floors		3.00
	Amount spent in repair of concrete bridges		808.80

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box culverts	16	$ 6,228.80	35	$ 9,666.70
	Corrugated pipe culverts			44	1,318.39
	Wood pile bridges	5	864.15	1	158.00
	Circular concrete culverts			3	373.50
		21	$ 7,092.95	83	$ 11,516.59

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 480.65	$ 706.52

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 1,416.40	$ 3,156.68
	Amount of overdraft		
		1913	1914
	Amount paid in	11,254.86	24,684.54
	Outstanding bills Nov. 1	2,000.00	7,000.00
	Outstanding warrants Nov. 1		
	Amount of balance Nov. 1	3,156.68	8,905.57
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		28,000.00
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	845.30	1,856.60
III.	Repair.		
	Amount spent on road repairs on rounty road system	2,218.15	5,999.90
IV.	Culverts Classified as Road Work.		
	Total	1,836.47	1,939.46
V.	Maintenance of County Road System.		
	No. of miles county road system	128.8	128.8
	No. of miles regularly dragged	122	125
	Average number of times dragged	10.5	21
	Average cost per mile dragged, both sides	$ .53	$ .60
VI.	Permanent Work on County Road System.		
	1913—Work started on 2 miles of road.		
	To permanent grade with standard cross section (Class II-A) 14 miles costing		14,454.75
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	29	24
	No. of miles staked for grader repair		8
	No. of miles profile platted	21	22
	No. miles grade line approved by Highway Commission	15	22
	No. miles officially approved by Highway Commission	1	20
IX.	Total Engineering Cost	$ 1,319.15	$ 1,373.35

WINNESHIEK COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Overdraft Jan. 1	$ 9,144.60	$ 4,678.98
	Amount collected to Nov. 1	35,244.10	37,803.55
	Amount of balance Nov. 1	6,434.45	
	Overdraft Nov. 1		10,032.39
	Outstanding bills Nov. 1		3,700.00
	Outstanding warrants Nov. 1		6,913.80
		1914	1915
	Estimated bridge funds to be collected	37,837.18	39,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	486.40	575.00
	Bridge and culvert equipment on hand Nov. 1	200.00	875.00
III.	Repair.		
	Amount spent repair wood bridges	4,806.41	3,548.68
	Amount spent repair steel bridges with wood floors	5,745.89	1,623.85
	Amount spent in repair concrete bridges	305.96	699.03

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete pipe culverts	125	$10,225.67		
	Concrete circular culverts			95	$ 7,462.60
	Concrete box culverts	15	2,713.93	61	12,401.40
	Boiler pipe culverts	1	53.43	4	150.20
	Concrete arch culverts			25	2,929.40
	I-Beam on piling	1	427.91		
	I-Beam spans, concrete floors			11	13,664.38
	I-Beam concrete abutments	9	11,861.99		
	I-Beam spans, wood floors			10	4,570.26
	Abutments	4	1,775.20		
	High steel trusses	2	14,101.27		
	Steel trusses			2	14,721.79
	Steel truss			1	469.96
	Concrete abutments			2	1,502.46
	Stone abutments			4	1,830.07
	I-Beam spans			3	1,160.49
	Steel top, concrete floor			1	361.37
	Concrete slab stone abutment			1	941.05
	Concrete slab concrete abutment (½ cost)			1	606.81
	Pile wings			4	450.48
	Stone arch ½ cost			1	61.12
	Concrete footing and wing			1	410.93
	Corrugated culvert pipes			174	2,767.75
		157	$41,159.40	397	$ 66,462.52

