

STATE OF IOWA
1920

REPORT OF THE

State Highway Commission

FOR THE

Year Ended December 1, 1920

ISSUED BY THE
STATE HIGHWAY COMMISSION
AMES, IOWA

J. W. HOLDEN, Chairman
WM. COLLINSON
A. MARSTON

State Highway Commissioners

FRED R. WHITE
CHIEF ENGINEER

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LETTER OF TRANSMITTAL

Hon. W. L. Harding, Governor:

Pursuant to the provisions of Section 2860, Compiled Code 1919, the State Highway Commission presents herewith Part One of its Seventh Annual Report. This part of the report covers the principal operations of the Commission for the year December 1, 1919, to December 1, 1920.

Part Two of this report will contain a summary of the annual reports of the county engineer for the year December 31, 1919, to December 31, 1920. It will be presented later as the law provides.

J. W. HOLDEN, Chairman.

W. COLLINSON,

ANSON MARSTON,

Commissioners.

Ames, Iowa, December 31, 1920.

Chapter I. Summary of Work for 1920.

The Seventh Annual Report of the State Highway Commission is divided into two parts.

Part One is a report of the activities of the State Highway Commission for the year ending December 1, 1920, and of the expenditures of the Commission for the year ending June 30, 1920.

Part Two is a summary of the annual reports of the county engineers for the year ending December 31, 1920.

The Year of 1920.

A year ago, looking forward to the year of 1920, the Commission said "The year of 1920 should show a marked advancement in the amount of road construction accomplished * * * . The amount of construction work that will be accomplished in 1920 is dependent, not on the amount of funds available, nor on the amount of preliminary engineering work that can be accomplished, but is dependent on the contracting forces and the material resources of the state and the ability of the railroads to furnish the transportation facilities required."

This forecast proved to be quite true. Much more construction work was accomplished in 1920 than in 1919, but even at that, less than fifty per cent of the work placed under contract was completed. The principal difficulty was a lack of adequate rail transportation facilities. The situation would not have been so bad, had not the Interstate Commerce Commission issued numerous orders to the railroads dictating that preference be given to the movement of coal and practically placing embargoes on the shipment of construction materials. Under such treatment, it was possible to proceed with only the most favorably located projects. Towards the end of the season, a shortage of cement seriously delayed many of the paving contracts.

There was a shortage of labor until about the first of July. After that date, there was apparently a sufficient supply.

The financial stringency was one factor which was not foreseen a year ago, and which for a time threatened to seriously cripple the work. In a number of counties, large contracts had been let, contemplating bond issues. These bonds bear five per cent interest and cannot be sold for less than face value. After the work had

been started, it was found that these bonds would not sell on the market at face value, and it looked for a time as though the work would have to stop. This condition was finally relieved through the purchase by the Des Moines banks, where the primary road funds are deposited, of a sufficient amount of bonds to keep the work going.

The contracting forces were very greatly strengthened during the season just passed. A number of strong contracting concerns came from outside the state, a number of new concerns were organized locally, and the old local concerns are better organized and capable of handling more work.

On the whole, the season of 1920 was a successful one. The construction work completed was many times that of the previous year. Contractors were developed. Engineers were trained. New sources of material were discovered. A new confidence in the success of the work was created. All these things were necessary. Their accomplishment will be evidenced by the increasing volume of work completed in the next few years.

Counties Voting on Hard Surfacing.

During the past year, two counties, Webster and Worth, voted on hard surfacing their primary road systems. In Worth county the proposition carried. In Webster county it lost. In all, forty-one counties have voted on this question. Twenty-seven counties have voted "yes." Fourteen counties have voted "no." The following counties have voted for hard surfacing:

Allamakee	Emmet	O'Brien
Benton	Floyd	Osceola
Black Hawk	Greene	Palo Alto
Buchanan	Hancock	Plymouth
Cerro Gordo	Johnson	Polk
Clay	Kossuth	Scott
Clinton	Linn	Sioux
Des Moines	Lyon	Woodbury
Dickinson	Marshall	Worth

The following counties have voted against hard surfacing:

Boone	Franklin	Story
Buena Vista	Hardin	Tama
Calhoun	Lee	Webster
Carroll	Louisa	Wright
Cherokee	Sac	

It is of interest to note that in the above forty-one counties, 145,627 votes were cast. Of this number 80,806 votes were for hard

surfacing, and 64,821 were against hard surfacing. In the forty-one counties, there was a net majority of 15,985 in favor of hard surfacing.

Counties Voting on Bond Issues.

Webster county is the only one that voted during the past year on the question of issuing bonds for the improvement of the primary road system. The proposition was voted down.

The following counties have approved the issuance of bonds:

County	Amount of Bonds Authorized
Black Hawk	\$1,500,000
Clay	800,000
Clinton	1,800,000
Cerro Gordo	750,000
Floyd	1,000,000
Greene	1,000,000
Hancock	1,000,000
Kossuth	1,500,000
Lyon	1,125,000
O'Brien	1,500,000
Polk	2,000,000
Scott	2,000,000
Woodbury	2,500,000

Total amount of bonds authorized \$18,475,000

The following counties have disapproved the issuance of bonds:

County	Amount Proposed
Allamakee	\$ 500,000
Boone	500,000
Cherokee	800,000
Carroll	1,000,000
Louisa	1,500,000
Palo Alto	750,000
Story	1,000,000
Tama	1,000,000
Webster	2,000,000
Wright	1,000,000

Total \$10,050,000

In the twenty-three counties there were 80,707 votes cast on the question of issuing bonds. Of this amount, 43,387 votes were favorably and 37,320 were unfavorable. The total majority in favor of the issuance of bonds was 6,067.

Bonds Issued.

Although the issuance of \$18,475,000 of bonds have been authorized, only \$1,460,000 of such bonds have actually been issued and sold. The following are the counties in which bonds have been issued:

Cerro Gordo	\$ 340,000
Floyd	335,000
Polk	350,000
Scott	435,000
Total	\$ 1,460,000

Bridge Surveys and Plans.

Field surveys have been made for 1,792 bridges and culverts. Plans have been prepared for 1,074 bridges and culverts estimated to cost \$3,025,606. Plans have been approved for 496 bridges and culverts estimated to cost \$1,672,417. Shop drawings for 103 structures have been checked and approved. A comparison of the work during the past five years follows:

Year	Field Surveys Made	Plans Prepared		Plans Approved		Shop Drawings Approved
		No.	Estimated Cost	No.	Estimated Cost	
1920	1792	1074	\$ 3,025,606	496	\$ 1,672,417	103
1919	1232	536	1,481,300	307	852,900	86
1918		236	1,298,000	163	634,000	79
1917		343	1,441,000	113	413,500	154
1916		472	1,511,000	288	582,000	178

Bridge and Material Contracts.

Two hundred twenty-eight bridge contracts for work costing \$4,307,100 were checked and approved or disapproved. Fifty-three material contracts were approved. A comparison of the contracts checked for approval during the past five years, follows:

Year	Bridge Contracts		Number of Material Contracts
	Number	Amount	
1920	228	\$ 4,307,100	53
1919	273	3,213,800	35
1918	173	1,760,800	56
1917	197	2,179,000	59
1916	208	2,070,800	68

Railroad Crossing Work.

Surveys were made for the improvement of thirteen railroad crossings. Plans were prepared for twenty railroad crossing projects. Twenty-one crossing projects have been satisfactorily adjusted and agreements reached between the public and the railroad companies regarding the division of cost. The plans for these twenty-one projects contemplate the elimination of eight crossings, the separation of grades in five crossings, and the improvement of sixteen grade crossings.

Road Projects Outlined.

In every county of the state, at least one project has been outlined for the improvement of a portion of the primary road system. In a majority of the counties, two or more projects have been outlined. During the past year, ninety-eight projects were outlined, for the improvement of 1438.8 miles of the primary road system. To date, a total of 216 projects have been outlined for the improvement 3,393 miles or more than fifty per cent of the primary road system.

Federal Aid Projects Submitted to U. S. Bureau of Public Roads.

Project statements for forty-nine federal aid projects, contemplating the improvement of 823 miles of primary road system, at an estimated cost of \$8,228,090, were submitted to the U. S. Bureau of Public Roads during the year covered by this report. In all, 105 projects have been submitted to the Bureau of Public Roads. These projects contemplate the improvement of 1,722 miles, at an estimated cost of \$17,147,447.46. The improvements contemplated by the projects are as follows:

Grading and Draining	1240.5 miles
Graveling	219.7 miles
Paving	261.8 miles

Federal Aid Funds Obligated.

If project agreements are not executed, obligating federal aid funds within two years after they become available, such funds revert to the Federal Government. Under these conditions, Iowa must have obligated \$5,058,014.40 of federal aid funds by July 1, 1921. Up to December 1st, 1920, seventy-one project agreements had been signed with the Secretary of Agriculture, obligating \$6,293,839.98 of federal aid, or more than a million dollars more than the amount which must be obligated by July 1, 1921.

Road Contract Approval.