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 1,274.00	$ 1,929.80

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of overdraft	$ 1,542.27	$ 293.22
		1913	1914
	Amount paid in	25,770.77	38,550.83
	Amount of overdraft Nov. 1	293.22	6 030.39
		1914	1915
	Estimated amount to be collected		40,000.00
II.	Equipment and Material.	1913	1914
	Road machinery on hand Nov. 1	2,187.00	2,784.00
III.	Repair.		
	Amount spent repairs county road system	9,616.32	15,497.52
IV.	Culverts Classified as Road Work.		
	Total	9,224.92	15,511.00
V.	Maintenance of County Road System.		
	No. miles county road system	202.3	202.3
	No. miles regularly dragged		202.3
	Average number times dragged		17
	Average cost per mile dragged, both sides		$ .90
VI.	Permanent Work on County Road System.		
	Permanently graded 5,000 feet costing	$ 635.00	
	Surfaced 4,400 ft. with gravel costing	1,643.95	
	Spent surfacing with 20 ft. gravel		404.10
	Spent surfacing with 24 ft. gravel		337.10
VII.	Permanent Work on Township Road System.	1913	1914
VIII.	Engineering.		
	No. miles surveyed	1	25
	No. miles profile platted	1	24
IX.	Total Engineering Cost—Construction, etc	$ 710.60	$ 2,282.41

WEBSTER COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$15,922.24	$ 17,162.47
	Overdraft Jan. 1		
	Amount collected to Nov. 1	30,703.85	36,363.15
	Amount of balance Nov. 1	31,396.16	15,099.60
	Overdraft Nov. 1		
	Outstanding warrants Nov. 1		
	Outstanding bills Nov. 1	14,233.00	1,600.00
		1914	1915
	Estimated bridge funds to be collected during	37,756.00	37,756.68
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	1,875.00	1,960.00
	Bridge and culvert equipment on hand Nov. 1	150.00	435.00
III.	Repair.		
	Amount spent in repair wood bridges		1,120.42
	Amount spent in repair steel bridges (wood floors)		2,280.06
	Amount spent in repair concrete bridges		

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete pipe culverts	3	$ 367.10		
	Corrugated pipe culverts			2	$ 206.37
	Concrete box culverts	13	3,819.37	43	10,374.27
	Circular concrete culvert	1	935.00		
	Cost I. pipe culverts			15	965.89
	I-Beams on piling	18	9,445.13	1	178.83
	I-Beams, concrete abutments	7	8,720.35	8	7,321.68
	Wood pile bridges	3	458.83		
	Concrete abutments			2	954.24
	Steel truss on piling	1	995.00		
	Head walls			12	1,442.32
	Concrete slab bridges			2	2,063.79
	Steel trusses, concrete floors and abutments			3	4,463.00
	I-Truss on piling			1	789.70
	I-Beams on piling			2	962.46
		46	$24,740.78	91	$ 29,662.55

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 1,009.60	$ 1,120.42

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 7,437.63	$ 13,521.13
	Amount of overdraft		
		1913	1914
	Amount paid in	30,071.48	37,300.96
	Outstanding bills Nov. 1		300.00
	Amount of balance Nov. 1	13,521.13	6,000.00
	Outstanding warrants Nov. 1		
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected during		38,433.10
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1		
	Road machinery on hand Nov. 1	709.50	8,113.00
III.	Road Repair.		
	Amount spent on road repairs on county road system	2,703.58	1,589.90
IV.	Culverts Classified as Road Work.		
	Total	1,506.47	
V.	Maintenance of County Road System.		
	No. of miles county road system	181	181
	No. of miles regularly dragged	95	178
	Average number of times dragged	21	24.1
	Average cost per mile dragged, both sides	$ .75	$ 1.00
VI.	Permanent Work on County Road System.		
	Permanently graded 7.000 ft. Costing	6,451.14	
	To permanent grade with standard cross section (Class II-A) 26.5 miles costing		25,853.96
VII.	Permanent Work on Township Road System.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	32	39.75
	No. of miles staked for grader repair		
	No. of miles profile platted	7.25	51.5
	No. miles grade line approved by Highway Commission	4	33.5
	No. miles officially approved by Highway Commission	4	24.5
IX.	Total Engineering Cost—Road Construction, etc.	$ 2,345.64	$ 4,442.82

WOODBURY COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 8.05	$ 317.97
	Overdraft Jan. 1	35,527.23	49,882.84
	Amount collected to Nov. 1	1,315.04	131.73
	Amount of balance Nov. 1		
	Overdraft Nov. 1	10,037.68	
	Outstanding bills Nov. 1	34,222.88	284.51
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected	51,465.00	50,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1	3,717.00	4,243.00
	Bridge and culvert equipment on hand Nov. 1	639.00	1,614.90
III.	Repair.		
	Amount spent in repair wood bridges	19,711.86	
	Amount spent in repair steel bridges (wood floors)	184.54	11,174.72
	Amount spent in repair concrete bridges		68.09