Two hundred sixty-nine road contracts amounting to \$13,088,100 have been examined, checked, and passed upon. Two hundred seven of these, amounting to \$12,212,020 were for primary road work. Of these two hundred seven contracts, two hundred two, amounting to \$11,450,568 were approved, and five, amounting to \$761,452, were disapproved. Sixty-two contracts, amounting to \$876,081 were for secondary road work. Of these sixty-two contracts, fifty-nine, amounting to \$853,504 were approved, and three, amounting to \$22,577 were disapproved.

Changes in County Road System.

The Commission investigated forty-eight requests for changes in the county road system. Thirty-seven of these requests were approved, resulting in a net increase in the county road system, of 138.45 miles.

Changes in Primary Road System.

Fifty-five proposed changes in the primary road system, in thirty-eight counties, were approved, resulting in a net increase of 209.4 miles in the primary system. The total mileage of the primary road system now is 6621.5 miles.

Road Surveys and Plans.

During 1920 detailed surveys were made for the improvement of 1,089 miles of the primary road system, plans were completed for 1,164 miles, and plans prepared by county engineers for improving 413 miles of secondary roads were checked and approved.

Surveys have now been completed on 2,584 miles, or forty per cent of the primary road system, and plans are completed on 1,768 miles or twenty-seven per cent of the primary road system.

Road surveys, plans and specifications, are costing at the rate of about \$208.00 per mile or about 1.03 per cent of the cost of the construction work.

Road Construction.

The following amounts of the various classes of road work were completed during 1920:

Paving	46.58 miles
Graveling	102.52 miles
Grading	409.82 miles
Tile Drains.....	1,168,700 Lin. ft.

At the end of the 1920 season, work was in progress on ninety-six projects located in sixty-six counties. The uncompleted work on these projects was as follows:

Paving	112.9 miles
Graveling	119.5 miles
Grading	423.8 miles
Tile Drains	1,212,000 Lin. ft.

This work will be carried over into the 1921 construction season.

Engineering in connection with the construction work is costing about 4.50 per cent of the construction work.

Government Equipment Received.

During 1920, government equipment, valued at \$1,588,000 was received. The total value of government equipment received to December 1, 1920, is \$2,309,709. This equipment consists of 595 motor trucks, 65 Ford cars, four other passenger cars, 17 tractors, two concrete mixers, three road graders, and a quantity of miscellaneous equipment, tools, etc.

Three hundred sixty-seven trucks, and six tractors, valued at \$1,154,814, were assigned to the counties. Nine trucks, valued at \$19,850 have been assigned to road work at state institutions. Two trucks, valued at \$7,700 have been assigned to the Executive Council, and two trucks valued at \$7,700 have been assigned to the State Board of Agriculture.

The total cost of this equipment to the state was approximately \$107,000, or 4.6 per cent of its value.

State Institutional Roads.

The work on state institutional roads consists of building about 2.5 miles of paving, surfacing two miles with gravel, surfacing three miles with cinders, and maintaining 22 miles under the patrol system.

Road Maintenance.

One hundred twenty-two road complaints were investigated and adjusted. The primary roads were numbered and marked in the field.

The maintenance of the primary road system was taken over under the primary road law on July 1, 1920, and an appropriation of primary road funds was made for maintaining the system until January 1, 1921. Since that time the maintenance of this system has cost \$614,296.71. General supervision has been given to this work.

District Engineers.

Assistant District Engineers were added to the engineering forces in seven districts. During the year, district engineers and assistant district engineers spent 2,934 days in the field on road and bridge work. They spent 280 days in attending road and bridge lettings for work costing \$20,236,00, supervised the making of surveys on 1,089 miles of primary roads, made reconnaissance surveys and estimates for 1,438 miles of road for which projects have been outlined, and spent 616 days on primary road construction work.

Drainage Investigation

In co-operation with the U. S. Geological Survey and the State Geological Survey, the investigation of stream discharge has been continued. Twenty-seven stream gaging stations, where water stages are measured at least once a day, are in operation. At these stations, 135 measurements of the amount of water flowing have been made. Two self-recording gages have been installed, one at Decorah, and the other at Cedar Rapids. One severe flood not covered by a gaging station, was investigated.

Drainage and Sale of Lakebeds.

Engineering assistance has been furnished the Executive Council in the drainage and sale of state lands included within the beds of East Swan, Birge, Ryan, Goose, and Tow Head Lakes.

Materials and Tests.

Tests and examinations were made of 7,132 carloads of materials as follows:

Cement	1384	Carloads
Sand	1400	Carloads
Gravel and Stone	3410	Carloads
Brick	368	Carloads
Reinforcing Steel	20	Carloads
Drain Tile	550	Carloads

These cars, if coupled together, would form a train sixty-seven miles long. Testing this material involved the making of 7,471 separate tests.

A survey of the road building resources of the state has been carried on. Undeveloped deposits in twenty-four counties have been examined. Inspections have been made of eighteen commercially operating gravel pits, fifteen stone quarries, and forty-two

drain tile plants. At a conservative estimate this department has saved \$100,000 this year through locating and developing local material deposits where it was thought material would have to be shipped in from a distance.

Capitol Grounds Improvement.

Engineering services and advice have been furnished the Executive Council and Capitol Extension Engineer in connection with work on capitol grounds.

Standard Specifications.

The following standard specifications were prepared and issued:
 Specifications for Secondary Road System.
 Specifications for Concrete Road Construction.

Publications.

The following bulletins were issued:
 Regular Service Bulletin—eight issues.
 Pamphlet on Detours.
 Road Building Program, 1920.
 Primary Road Guide.
 Pamphlet on Reinforced Concrete Through Girders.
 Concrete Road Specifications.
 Standard Specifications for Secondary System.

The Year 1921.

The year of 1921 should show twice as much construction work on the primary road system as was accomplished in 1920. Engineering and contracting forces are better organized, labor should be plentiful, and railroads should be able to give better service. If the legislature should authorize the use of the surplus primary road funds in the purchase of primary road bonds, there will be no holding up of work due to financial depression.

Organization of the Commission.

On December 1, 1920, there were two hundred forty-five people on the Commission's force, exclusive of the Commissioners and exclusive of temporary and part time help. The organization of the Commission by departments is as follows:

COMMISSIONERS.

J. W. Holden, Chairman.
 William Collinson.
 Anson Marston.

EXECUTIVE DEPARTMENT.

F. R. White	Chief Engineer
T. R. Agg	Consulting Road Engineer
A. H. Fuller	Consulting Bridge Engineer
May Vander Linden	Secretary

DEPARTMENT OF PURCHASES AND ACCOUNTS

F. W. Parrott	Auditor
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OFFICE DIVISION.

C. R. Jones	Assistant Auditor
Velda Rowland	File Clerk
Io Morrow	Stenographer
J. W. Eichinger	Bulletin Editor
Fleta Craig	Stenographer
Mosely Dressler	Blueprint Clerk
G. R. Russell	Asst. Blueprint Clerk
L. H. Doggett	Store Room Clerk
Lowell Mattox	Asst. Store Room Clerk
Anna S. Lynch	Stenographer
Eva Threlkeld	Stenographer

ACCOUNTING DIVISION

M. E. Davis	Assistant Auditor
E. T. Burk	Audit Clerk
E. E. Axon	Bookkeeper
C. W. Ott	Bookkeeper
C. E. Bennett	Assistant Bookkeeper
E. F. Mattox	Assistant Bookkeeper
J. R. Harrison	Clerk
DeVere McNeil	Clerk
Ruth Brosi	Stenographer
Fanny Swanberg	Stenographer
Nellie Maroney	Stenographer
Lucille Nickels	Stenographer
Myrtle Jorgensen	Stenographer
Edna Dressler	Stenographer

DEPARTMENT OF ROAD ADMINISTRATION

C. Coykendall	Engr. of Road Administration
M. L. Hutton	Asst. Engr. of Road Administration
Anne Vander Linden	Stenographer

DEPARTMENT OF ROAD DESIGN.

W. E. Jones	Engineer of Road Design
L. L. Clement	Road Designer
F. C. Schneider	Road Designer
L. B. Clement	Road Designer
Carl Albaugh	Draftsman
W. P. Lindauer	Draftsman

DRAFTING DIVISION.

W. T. Ide	Chief Draftsman
Violet Robertson	Draftswoman
Jessie Brooks	Draftswoman
E. Carlotta Howard	Draftswoman
Margaret Lysinger	Draftswoman
Sarah McElyea	Draftswoman
Rowena C. Merritt	Draftswoman
Mrs. J. C. Nichols	Tracer
Evelyn Compton	Tracer
June Erickson	Tracer
Enid Ruston	Tracer
Ruth Steiglitz	Tracer

DEPARTMENT OF ROAD CONSTRUCTION

F. H. Mann	Engineer of Road Construction
H. K. Davis	General Inspector
G. S. Foster	General Inspector
W. G. Howe	Assistant Engineer
A. E. Jarvis	Draftsman
Mrs. Leila Vanderlinden	Stenographer

DIVISION OF MACHINERY AND EQUIPMENT

A. S. Miller	Supt. of Machinery
Chas. Kinderman	Repair Shop Foreman
F. E. Been	Storekeeper
J. H. McKinney	Watchman

DIVISION OF STATE INSTITUTION ROADS

W. D. Johnston	Engr. State Institution Roads
O. M. Briley	Inspector
O. K. Livingston	Truck Driver

DEPARTMENT OF ROAD MAINTENANCE.

W. H. Root	Engr. of Road Maintenance
Millie Oswalt	Stenographer

BRIDGE DEPARTMENT.

J. H. Ames	Bridge Engineer
E. W. Blumenschein	Asst. Bridge Engineer
W. N. Adams	Chief Bridge Designer
R. E. Braun	Bridge Designer
M. G. Spangler	Bridge Designer
C. H. Cook	Bridge Draftsman
H. A. Hansen	Bridge Draftsman
J. E. Hiland	Bridge Draftsman
Hubert Schmidt	Bridge Draftsman
R. J. DeLa Hunt	Bridge Draftsman
Paul Bernard	Bridge Draftsman
Chas. E. Lippert	Bridge Draftsman
Harry Bowman	Railroad Crossing Engineer
J. A. Paulsen	Asst. Bridge Engineer
W. P. Nichols	Field Engineer
F. B. Howell	Record Clerk
Marie Gowey	Stenographer

DRAINAGE DIVISION.

R. W. Clyde	Drainage Engineer
E. D. Burchard	Asst. Drainage Engineer

DEPARTMENT OF MATERIALS AND TESTS.

R. W. Crum	Engineer of Materials and Tests
Bert Meyers	Asst. Engr. of Materials and Tests
J. L. Anderson	Inspector
R. A. Breitengross	Inspector
Ralph Clover	Inspector
Mark Morris	Inspector
D. A. Jones	Inspector

MATERIALS RESOURCE DIVISION

P. J. Preston	Asst. Engineer of Materials
W. E. Pugsley	Field Assistant
G. A. Pugsley	Field Assistant
R. M. Connor	Field Assistant
F. E. Gulick	Field Assistant
W. J. Combs	Field Assistant

AMES LABORATORY.

Paul Critz	Laboratory Chief
Jay Elliott	Laboratory Assistant
L. G. Banner	Laboratory Assistant
K. M. Dewey	Laboratory Assistant

DAVENPORT LABORATORY.

Vere Ewing	Laboratory Chief
J. D. Kaser	Laboratory Assistant
J. R. Clements	Laboratory Assistant

DES MOINES LABORATORY.

W. H. Douglas	Laboratory Chief
M. D. Wickware	Laboratory Assistant
McKinley Kantor	Laboratory Assistant
Frederick Bender	Laboratory Assistant

MASON CITY LABORATORY.

B. L. Bowling	Laboratory Chief
Caryl DePew	Laboratory Assistant
Lester C. Payne	Laboratory Assistant
M. L. Payne	Laboratory Assistant
Chas. S. Meyer	Laboratory Assistant

DISTRICT OFFICE NO. 1—AMES

W. F. Beard	District Engineer
H. S. Leicht	Road Designer
J. L. Vannoy	Draftsman
Dorothy Twitchell	Draftswoman
C. L. Gleason	Chief of Party
B. R. Smith	Resident Engineer
J. L. McGrane	Resident Engineer
E. G. Raynor	Resident Engineer
J. A. Karr	Inspector
Thomas Jennings	Inspector
H. E. Spickard	Instrumentman
Glen A. Foster	Instrumentman
L. G. Krull	Instrumentman
D. A. Morris	Instrumentman
M. L. Clement	Rodman

DISTRICT OFFICE NO. 2—MASON CITY

Raymond Zack	District Engineer
T. R. Perry	Asst. District Engineer
E. R. Meredith	Road Designer
Vera O'Donnell	Stenographer
F. K. Preston	Chief of Party
E. B. Gordon	Resident Engineer
W. D. Ross	Resident Engineer
W. D. Griffin	Inspector
R. I. Mount	Inspector

W. D. Tomlinson	Inspector
G. R. Heneley	Instrumentman
Henry Kassell	Instrumentman
Amiel Reichstein	Instrumentman
Harold Wilson	Instrumentman

DISTRICT OFFICE NO. 3—SIOUX CITY

E. W. Dunn	District Engineer
E. Capel	Asst. District Engineer
Edna Eckert	Stenographer
Belle Courtney	Gaswoman
Eugene Cook	Resident Engineer
P. W. Riedesel	Resident Engineer
S. A. Schackle	Resident Engineer
H. C. Smith	Inspector
S. F. Sprague	Inspector
E. B. Carson	Instrumentman
Holger Jacobson	Instrumentman
Newell Ropes	Instrumentman
F. S. Clyde	Rodman
Perry Collins	Rodman

DISTRICT OFFICE NO. 4—ATLANTIC

L. M. Martin	District Engineer
E. H. Irwin	Road Designer
Vera Wilson	Draftswoman
E. Irene Highley	Draftswoman
L. E. Clayton	Chief of Party
B. J. Conlon	Resident Engineer
John E. Buck	Resident Engineer
T. E. Martin	Resident Engineer
F. D. Caldwell	Resident Engineer
D. M. Finley	Resident Engineer
C. D. Weller	Resident Engineer
W. A. Griffith	Instrumentman
W. F. Carlson	Instrumentman
Glen A. Kringle	Instrumentman
R. E. Copeland	Instrumentman
J. G. McFadden	Instrumentman
Joe Gibson	Instrumentman
E. E. Phifer	Instrumentman
Ray Myers	Rodman
T. B. Shupe	Rodman
D. L. Pell	Rodman
P. G. Osterholm	Rodman
H. B. Sickler	Rodman

DISTRICT OFFICE NO. 5—OTTUMWA

J. S. Morrison	District Engineer
W. J. Smith	Assistant District Engr.
G. H. Mack	Road Designer
Edyth R. Adey	Stenographer
Robert Merritt	Chief of Party
H. E. Horner	Resident Engineer
A. W. Nelson	Resident Engineer
W. P. Norris	Resident Engineer
R. C. Fye	Instrumentman
C. C. McCarthy	Instrumentman
D. A. McNaughton	Instrumentman
R. H. Williams	Instrumentman
S. B. Espe	Rodman
E. C. Stevens	Rodman

DISTRICT OFFICE NO. 6—CEDAR RAPIDS

W. M. Lee	District Engineer
L. S. Gates	Asst. District Engineer
J. W. Brandt	Road Designer
Opal M. Foster	Stenographer
T. E. Riley	Chief of Party
F. A. Peterson	Chief of Party
R. C. Lary	Resident Engineer
P. W. Shive	Resident Engineer
C. R. Livingston	Resident Engineer
J. B. Durham	Inspector
F. M. Thul	Inspector
A. F. Miller	Inspector
L. A. Davidson	Instrumentman
O. M. Jones	Instrumentman
J. G. Butter	Instrumentman
H. D. Carrithers	Instrumentman
K. F. Trottnow	Instrumentman

DISTRICT OFFICE NO. 7—WATERLOO

J. W. Mercer	District Engineer
I. E. Goodrich	Asst. District Engineer
O. L. Huffman	Road Designer
Floy Foss	Stenographer
Lena Alt	Draftswoman
E. W. Hahn	Chief of Party
F. A. Patzer	Resident Engineer
C. P. Lechner	Instrumentman
F. B. Schmidt	Instrumentman
H. E. Kingman	Instrumentman
E. B. Spencer	Instrumentman
G. H. Butterfield	Rodman

DISTRICT OFFICE NO. 8—STORM LAKE

J. F. Reynolds	District Engineer
A. A. Baustian	Asst. District Engineer
M. E. Johnson	Road Designer
Hazel Brandt	Draftswoman
S. W. O'Brien	Chief of Party
J. L. Geils	Resident Engineer
F. H. Feller	Resident Engineer
R. E. Riblet	Inspector
E. C. Neudecker	Instrumentman
Ernest Nelson	Instrumentman
R. L. Hufford	Instrumentman
William Ebert	Rodman

DISTRICT OFFICE NO. 9—CHARITON

W. O. Price	District Engineer
W. H. Richards, Jr.	Road Designer
Susie Wright	Stenographer
L. B. Mathews	Chief of Party
F. G. Longer	Chief of Party
C. H. Ford	Resident Engineer
E. H. Albright	Resident Engineer
W. N. Handy	Instrumentman
H. A. Kennedy	Instrumentman
H. E. Haywood	Rodman
Hugo Benefield	Rodman

Chapter II. Recommended Legislation.

We now have sufficient laws to produce roads as rapidly as the economic conditions will permit. The legislation now required, consists for the most part, of definitely repealing old laws which have in effect been repealed by more recent legislation, but which still remain on the statute books to confuse the average road officer. These laws were mentioned in some detail in our 1919 annual report. As it is anticipated that all highway laws will be given a careful review in connection with the revision of the Code, no reference to the repeal of obsolete laws will be made here. The following legislation is specifically mentioned because of its necessity in carrying out the program of road construction contemplated by recent legislative enactments.

Condemnation of Land for Road Purposes.

Sections 2799 and 2831 of the Compiled Code.

Under the statutes, the counties are estopped from condemning land for highway purposes, through an orchard or through ornamental grounds contiguous to a dwelling. It frequently happens that such an orchard or ornamental ground is located directly in the path of a meritorious relocation of the highway. It is recommended that the sections be amended by removing the limitations relative to orchards and ornamental grounds contiguous to dwellings.

Purchase of Land for Gravel Pits.