		1913		1914	
		No.	Cost	No.	Cost
IV.	New Construction.				
	Concrete box abutments	23	$15,359.46		
	Corrugated pipe culverts			4	$ 209.40
	I-Beams on concrete abutments	2	973.44	1	1,555.24
	Concrete box culverts			53	22,009.79
	Boiler pipe culvert			1	108.90
	Concrete deck girders	1	1,649.30	2	3,862.02
	Steel girder			1	1,629.57
	Concrete arch bridge	1	2,867.50		
	I-Beams on pilings			3	1,361.64
	Concrete slab bridges	4	5,001.70	1	2,319.04
	Steel trusses, concrete floor and abutments	4	7,736.11	4	10,594.49
		35	$33,587.51	70	$ 43,650.09

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 1,787.69	$ 3,621.11

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$ 846.30	$ 15,654.94
	Amount of overdraft		
		1913	1914
	Amount paid in	26,170.32	
	Outstanding bills Nov. 1	5,808.16	5,835.80
	Outstanding warrants Nov. 1	15,654.94	6,591.54
	Amount of balance Nov. 1		
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		
II.	Equipment and Material.	1913	1914
	Road material on hand Nov. 1	3,347.00	2,323.00
	Road machinery on hand Nov. 1		
III.	Repair.	11,735.64	7,825.02
	Amount spent on road repairs on county road system		
IV.	Culverts Classified as Road Work.	1,372.96	7,733.60
	Total		
V.	Maintenance of County Road System.	213	213
	No. miles county road system	200	162
	No. miles regularly dragged	10	45
	Average number times dragged	$ .57	$ .71
	Average cost per mile dragged, both sides		
VI.	Permanent Work on County Road System.	2,930.20	
	Permanently graded 1.3 miles costing		12,983.70
	Spent on permanent road work		
VII.	Permanent Work on Township Road System.	1913	1914
VIII.	Engineering.	32	150
	No. miles surveyed		40
	No. miles staked for grader repair	31	24
	No. miles profile platted	4.5	15
	No. miles grade line approved by Highway Commission		
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Road Construction, etc.	$ 3,778.77	$ 15,471.86

†Note: Includes $2,623.50 cost of running center lines on all county road system.

WORTH COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 1,056.21	
	Overdraft Jan. 1		
	Amount collected to Nov. 1	14,907.97	$ 19,722.11
	Amount of balance Nov. 1	9,494.27	3,491.50
	Overdraft Nov. 1		
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		
		1914	1915
	Estimated bridge funds to be collected during	19,388.43	16,000.00
II.	Equipment and Material.	1913	1914
	Bridge and culvert material on hand Nov. 1		225.00
	Bridge and culvert equipment on hand Nov. 1	400.00	400.00
III.	Repair.		
	Amount spent in repair wood bridges		
	Amount spent in repair steel bridges (wood floors)		556.68

	Type	1913 No.	1913 Cost	1914 No.	1914 Cost
IV.	New Construction.				
	Concrete box culverts	17	$ 2,238.14	86	$ 10,328.89
	Corrugated pipe culvert			1	33.60
	Concrete through girder	1	1,228.00		
	Abutment	1	305.10		
	Concrete deck girder			1	1,460.00
	Concrete arch bridge	1	5,638.33		
	Pony truss, concrete floor and abutments			1	2,000.00
	Concrete slab bridges	2	3,078.00	4	4,568.00
	Steel high truss, wood floor and abutments			1	1,756.31
		22	$12,487.57	94	$ 20,146.80