Sections 2888 to 2891 Compiled Code.

This statute provides for the purchase or condemnation of land for the purpose of securing gravel or other material for road purposes. The amount of land that can be purchased in any one place is limited to more than five acres. It is recommended that this limitation be removed; also that this law be enlarged so as to include the purchase of borrow pits.

Railroad Crossing Improvements.

On practically every Federal Aid project, there are one or more railroad crossings. The Commission is desirous of eliminating such crossings or separating grades wherever possible. Present laws re-

lating to crossing improvements were for the most part passed years ago when the highway traffic was only a small portion of its present volume. It is recommended that attention be given to railroad crossing legislation to the end that meritorious improvements may be made promptly, the cost fairly divided between the railroad and the public, and that highway work be not delayed.

Notice of Special Assessments for Hard Surfacing

Section 2922 Compiled Code.

This section apparently requires personal notices of hearings to be served on the owner and also the occupant of each tract of real estate included in a road assessment district, and in addition requires a published notice. It is recommended that this matter be clarified, and that only the published notice be required, the same as in drainage work.

Primary Road Bonds.

Sections 2933 to 2938 Compiled Code.

The interest on primary road bonds is limited to five per cent. Also, such bonds cannot be sold for less than face value. During the past year, it was not possible to sell these bonds under these limitations. It is recommended that the bond law be revised as follows:

- (a) Increase the maximum interest rate to six per cent.
- (b) Make the bonds a general obligation of the county.
- (c) Strike out the optional retirement feature, Sec. 2934 C. C.
- (d) Make interest payable semi-annually.
- (e) Strike out the specific mileage tax authorized in the question submitted to the voters.

Purchase of Bonds by State.

There will be an accumulation in the primary road fund for the next three or four years in excess of the amount that can reasonably be spent. It is recommended that the law be amended so that the state treasurer may use such excess funds for purchasing primary road bonds, and that he be authorized to sell the bonds whenever the funds are needed for primary road work. This provision is of vital necessity to the success of the primary road program for the next year or two.

Day Labor Work on Paving.

Section 2919 Compiled Code.

This section prohibits the construction by day labor, of paving. In view of the large amount of equipment received from the gov-

ernment, the scarcity of road contractors, and the necessity of the state having accurate cost data on paving construction, it is recommended that this section be amended so as to permit day labor work on paving.

Improvement of Primary Roads Within Cities and Towns

Section 2943 Compiled Code

It is recommended that this section be amended to provide:

- (a) That grading on extensions of primary roads within cities and towns, may be paid for from the primary road fund.
- (b) That hard surfacing on the primary roads may be extended into cities as well as towns, and seventy-five per cent of the cost thereof may be paid from the primary road fund. Such hard surfacing within cities to stop at the point where property will stand the assessment for paving under the laws governing municipalities.
- (c) That the width of hard surfacing within cities and towns may be at least as great as on the primary roads outside.

Anticipation of Primary Road Funds.

It is recommended that Section 2932 C. C. be amended so that the State Highway Commission may permit any county to anticipate its allotments of the primary road fund for a period not exceeding three years, by overdrawing its account. Such county should be required to pay interest on such overdrafts at the rate of six per cent per annum, the amount of interest being deducted from the county's allotment of the primary road fund.

Contingent Fund.

The law authorizes the construction of certain primary road work by day labor, but makes no provision for the payment of bills promptly. It is apparent that certain bills, such as payrolls, freight, etc., must be met promptly, or day labor work cannot be carried on. Under the present arrangement, such bills cannot be paid promptly. The bills must first be approved by the board of supervisors, then approved by the Highway Commission, then forwarded to Des Moines, where the warrant is written by the State Auditor. The warrant is returned to the Commission and is then forwarded to the claimant. All this might not take so long, except for the fact that the board of supervisors and the Highway Commission are in session only about one day a week, or even less frequently.

It is recommended that the law be amended to provide for a contingent fund in the hands of the Commission, from which prompt

payment can be made on bills requiring immediate attention. These bills would later be audited in the usual way and the warrants applied to reimburse the contingent fund.

Highway Commission's Maintenance Fund.

Section 2953 Compiled Code.

This section provides that the fund for maintaining the State Highway Commission shall be two and one-half per cent of the motor license fees. With the large volume of work required under the primary road law, two and one-half per cent of the motor license fees does not provide the Commission with sufficient maintenance funds. It is recommended that the maintenance fund be increased to three and one-half per cent of the motor license fees.

Receipt and Storage of Government Equipment.

Section 2948, Compiled Code.

This section provides for the receipt and distribution of government equipment, but makes no provision for paying the cost of receiving, re-shipping, repairing, remodeling, or storing such equipment. The Commission has borne this cost from its maintenance fund. Ground was leased, and four storage sheds were built. This does not provide sufficient shelter. A great deal of the equipment is now standing out in the weather. It is recommended that the state purchase the ground where the sheds are located, and that four more sheds be built. The Commission has an option on the ground at \$12,000.00. The four additional sheds will cost about \$50,000.00. The Commission will always need such sheds and storage space for the repair and storage of trucks, cars, and other mechanical equipment.

Contract Bonds.

Sections 8427 to 8430, Compiled Code, require a surety bond on all contracts over \$1000.00. Under the terms of this law, such bonds on primary road work alone will cost the state from \$150,000 to \$300,000 annually. It is recommended that this matter be given consideration to the end that the expense of such bonds may be materially reduced.

Bridge and Culvert Work on Primary Road System.

The grading on the primary road system necessitates the construction of a large number of bridges and culverts. These structures are quite expensive and the volume of the work is such that many counties, particularly in the southern part of the state, will

be unable to finance the bridge and culvert work rapidly enough to keep up with the grading work. Some counties are now bonded up to their limit of indebtedness and will be unable to proceed to the improvement of the primary road system unless some other method is provided for financing the bridge and culvert work.

It is recommended that Section 4054 of the Compiled Code be amended to permit counties to incur an indebtedness not in excess of three per cent of the assessed value of the taxable property for the purpose of building bridges and culverts on the primary road system or extensions thereof, within towns and cities which do not control their own bridge fund. It is recommended that whenever any one bridge on the primary road system costs in excess of \$25,000, such excess cost may be paid from the primary road fund.

Office Room for the Highway Commission.

On account of the large amount of work outlined under the federal aid act and the primary road law, the Commission's force has grown a great deal during the past two years, and will increase still further as the construction program grows to its full proportions. The Commission has absorbed space in the engineering buildings of the College which the College can very poorly afford to release, as the College itself is very badly overcrowded. In addition, the rooms which the Commission now occupies are poorly adapted to the work of the Commission.

It is recommended that the Commission be authorized to construct a building to provide offices for its forces and that the cost thereof be paid from the motor license fees.

Limitation on Appropriations for Bridges.

Section 2894, Compiled Code.

This section limits the amount which any county can appropriate for any one bridge, as follows:

- (a) Population of county 15,000 or less. Not more than \$25,000 for a bridge wholly within the county and not more than \$15,000 for a county line bridge.
- (b) Population of county 15,000 or more. Not more than \$35,000 for a bridge wholly within the county, and not more than \$20,000 for a county line bridge.

It is recommended that these limitations be removed. Many necessary bridges cannot be built within the limitations, and yet they happen to be so located within the county that their construction would not be authorized by the voters.

Chapter III. Executive Department

Reorganization of Departments.

During 1920, a reorganization and co-ordination of the various departments of the Commission's force was put into effect as follows:

(a) **Administrative and Accounting Departments.**

The Administrative and Accounting Departments were discontinued. In their places there were created the "Executive Department" and the "Department of Purchases and Accounts." The Executive Department includes the Chief Engineer, the Consulting Road Engineer and the Consulting Bridge Engineer. The Department of Purchases and Accounts includes all the purchasing and accounting work. The old Accounting Department became a division of the Department of Purchases and Accounts. This department also includes the Service Bulletin, the blueprinting, and the store room.

(b) **Department of Road Management**

The name of this department was changed to "Department of Road Administration." The work of this department remained about the same.

(c) **Department of Road Surveys and Plans.**

The name of this department was changed to "Department of Road Design." The Women's Drafting Department was made a division of the Department of Road Design.

(d) **Drainage Department.**

This department was made a division of the Bridge Department.

This reorganization resulted in a better co-ordination of the work, a clearer definition of responsibility, and the elimination of one department.

The work is now carried on under eight departments as follows:

Executive Department,
 Department of Purchases and Accounts,
 Department of Road Administration,
 Department of Road Design,
 Department of Road Maintenance,
 Department of Road Construction,
 Department of Materials and Tests,
 Bridge Department.

It is anticipated that these eight departments will constitute a permanent framework around which the future work of the Commission may be developed as divisions under existing departments.

Co-ordination of Departmental Work.

In order to co-ordinate the work of the various departments and bring each department into close touch with the work of the whole organization, the department heads were organized into a "Staff." This Staff meets each Saturday afternoon with the Chief Engineer, to discuss problems of general interest.

District Engineers' Meetings.

Once a month the district engineers are called into the general office for a day's conference with the Chief Engineer and department heads. These meetings keep the district engineers advised of the policy and plans of the general office, and the department heads in close touch with the work and the problems of the district engineers, thus welding the forces together into a single working unit.