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 457.60	$ 200.00

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$12,671.05	$ 21,133.03
	Amount of overdraft		
		1913	1914
	Amount paid in		16,599.02
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		
	Amount of balance Nov. 1	21,133.03	
	Amount of overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected		12,000.00
II.	Equipment and Material.	1913	1914
	Road machinery on hand Nov. 1	3,600.00	3,600.00
III.	*Repair.*		
	Amount spent on repairs county road system	1,012.64	
IV.	Culverts Classified as Road Work.		
	Total		
V.	Maintenance of County Road System.		
	No. miles county road system	114.5	114.5
	No. miles regularly dragged		60
	Average number times dragged		12
	Average cost per mile dragged, both sides		$ .75
VI.	Permanent Work on County Road System.		
	Permanent work done on 18 miles at cost of	1,333.90	
	To temporary grade with standard cross section (Class II-B) 1 mile costing		400.20
	Tractor grader work (Class II-C) 30 miles costing		2,192.98
	Surfaced 8 miles with gravel at cost of		1,924.14
VII.	Permanent Work on Township Road System.		
	1914—Temporary grade line, 94 miles.		
VIII.	Engineering.	1913	1914
	No. of miles surveyed	35	79
	No. of miles staked out for grader repair		
	No. of miles profile platted	20	79
	No. miles grade line approved by Highway Commission	10	20
IX.	Total Engineering Cost—Road Construction, etc.	$ 728.75	$ 998.50

WRIGHT COUNTY.

Bridges.

		1913	1914
I.	Bridge Fund.		
	Balance on hand Jan. 1	$ 2,623.80	$ 4,666.45
	Overdraft Jan. 1		
	Amount collected to Nov. 1	32,173.68	44,445.53
	Amount of balance Nov. 1	4,519.14	19,901.70
	Overdraft Nov. 1		
	Outstanding bills Nov. 1	44,248.51	20,889.66
	Outstanding warrants Nov. 1	1914	1915
	Estimated funds to be collected during	1913	45,000.00
II.	Equipment and Material.		1914
	Bridge and culvert material on hand Nov. 1		500.00
	Bridge and culvert equipment on hand Nov. 1		
III.	Repair.		
	Amount spent in repair wood bridges	55.75	13,144.31
	Amount spent in repair steel bridges (wood floors)	10,153.25	
	Amount spent in repair concrete bridges		

	Type	1913 No.	1913 Cost	1914 No.	1914 Cost
IV.	New Construction.				
	I-Beam concrete abutments	23	$21,444.76	11	$ 9,467.71
	Floor and abutments	13	24,591.86		
	Steel trusses, concrete floors and abutment				
		36	$46,036.62	11	$ 9,467.71

		1913	1914
V.	Engineering on Bridge and Culvert Repair and Construction		
	Salaries, transportation and supplies	$ 225.00	$ 675.00

Roads.

		Jan. 1-13	Nov. 1-13
I.	County Road Fund.		
	Amount of balance	$14,104.28	$ 7,655.53
	Amount of overdraft		
		1913	1914
	Amount paid in	17,706.18	39,642.25
	Outstanding bills Nov. 1		
	Outstanding warrants Nov. 1		8,961.61
	Amount of balance Nov. 1	7,655.53	5,688.80
	Overdraft Nov. 1		
		1914	1915
	Estimated amount to be collected	1913	45,000.00
II.	Equipment and Material.		1914
	Road material on hand Nov. 1	6,000.00	3,500.00
	Road machinery on hand Nov. 1		2,760.00
III.	Repair.		
	Amount spent on road repairs on county road system		4,492.59
IV.	Culverts Classified as Road Work.		
	Total	173.5	173.5
V.	Maintenance of County Road System.		171
	No. of miles county road system		10.5
	No. of miles regularly dragged		$ .96
	Average number of times dragged		
	Average cost per mile dragged, both sides		
VI.	Permanent Work on County Road System.		
	1913—Wheel scraper work done on 11 miles of road.		
	Blade grader work done on 9 miles of road.		7,528.31
	Surfaced 7.5 miles with gravel at cost of		
	1914—Wheel scraper, 10 miles.		
	Blade grader, 47 miles.		
VII.	Permanent Work on Township Road System.		
	1914—Temporary grade line, 94 miles.		
	Blade grader.	1913	1914
VIII.	Engineering.	55	12
	No. of miles surveyed		141
	No. of miles staked for grader repair	52	12
	No. of miles profile platted	6	
	No. miles grade line approved by Highway Commission		
	No. miles officially approved by Highway Commission		
IX.	Total Engineering Cost—Construction, etc.	$ 2,533.80	$ 4,481.14

INDEX

PART ONE.