Assistant District Engineers.

With the development of the program outlined by the Thirty-eighth General Assembly, the work of the district engineers increased to such an extent that it was necessary to create additional districts or to put on additional district engineers. It was finally determined that the situation could be met more cheaply by employing assistant district engineers. Seven assistant district engineers have been employed.

Seventh Annual Road Conference.

The seventh annual conference of road officers was held in Ames on February 24, 25, and 26, 1920. The meeting was attended by ninety county engineers, forty assistant engineers, one hundred eighty-six county supervisors, thirty-seven county auditors, three township trustees, and two road patrolmen. There was a total enrollment of four hundred fifty-five.

Appointments of Commissioners.

During the year, forty-six formal Commission meetings were held, of which thirty-nine were attended by Commissioner Holden, thirty-four by Commissioner Collinson, and thirty-six by Commissioner Marston.

The Commissioners spent a total of one hundred twenty-one days on inspection trips in the several counties, and in conferring with county boards of supervisors, township trustees, and other road officers.

Employees of the Executive Department spent a total of one hundred forty-four days on assignments outside the general office.

Official Communications.

During the year, the following official communications were sent to the county officials:

No. 47—To County Boards of Supervisors, relative to letting further contracts, contemplating the issuance of bonds, certificates, or other forms of indebtedness.

No. 48—To County Supervisors, County Auditors, and County Engineers, relating to paying drainage assessments on primary roads.

Contract Approval.

Contracts for road and bridge work and materials were approved as follows:

Federal Aid and Primary Roads.....	204	Contracts
Secondary Roads	78	"
Bridges and Culverts.....	198	"
Material	53	"
<hr/>		
Total Number of Contracts.....	533	"
Total value of work included in bridge and culvert, and primary road contracts approved	\$15,262,659.00	

Thirty-two contracts for work costing \$1,496,095.00 were disapproved.

Litigation.

As the primary road program develops, it is becoming more and more apparent that the Commission will be involved in a great deal of litigation. The primary road law is new. It contemplates the levying of special assessments on private property, the cutting down of hills, filling ravines, spanning streams, and the construction of drainage lines. Each of these phases of the work is a fruitful source of litigation. Since the Commission prepares the plans and supervises the construction work, it is sure to become involved in any litigation that may develop.

During the past year, the Commission has been named as defendant or co-defendant in four law suits as follows:

(a) Thomas Carey & Sons vs. The Highway Commission.

This case grew out of the Commission's refusal to approve a contract awarded Thomas Carey & Sons for certain paving work. The contractor attempted to compel the Commission to approve the contract, alleging that in disapproving same the Commission had exceeded its authority. The court sustained the Commission.

(b) George M. Cherrie vs. Town of Ankeny, Wright Construction Company, Highway Commission, and Polk County.

In this case the plaintiff sought to enjoin the county and the Commission from constructing a tile drain and an open ditch along the side of a road which was being hard surfaced within the town of Ankeny. Plaintiff claimed that water was being diverted from its natural course and plaintiff was damaged thereby. The court permitted the construction of the tile drain, but ordered the open ditch to be filled up.

(c) Story County vs. Highway Commission.

In this case, the Board of Supervisors of Story County graveled certain portions of the Lincoln Highway which is on the primary road system, without first securing the approval of the Commission on said gravel project. After the work was completed, they requested payment from the primary road fund. The Commission refused to approve the claims. The Board is attempting to force payment of said claims as primary road work. The case has not yet been tried.

(d) Andrew Nielson, Julius Claeys, D. J. Connell, Patrick McDonald, and M. E. Lillis vs. Board of Supervisors of Scott County, County Auditor, County Treasurer, and Highway Commission.

The plaintiffs are the owners of real estate within the assessment district for hard surfacing a portion of the primary road system. They are asking an injunction restraining the defendants from levying an assessment on their property. It is alleged that the law is unconstitutional, does not provide sufficient notice of assessments, and that the levying of such assessments would constitute the taking of property without due process of law. The case has not yet come to trial.

Publications.

During the year, eight issues of the regular Service Bulletin were published. The following additional publications were issued:

Primary Road Guide,
Pamphlet on Detours,
1920 Road Building Program,
Standard Specifications for Construction Work on the
Secondary Road System,
Standard Specifications for Primary and Federal Aid
Construction Work.

Modifications of Primary Road System.

The law provides that the primary road system may be changed,

- (a) For more efficient service,
- (b) For more economical construction.

During the past year, changes or modifications have been made in the primary road system of twenty-one counties. The greater number of these modifications consisted merely of adding to the system roads on corporation lines which were extensions of the primary roads already established, or in extending primary roads to the corporation lines. The modifications made resulted in a net increase in the primary road system of 209.4 miles. The total mileage of the system now is 6,621.5 miles.

Modification of County Road System.

Forty-eight requests from twenty-eight counties were received, for modifications of the county road system. After investigation, the Commission approved thirty-seven of these requests, adding 143.95 miles to the county road system, and removing 5.5 miles, making a net increase of 138.45 miles. A more detailed report of the county road changes will be found in Chapter VI.

State Fair Exhibit.

The usual highway exhibit was maintained at the State Fair.

Registration of Highway Routes.

In 1920 five routes were registered with the Highway Commission, as provided under Section 3021 of the Compiled Code. A complete list of the registered highways is given below:

Number	Name of Route	Date Registered
1	Great White Way.....	July 30, 1914
2	Green Crescent	July 30, 1914
3	Center Point Motor Club.....	September, 1914
4	Red Ball Route.....	January 2, 1915
5	King's Highway	June 28, 1915
6	Southwest Trails	June 28, 1915
7	Waubonsie Trail	April 3, 1916
8	Chariton and Leon Short Line.....	April 3, 1916
9	John D. Parmalee Trail.....	April 3, 1916
10	Capitol Highway	June 9, 1916
11	Red Line	June 9, 1916
12	Farmers Highway	June 9, 1916
13	Black Hawk Trail.....	Sept. 25, 1916
14	Jefferson Highway	Sept. 25, 1916
15	Hamlin Short Route.....	Sept. 25, 1916
16	Hawkeye Cut-off	Sept. 25, 1916
17	Black Diamond Trail.....	Sept. 25, 1916

Number	Name of Route	Date Registered
18	Lincoln Highway (Iowa Division).....	December 2, 1916
19	Daniel Boone Trail.....	December 22, 1916
20	Perry Pike	December 22, 1916
21	Diamond Trail	December 22, 1916
22	Red X Route.....	December 22, 1916
23	Okoboji Trail	March 23, 1917
24	Cedar Rapids, Ottumwa and McGregor Trail	March 23, 1917
25	Tourist Trail	March 23, 1917
26	Grand Line	March 23, 1917
27	Washington Highway	March 23, 1917
28	Lineville-Indianola Short Line.....	March 23, 1917
29	Blue J. Highway.....	March 23, 1917
30	Hawkeye Highway	June 29, 1917
31	Star Route	December 1, 1917
32	Burlington Way	December 1, 1917
33	Iowa Blue Grass Route.....	December 1, 1917
34	Denison-Sioux City Cut-off.....	December 1, 1917
35	Imperial Highway	January 4, 1918
36	Lincoln Hawkeye Pike.....	January 22, 1918
37	Muscatine-Des Moines Short Line.....	March 18, 1918
38	River to River Route.....	April 16, 1918
39	Everett Powers Highway.....	July 20, 1918
40	Wilson Highway	Sept. 13, 1918
41	Woodward-Ogden Cut-off	December 4, 1918
42	Diagonal Trail	December 4, 1918
43	Pershing Way	August 14, 1919
44	Golden Rod Highway.....	October 23, 1919
45	Rainbow Trail	October 23, 1919
46	Custer Battlefield Highway	December 23, 1919
47	M. C. Trail.....	December 6, 1919
48	Indian Highway	February 5, 1919
49	National Parks Pike.....	April 29, 1920
50	Wilson Highway (Amended).....	June 24, 1920
51	Mississippi Valley Highway.....	Sept. 17, 1920
52	Eldora-State Center and Colfax Highway.....	Sept. 17, 1920

Inspection of Road Surfaces, Other States

In October, 1920, Chief Engineer F. R. White and Consulting Road Engineer T. R. Agg, made an inspection of road surfaces in Illinois, Indiana, Michigan, Ohio, and Pennsylvania. Particular attention was given to pavements consisting of an asphalt wearing surface on concrete base, although many roads of other types were examined. Where truck traffic was heavy, roads which had been constructed less than three years were often badly damaged, necessitating extensive reconstruction. From the data collected from

this and other sources, the following general conclusions were drawn:

- (a) That the destructive effect of traffic on paved roads is dependent more on weight and speed of the larger trucks than on the number of vehicles using the road. Thus, a pavement which would carry tens of thousands of passenger cars and light trucks without apparent distress, may be almost totally ruined by the passage of fifty or one hundred heavy trucks.
- (b) That the destructive effect of trucks is dependent, not only on the weight of the vehicle and load, but also on the speed, the type of tire used, condition of the tire, etc. Thus the destructive effect increases rapidly with speed, a hard rubber tire is more destructive than a pneumatic tire, and an old worn hard rubber tire is much more severe than a new tire.
- (c) That more pavements fail because of insufficient foundations than because of surface abrasion. The question of slab strength is of vital importance. Other things being equal, that pavement which will give the greatest slab strength for a given expenditure of funds is best suited to modern traffic requirements.
- (d) That thorough drainage of the subgrade is vital to the life of the pavement and a wise investment of funds. For a given traffic condition, a much lighter pavement can be safely used on a well drained subgrade than on a poorly drained road.
- (e) That the construction of pavements on rural highways presents a problem wholly different from that of a city or town pavement, and that pavement thicknesses which may have proved satisfactory in cities and towns, will not necessarily prove satisfactory for rural highways.