DEPARTMENTAL REPORT, APRIL, 1913-DECEMBER, 1913.

PAGE

SECTION ONE.—*General Review, 1913.*

Organization prior to April 9, 1913 7
Organization of Present Commission 9
Departments 10
Service Bulletin Number One, May edition 10
Road Maps 11
Meeting with Committee on Retrenchment and Reform 12
Civil Service Principles 12
Conference with State Accounting Department 12
Conference with Committee Representing County Auditors 12
Conference with County Engineers 13
Adjustment of Existing Contracts 13
Adoption of Tentative Road System 14
Examination of Final County Road System 14
Changes of Engineers 15
Approval of Contracts 15
Approval of Road Plans 15
Meeting with County Boards of Supervisors 15
Salaries and Per Diem of the Commission 15
Schedule 1—
Personnel and Salaries of the Commission and Administrative Department 16
Schedule 2—
Bonds of Commissioners and Employes 16
Schedule 3—
Appointments filled by Commissioners 17

SECTION TWO.—*Designing Department.*

Methods and Cost Keeping 21
County Bridge Maps 22
County Road Maps 22
County Bridge Plans 23
Schedule 4—
Special Plans Prepared for Counties 23
Description and Extent of Work Done on Standard Plans 24
Permanent Standards 26
Wooden Bridges 28
Steel Bridges 28
Standards for Road Work 28
Checking of Working Drawings for Steel Bridges 29

PAGE

Schedule 5—
List of Shop Drawings of Steel Bridges Submitted for Approval... 29
Approval of Special Designs Submitted by County Engineers and Contractors for Analysis and Approval..... 30
Schedule 6—
List of Special Designs Submitted by County Engineers and Contractors 31
Schedule 7—
Inspection Trips by Members of Designing Department..... 33
Tests and Research Work..... 34
Cost of Operation..... 34
Conclusion 34
Schedule 8—
Supplies and Salaries..... 34
Schedule 9—
Personnel and Salaries of Designing Department..... 35

SECTION THREE.—*Field Department.*
District Division..... 36
Explanation of the Road Law..... 37
Examination of Bridge Sites for New Structures..... 37
Attending Bridge Lettings and Inspection of Bridge Construction 38
Investigation of Complaints..... 38
Investigation of County Road Systems..... 39
Examination of Emergency Work..... 40
Approval of Grade Lines for Road Improvement..... 40
Special Assignments..... 41
Detailed Statement of Activities of Field Department..... 42
Schedule 11—
Detailed Statement of Appointments of Field Engineers..... 42
Schedule 12—
Distribution of Time Spent in the Field..... 52
Schedule 13—
Personnel and Salaries of the Field Department..... 52

SECTION FOUR.—*Educational Department.*
Publication of Monthly Service Bulletin..... 53
Activities of the Educational Department..... 53
Schedule 14—
Personnel and Salaries of Educational Department..... 54

SECTION FIVE.—*Office and Accounting Department.*
Correspondence 55
Accounting 55
Filing 56
Reports 56
All Commission Records 56
Approval of Contracts..... 57
Schedule 15—
Contracts Submitted for Approval..... 58
Purchasing of Supplies 59
Uniform Record Blanks..... 59

PAGE

Schedule 16—
Blanks Prepared for Uniform Accounting and Records..... 59
Inventories 61
Schedule 17—
Personnel and Salaries of Office and Accounting Department.... 61

PART TWO.

DEPARTMENTAL REPORT, DECEMBER, 1913, TO DECEMBER, 1914.

SECTION ONE.—*General Review.*
Change in Sentiment..... 65
Final Approval of County Road System..... 66
Road Meetings..... 67
Short Course for Highway Engineers..... 68
Standard Specifications and Classifications for Road Work..... 68
Official Communications..... 69
Conference with the Board of Railroad Commissioners and Representatives of the Railroads in Iowa..... 69
Report on Road Materials and Freight Rates..... 71
Changes of Engineers..... 71
Monthly Meetings..... 71
Bonds Voted for Bridge Construction..... 72
Federal Post Roads..... 72
Registration of Routes..... 73
Quarters for the Highway Commission..... 73
Convict Labor..... 74
Conference in Franklin County..... 74
Iowa Federation of Women's Clubs..... 75
Appointments of Commissioners..... 76
Schedule 20—
Personnel and Salaries of Commissioners and Administrative Engineers 76