Chapter IV. Bridge Department.

During the period covered by this report the bridge department prepared detailed plans for 1,074 bridges and culverts located in sixty counties and estimated to cost \$3,025,606.00; approved four hundred and ninety-six designs submitted from fifty-one counties and estimated to cost \$1,672,417.00; checked and approved one hundred and three detailed shop drawings for steel structures from forty-eight counties and estimated to cost \$387,501.00; made field surveys for 1,792 bridges and culverts in thirty-seven counties; checked for approval two hundred and twenty-eight bridge and culvert contracts totaling \$4,471,106.00 from seventy-one counties; approved fifty-three material contracts from thirty-one counties; developed one new standard design and made thirty-nine special inspection trips to twenty-eight counties.

The district engineers representing the bridge department have attended one hundred and thirty-nine bridge lettings in seventy-six counties on advertised work totaling \$4,982,512.00; attended one hundred and thirteen material lettings in seventy-seven counties; spent two hundred and ninety-nine days in examining bridge sites; and spent seventy-seven days in supervising and inspecting bridge work.

In addition to the above, this department has handled all of the office and field work on the preparation and checking of plans and estimates of cost for railroad crossing improvements and attended a number of conferences on this work. A more detailed statement of the railroad crossing work appears in Chapter V.

The following tabulation shows the summary and comparative statements of the detailed work of this department during the past three years exclusive of the work done on railroad crossing improvements:

		1918	1919	1920
Bridge designs prepared.....	No. of designs	236	536	1,074
	No. of counties	58	61	60
	Estimated value	\$ 1,298,500	\$ 1,481,300	\$ 3,025,006
Approval of bridge plans.....	No. approved	163	307	496
	No. counties	36	44	51
	Estimated value	634,000	852,900	1,072,417
Approval of shop drawings.....	No. approved	79	83	103
	No. counties	41	42	48
	Est. value of steel.....	184,000	294,491	387,501
Approval of bridge contracts.....	No. approved	159	228	198
	No. counties	68	79	70
	Total amt't approved.....	1,589,746	2,879,205	3,553,586
Approval of material contracts.....	No. approved	56	35	32
	No. counties	39	16	31
	No. lettings	103	145	139
Bridge lettings attended.....	No. bridges	1,714	2,234	2,639
	Est. amount of bridge work	2,226,433	3,216,130	4,982,512
	No. bridges and culverts		1,232	1,792
Field surveys made.....	No. counties		33	37
	No. attended		75	111
Material lettings.....	Number made	103	23	39

Since the present highway law became effective in April, 1913, the engineers of the bridge department have designed, checked or approved, 6,654 detailed individual plans for specific bridges with a total estimated cost above \$18,498,000.00; checked and reported for approval 1,389 bridge contracts with a total contract price of \$15,695,000.00; approved three hundred material contracts; attended seven hundred and eighty-six bridge lettings for work estimated to cost \$17,054,000.00 and attended five hundred and forty-seven material lettings.

Bridge Designs for Specific Locations.

The Commission each year is called upon by the counties to prepare designs for bridges and culverts in specific locations. These designs are prepared in the bridge department from notes either furnished by the county engineer or secured by the engineers of the bridge department and district engineers in co-operation with the county engineers. The plans so prepared are furnished to the counties without cost.

During the past year the bridge department has prepared 1,074 designs for individual locations from notes sent in by the county engineers and those secured by engineers of the Commission. The total estimated cost of the bridges and culverts designed during 1920 by the Commission is \$3,025,606.00.

Since the present road law went into effect in April, 1913, the bridge department has prepared 3,949 designs for specific locations

which are estimated to cost \$11,676,400.00. The average estimated cost of structures designed by the Commission during the past six years is as follows:

1915	\$2,580
1916	3,200
1917	4,200
1918	5,500
1919	2,760
1920	2,820
Average for six year period.....	3,510

The bridge department has completed the design of several bridges of importance during the past year. Among these are the following:

A 200'x18' through riveted truss span on tubular piers with wood approach spans, located on the county line between Mahaska and Poweshiek counties, two and one-half miles north of New Sharon. Contract price \$50,000.00.

Revised plans were made for a bridge over the Maquoketa river in the city of Manchester, Delaware county, which consists of two 87' concrete arch spans, with a 26' roadway, and two 5' sidewalks. Estimated cost \$43,000.00.

Plans were completed for a steel plate girder bridge, consisting of three 70' spans with a 26' roadway and a 4' sidewalk, which is being constructed over Squaw creek in the city of Ames, Story county. The contract price for this bridge was \$45,258.00.

A combined cantilever and deck girder re-inforced concrete bridge on the Lincoln Highway east of Nevada in Story county, which replaces a combination steel and wood bridge over the tracks of the Chicago, Rock Island & Pacific Railway Company. The new design consists of one 60' and six 42' spans with 24' width of roadway.

A 150'x20' through riveted truss with two I-beams approach spans, which is located over the Skunk river on the Lincoln Highway one mile east of Ames in Story county. The contract price is \$23,460.00.

During the past few years there has been an increasing tendency toward the construction of bridges of a more permanent nature. This tendency is particularly noticeable in regard to the larger bridges, the culverts and all structures located on the Primary Road System. The Commission is seldom requested to prepare a design for an important bridge or a structure on an important highway in which other than construction materials of a permanent nature are used. This growing tendency to replace the lighter and unsafe structures with permanent construction wherever practical will ultimately materially reduce the annual expenditures for maintenance and repairs.

Schedule One gives a detailed statement of the bridge designs for specific locations as prepared by the bridge department in 1920.

Bridge Work on Federal Aid Projects.

The large mileage of roads included in federal aid and primary road projects for construction to permanent grade has necessitated the reconstruction and renewal of many bridges and culverts on such roads. It is the policy of the Commission to recommend the replacement of all bridges and culverts of a temporary character on these projects and particularly on those roads brought to grade preparatory to hard surfacing.

In order to facilitate the work of preparing plans for the new structures required the Commission has extended to the counties engineering service in securing the field information required to prepare the designs and in many cases to the preparation of the plans themselves. During the past year the bridge department has secured the field information or checked the field notes on 152 bridges and 1,640 culverts, a total of 1,792 structures, which are practically all located upon the Primary Road System.

Approval and Analysis of Designs Submitted.

One of the important duties of the Commission is to check and analyze designs for structures submitted for approval under the standard specifications of the Commission. The work necessary to check and approve an individual design submitted depends largely upon the type of structure, its importance and the completeness and accuracy with which the plans have been prepared. Many of the more important structures require in addition to an actual computation of the stresses, a detailed study of the location, the waterway opening provided, the roadway requirements and many other features of the design. Often the mathematical calculations alone will require the work of a designer for several days or perhaps weeks. On steel bridges the Commission not only checks the original drawings, but in addition, checks in detail the shop or working drawings prepared by the fabricating shop. Copies of these approved shop drawings are then furnished to the county engineers for the purpose of checking the material when delivered in the field.

During the past year the bridge department has checked the individual plans for 496 structures as submitted by county engineers or private engineers and in addition has approved the detailed shop

drawings for one hundred and three structures estimated to cost \$387,501.00. A detailed record of the approval of individual plans and shop drawings is kept in the Commission's office but is not included in this report. Since April, 1913, the bridge department has checked 2,161 designs, the cost of which was estimated at \$5,192,000.00. During the same period of time and in addition to the above a total of seven hundred and twenty-six shop drawings was checked on work estimated to cost \$2,176,000.00.

Standard Plans.

The bridge department has made slight revisions of some of the standard bridge and culvert plans which have previously been issued. In addition some work of a preliminary nature has been done towards a more complete revision of the standards for steel superstructure and concrete bridges.

The following is a complete list of the standard bridge and culvert plans which have been issued and are in effect January 1, 1921:

Series C—Concrete box culverts for spans from 2 ft to 12 ft., 24 sheets of designs, C-1 to C-24 inclusive and 4 sheets of typical designs TC-1 to TC4 inclusive. Dated June, 1919.

Series D—Circular concrete culverts from 18 inch to 42 inch diameter. Four sheets of designs and four sheets of estimates, D-1 to D-8 inclusive. Dated 1914.

Series E—Metal culverts. One sheet E-1. Dated 1914.

Series F—Concrete pipe culverts, F-1 concrete pipe culverts. Dated 1914. F-2 alternate design for pipe culverts. Dated 1919.

Series G—Timber and steel construction. Three sheets of designs. G-1, pile trestle. Revised December, 1918. G-2, pile abutments for short pony truss spans, 18 ft. roadway. Dated January 1, 1917. G-3, pile abutment for long steel spans, 16 ft. roadway. Dated January, 1919. G-3a, pile abutment for long steel spans, 18 ft. roadway. Dated January, 1919. G-4, timber substructures for wood trusses. Dated December, 1918. G-5 to G-10 inclusive. Six sheets timber trusses, spans 30 ft., 34 ft., 38 ft., 45 ft., 51 ft., and 57 ft., 16 ft. roadways. Dated December, 1918.

Series H—Concrete deck girder bridges for spans from 24 ft. to 40 ft. inclusive. Two design sheets H-1. Dated November, 1915. Series C, J and H are published together in booklet form.

Series I—Concrete through girder bridges for spans from 24 ft. to 42 ft. inclusive with 18 ft. and 20 ft. roadways. Published in booklet form.

Series J—Concrete slab bridges for spans from 14 ft. to 24 ft. inclusive. One design sheet J-1. Dated November, 1915.

Series K—Concrete bridge abutments. Five designs of two sheets each, dated November, 1917 and one design of two sheets dated May,

1919. K-1. Abutments for steel truss spans. Heights 10 ft. to 19 ft. inclusive. K-2. Abutments for steel truss spans. Heights 20 ft. to 30 ft. inclusive. K-3. Abutments for I-Beam bridges. Heights 10 ft. to 24 ft. inclusive. K-4. Abutments for slab bridges. Heights 10 ft. to 19 ft. inclusive. K-5. Abutments for deck girder bridges. Heights 12 ft. to 24 ft. inclusive. K-1 to K-5 inclusive published in booklet form. K-6. Abutments for through girders. Heights 12 ft. to 24 ft. inclusive. Published in booklet form.

Series M—Concrete bridge piers. One design sheet M-1. Dated July, 1916.

Series T—Riveted high trusses with concrete floors on steel joists for spans from 90 ft. to 150 ft. inclusive and for both 16 ft. and 18 ft. roadways. 14 designs T-1 to T-14 inclusive. Published in booklet form.

Series V—I-Beam spans. Four sheets of designs. V-1 beam spans with concrete floor and angle railing. Dated January, 1915. V-2. Beam spans with wood floor and pile abutments. Dated January 15, 1917. Supersedes and renders void design V-2, dated September 1, 1915 and printed in booklet of designs for beam spans and X series pony trusses. V-3. Beam spans with concrete floor and concrete railing. Dated September 15, 1915. V-4. Beam spans with concrete floor and gas pipe railing. Dated September 15, 1915. Series X and V are published together in booklet form.

Series X—Riveted pony trusses with concrete floors and without joists for spans from 35 ft. to 100 ft. inclusive and for both 16 ft. and 18 ft. roadways. 28 designs X-1 to X-28 inclusive.

Series Y—Riveted pony trusses with concrete floors on steel joists for spans from 90 to 150 ft. inclusive and for both 16 ft. and 18 ft. roadways. 20 designs Y-1 and Y-20 inclusive. Published in booklet form.

Standard Specifications.

The list of standard specifications issued by the Commission for bridge and culvert work and for materials which are in effect January 1, 1921 are as follows:

- Highway Bridge and Culvert Construction (Series 1919).
- Reinforcing Steel (Series 1914 revised 1917).
- Corrugated Metal Culvert Pipe (Series 1918).
- Bridge Lumber and Piling (Revised Series 1918).

Some revision of the standard specifications on reinforcing steel will be made in 1921 and a new set of specifications issued.

Trips by Members of the Bridge Department.

Inspection of work under construction as well as examination of existing structures, shop inspection of fabricated material, and preliminary examination of bridge sites necessitated a number of trips by members of the bridge department. Most of the special

bridge problems of the counties are handled through the district engineers' offices but occasionally problems are presented which require special attention by an engineer from the central office. The total number of special inspection trips made by members of the bridge department for the past six years are as follows: 1915, 73; 1916, 79; 1917, 68; 1918, 103; 1919, 23; 1920, 39.

Bridge Complaints.

The Commission each year receives many complaints concerning the condition of certain bridges or culverts. In general each complaint is referred to the district engineer and insofar as practical a personal examination of the conditions is made by him. It is usually possible to adjust the complaint in this manner satisfactory to all parties concerned. Where it appears desirable after a field examination to make surveys and prepare plans for the improvement this is done and the complaint is later adjusted in this manner. Since the work of adjusting these complaints is largely handled through the district offices the detailed report concerning these adjustments is given under the chapter relating to the work of the district engineer. Some of the complaints are adjusted by correspondence without the necessity of referring the matter to the district engineer for further investigation.

Approval of Contracts on Bridge Work.

The Commission is required by statute to approve all contracts for bridges and culverts costing over \$2,000 and all private contracts in amounts of \$1,000 or more. These contracts as awarded by the boards of supervisors are submitted to the Commission and must be approved before they are valid as contracts. The work of the approval of contracts for bridge work is one of the important duties of the Commission. During 1920 a total of 228 contracts for bridge work was submitted for approval. One hundred and ninety-eight contracts for work costing \$3,553,586.00 were approved. Twenty-seven contracts for work costing \$753,514.00 were rejected. The tabulation below gives the summary and comparative statement of the bridge contracts submitted for approval from April, 1913 to December 1, 1920.

Bridge Contracts Submitted for Approval.

Date of Report	Approved	Average contract amt.	Total amt. Approved
Apr. 1, 1913 to Dec. 1, 1913	53		\$ 344,182.24
Dec. 1, 1913 to Nov. 1, 1914	121	7,774.00	731,205.58
Nov. 1, 1914 to Dec. 1, 1915	172	7,830.00	1,337,069.15
Dec. 1, 1915 to Dec. 1, 1916	208	9,950.00	2,043,393.47
Dec. 1, 1916 to Dec. 1, 1917	197	10,803.00	2,128,238.53
Dec. 1, 1917 to Dec. 1, 1918	159	10,735.00	1,700,797.85
Dec. 1, 1918 to Dec. 1, 1919	228	12,628.00	2,879,205.68
Dec. 1, 1919 to Dec. 1, 1920	198	17,947.00	3,553,586.64
Total	1,336		\$14,777,659.14

Since April, 1913 the Commission has approved 1,336 contracts for bridges and culverts with a total contract price of \$14,777,659.14.

Standard forms of contracts are prepared by the Commission and where the contracts submitted are on the standard form and the proceedings relative to the award made in the proper manner the time required for approval by the Commission is short. During 1920 forty-seven per cent of the contracts submitted for approval were approved by the Commission in less than four days from date of receipt. Fifty-three per cent were retained for investigation or for correction and the average time required for approval was twelve days. The average time required on all contracts was seven days.

Schedule Two shows in detail the contracts which were submitted for approval during the period from December 1, 1919, to December 1, 1920.

Approval of Material Contracts.

Although the approval by the Commission of material contracts awarded on the basis of bids received at a public letting is not required by law yet many of the counties voluntarily submit such contracts for review. When such contracts are properly made out on the standard forms supplied for this purpose the time required for approval is very short. During the period covered by this report a total of sixty-two material contracts were submitted for approval. A detailed statement of each of such contracts will be found under Schedule Three.

General Field Work in Connection with Bridge Department.

Much of the detailed field work of the Commission relating to bridges is handled by the district engineers. This work consists of

assistance given at the request of the counties in determining the type and character of drainage structures, inspecting work under construction, preliminary work on large bridge projects, adjustments of differences arising between the counties and contractors over interpretation of the specifications and contracts, and giving general advice pertaining to bridge and culvert work and the materials of construction.

During the period covered by this report the engineers from the district offices spent a total of two hundred and ninety-nine days in examining bridge sites, one hundred and forty-three days in attending bridge lettings, ninety-five days in attending material lettings and seventy-seven days in supervising and inspecting bridge and culvert work.

Current Prices of Materials and Construction.

One of the important duties of the bridge department is to advise the counties, upon request, concerning the cost of materials and construction. During the past year the number of such requests received from the counties greatly exceeds that of any previous year. The bridge department endeavors to keep advised as to the current prices of material and construction so that requests of this character received from the counties may be answered promptly.

Bridge and Material Lettings.

During 1920 the total estimated cost of bridge and culvert work included in lettings attended was \$4,471,106.00 which is an increase of \$1,254,976.00 over 1919. The records kept by the Commission on lettings attended cover in detail the letting data on the 2,639 structures included in lettings attended during the past year. The total number of days spent in attending bridge lettings during 1920 was 143 and the total days spent in attending material lettings was ninety-five.

Bridge Construction Work During 1920.

During the past year construction costs have increased slightly over those of previous years. Lack of adequate rail transportation interfered considerably with the construction work, although labor was much more plentiful during the past year than during the previous two years. During the latter part of 1920 there was a tendency toward lower prices of materials and construction. How far this tendency may go for next year's work cannot be foreseen. The amount of bridge and culvert work put under contract in 1920 exceeds that of any previous year by a substantial amount.

AVERAGE PRICE PAID FOR CORRUGATED CULVERTS IN 1918, 1919 AND 1920.