SECTION TWO.—*Designing Department.*
Schedule 21—
Bridge Designs and Specific Locations..... 78
Schedule 22—
Analysis and Approval of Bridge and Culvert Plans Submitted... 80
Checking and Approval of Working Drawings..... 81
Schedule 23—
Working or Shop Drawings Submitted for Approval..... 81
Work on County Road Profiles and Maps..... 83
County Road Profiles..... 83
Miscellaneous Road Plats..... 83
Preparation of Plans for Improvement of Dangerous Railroad Crossings 83
Special Inspection Trips and Preparation of Technical Reports for Counties 84

PAGE

Schedule 24—
Special Inspection Trips and Preparation of Reports 85
General Investigation of Concrete Bridge Construction Throughout the State 86
Experimental and Research Work 86
Preparation of Evidence in Litigation Involving Bridge Patents 86
Surveys and Plans for State and County Institution Buildings and Grounds 87
Highway Engineers' Short Course 87
Traffic Investigation 88
Miscellaneous Drafting Work 88
Summary 88
Schedule 25—July, 1913, to June 30, 1914—
Personnel and Salaries of Designing Department 89

SECTION THREE.—*Field Department.*
Explanation of the Road Law 90
Examination of Bridge Sites 91
Bridge Lettings Attended 91
Inspection and Supervision of Bridge Work 92
Emergency Work 92
Special Assignments 93
Investigation of County Road Systems 94
Approval of Grade Lines 95
Inspection and Supervision of Road Work 95
Investigation of Complaints 96
Explanation of Yearly Report Blanks 97
Railway Crossing Work 97
Detailed Report of Field Engineers 98
Organization 98
Field Districts 98
Schedule 31—July, 1913, to June 30, 1914—
Personnel and Salaries of Field Department 100
Schedule 26—
Field Notes—Bridges. (Taken by Field Department) 100
Schedule 27—
Bridge Lettings Attended 102
Schedule 28—
Emergency Bridge Work Certified by Commission 104
Schedule 29—
Approval of Grade Lines and Profiles 104
Schedule 30—
Complaints investigated 106
Schedule 32—
Classification of Field Work by Districts 109
Schedule 33—
Showing Number of Trips and Days Spent in Each County 109
Schedule 34—
Detailed Trip Report of Field Engineers 110

PAGE

SECTION FOUR.—*Educational Department.*
Meetings 127
Schedule 35—
Summary of Educational Meetings 130
Publications 130
Exhibits 131
School of Instruction for Highway Engineers 131
Photographs 133
Relation of Highway Improvement to Rural Development 134
Engineers' Short Course 134
Schedule 37—July, 1913, to June 30, 1914—
Personnel and Salaries of Educational Department 134
Schedule 36—
Road Meetings by Counties 135

SECTION FIVE.—*Office and Accounting Department.*
Blank Forms 138
Schedule 16-A—
Blanks Prepared for Uniform Accounting and Records 138
Official Communications 140
Contract Approval 140
Schedule 38—
Contracts Submitted for Approval 141
Accounting Work on State Roads 144
County Engineers' Reports 144
Schedule 39—July, 1913, to June 30, 1914.
Personnel and Salaries of Office and Accounting Department 144

PART THREE.

HIGHWAY LEGISLATION.

SECTION ONE.—
Amendments and Additions to the Iowa Road Law Recommended by the County Supervisors and Engineers 147
Resolutions Passed by Supervisors' Convention 147
Resolutions Committee 148
Recommendations of County Engineers 149

SECTION TWO.—
Amendments and Additions to the Present Highway Legislation Recommended by the State Highway Commission 152
1. Resolution of Necessity 152
2. Authority to Condemn Land for Road Purposes 153
3. Drainage Districts for Draining County Roads 153
4. Road Poll Tax 153
5. Date of Making Engineer's Report 153
6. Extension of County Road System 154
7. Trees, Brush and Weeds on Roads 154
8. Alteration of County Road Systems 154