Diameter	Class	Price per Lin. Ft. Less Carlots F. O. B. County					
		1918		1919		1920	
		Range in price	Avg.	Range in price	Avg.	Range in price	Avg.
12 inches	A	\$.78 to \$.90	\$.85	\$.72 to \$.90	\$.79	\$.59 to \$1.08	\$.66
15 inches	A	1.25 to 1.25	1.25	1.30 to 1.28	1.29	1.23 to 1.62	1.21
18 inches	A	1.10 to 1.70	1.57	1.30 to 1.55	1.41	1.45 to 1.90	1.71
24 inches	A	2.40 to 2.25	2.68	1.75 to 2.10	1.85	2.05 to 2.42	2.30
30 inches	A	2.15 to 2.75	3.50	2.30 to 3.70	3.50	3.75 to 4.35	4.48
36 inches	A	2.40 to 4.25	4.30	2.80 to 4.10	3.60	4.14 to 5.80	4.92
12 inches	B	.78 to .90	.78	.65 to .80	.71	.57 to .98	.66
15 inches	B	1.18 to 1.25	1.22	.96 to 1.30	1.07	1.25 to 1.56	1.41
18 inches	B	1.58 to 1.64	1.43	1.25 to 1.45	1.30	1.50 to 1.80	1.96
24 inches	B	1.80 to 2.60	1.90	1.55 to 1.95	1.67	2.00 to 2.90	2.27
30 inches	B	2.40 to 3.30	3.12	2.50 to 3.25	2.78	3.25 to 4.20	3.90
36 inches	B	2.60 to 3.90	3.73	2.75 to 2.90	3.00	3.75 to 5.02	4.20

AVERAGE PRICE PAID FOR REINFORCING STEEL IN 1918, 1919 AND 1920.

Description	Price per Cwt. Stock Lengths C. L. F. O. B. County					
	1918		1919		1920	
	Range in price	Avg.	Range in price	Avg.	Range in price	Avg.
½-inch O. H. New Billet Stock	\$1.15 to \$1.75	\$1.66	\$1.00 to \$1.30	\$1.18	\$1.10 to \$5.38	\$4.90
¾-inch O. H. New Billet Stock	3.10 to 3.90	3.62	2.90 to 3.25	3.01	4.12 to 5.55	4.82

AVERAGE PRICE PAID FOR STRUCTURAL STEEL IN 1918, 1919 AND 1920.

Description	Price per Cwt. Erected and P. O. B. County					
	1918		1919		1920	
	Range in price	Avg.	Range in price	Avg.	Range in price	Avg.
I Beams Erected	\$1.20 to \$7.25	\$3.00	\$5.95 to \$8.25	\$5.35	\$7.00 to \$9.00	\$7.25
F. O. B. County	5.60 to 5.75	5.25	4.50 to 5.30	4.90	5.65 to 6.50	6.21
Trusses Erected	7.60 to 8.70	7.50	7.50 to 8.30	7.85	9.00 to 12.50	10.30
F. O. B. County	5.90 to 6.75	6.30	5.30 to 6.20	5.80	7.00 to 9.00	7.65

AVERAGE PRICE PAID FOR LUMBER IN 1918, 1919 AND 1920.

Size	Description	Price per M. B. M. C. L. F. O. B. County					
		1918		1919		1920	
		Range in price	Avg.	Range in price	Avg.	Range in price	Avg.
3x12	Stand. Sawn. Doug. Fir	\$14 to \$18	\$17.00	\$15 to \$15	\$18.00	\$15 to \$15	\$17.40
3x14	Stand. Sawn. Doug. Fir	35 to 40	38.00	35 to 45	38.50	30 to 40	34.40
3x15	Stand. Sawn. Doug. Fir	35 to 40	38.00	30 to 45	39.00	35 to 40	36.25
3x15	Full Sawn. Doug. Fir	28 to 37	32.00	36 to 40	41.00	40 to 45	35.25
3x14	Full Sawn. Doug. Fir	39 to 43	40.50	39 to 51	42.00	50 to 62	52.80
3x16	Full Sawn. Doug. Fir	39 to 43	40.50	39 to 51	42.50	51 to 62	52.80
3x12	Stand. Sawn. White Oak		38.00		46.00		72.00

AVERAGE PRICE PAID FOR FILING IN 1918, 1919 AND 1920.

Length	Kind	Price per Lineal Foot Carlots F. O. B. County					
		1918		1919		1920	
		Range in price	Avg.	Range in price	Avg.	Range in price	Avg.
15 ft.	Red Cedar	\$.46 to \$.51	\$.48	\$.38 to \$.50	\$.44	\$.24 to \$.46	\$.44
15 ft.	Red Cedar	.19 to .21	.21	.32 to .32	.32	.20 to .48	.37
30 ft.	Red Cedar	.22 to .30	.24	.22 to .33	.27	.23 to .35	.29
30 ft.	Cypress	.15 to .17	.16	.17 to .27	.22	.18 to .40	.28
30 ft.	Cypress	.16 to .18	.17	.18 to .20	.19	.28 to .40	.29
30 ft.	Cypress	.17 to .20	.18	.20 to .31	.24	.31 to .45	.32

Average price paid for cement in 1918, 1919 and 1920:

1918 dealer's net price per bbl. F. O. B. Cedar Rapids.

Car lots range in price \$2.08 to \$2.28—Avg. \$2.40.

1919 dealer's net price per bbl. F. O. B. Cedar Rapids.

Car lots range in price \$2.13 to \$2.65—Avg. \$2.40.

1920 dealer's net price per bbl. F. O. B. Cedar Rapids.

Car lots range in price \$2.18 to \$2.71—Avg. \$2.39.

Bids received from local dealers are from ten cents to twenty-five cents per bbl. above dealer's price on account of storage and handling charges made.

SCHEDULE ONE

BRIDGE DESIGNS FOR SPECIFIC LOCATIONS

County	No. of Designs	Estimated Value	County	No. of Designs	Estimated Value
Adair	47	\$ 75,301.00	Howard	2	21,067.00
Adams	42	61,215.00	Ia	1	14,096.00
Albany	14	7,799.00	Jasper	3	35,544.00
Appanoose	5	45,135.00	Kookuk	11	20,480.00
Benton	57	108,812.00	Kossuth	31	51,778.00
Black Hawk	4	36,093.00	Lee	8	54,491.00
Boone	1	9,343.00	Lucas	18	91,332.00
Bower	2	40,624.00	Lyon	38	47,247.00
Boyer	28	25,477.00	Mahaika	4	45,628.00
Calhoun	1	8,932.00	Mills	24	168,616.00
Carroll	28	55,745.00	Mitchell	1	11,500.00
Cerro Gordo	31	27,781.00	Monona	2	15,732.00
Cherokee	35	43,582.00	Montgomery	1	38,640.00
Chickasaw	4	28,800.00	Muscatine	7	52,434.00
Clarke	39	60,377.00	O'Brien	11	26,771.00
Clay	9	5,640.00	Osceola	4	15,240.00
Clayton	22	38,028.00	Plymouth	4	29,330.00
Custon	1	14,700.00	Pocahontas	11	75,194.00
Davis	54	96,331.00	Polk	6	29,494.00
Decatur	36	58,056.00	Pottawattamie	2	17,528.00
Delaware	1	43,562.00	Poweshiek	1	25,644.00
Des Moines	11	9,767.00	Ringgold	1	15,080.00
Dickinson	1	2,839.00	Sac	2	7,190.00
Dubuque	33	24,273.00	Scott	27	26,567.00
Dunn	1	25,218.00	Shelby	46	97,425.00
Floyd	5	9,468.00	Story	3	28,256.00
Franklin	17	34,347.00	Taylor	69	80,503.00
Fremont	63	194,385.00	Van Buren	33	191,267.00
Geary	13	65,136.00	Warren	12	12,172.00
Grundy	14	25,986.00	Webster	2	
Guthrie	40	60,495.00	Winnebago	1	8,825.00
Hamilton	14	32,541.00	Woodbury	2	28,417.00
Hannock	2	9,285.00	Wright	4	47,288.00
Hardy	4	45,438.00			
Harrison	2	20,195.00	Total	1,074	\$ 2,625,908.00
Henry	34	34,890.00			

Chapter V. Railroad Crossing Improvements.

During the past year the Commission has endeavored to concentrate its efforts in the improvements of railroad crossings to those located upon the main travelled highways and main line railroads. Nearly all crossing projects listed and plans prepared are in connection with the improvement of the Primary Road System. High construction costs and the lack of transportation facilities have interfered to some extent with the adjustment of a number of important crossing projects but the principal difficulty is that of inadequate railroad crossing laws. Before we can expect to get crossings improved at a rate commensurate with our needs, the laws affecting such improvements must be completely revised and brought up to date.

Below is given a comparative statement of the work accomplished on railroad crossing improvements from December 1, 1919 to December 1, 1920.

	During 1919	During 1920	Grand total to Dec. 1, 1920
Crossing projects listed.....	27	37	309
Number of railroad crossings involved on projects listed.....	56	69	430
Projects surveyed.....	14	13	179
Projects for which plans and estimates were prepared.....	16	20	176
Number of conferences held.....	11	25	120
Number of projects satisfactorily adjusted.....	7	21	127
Number of projects listed which have been appealed to Railroad Commission.....	1	2	21
Projects adjusted by Railroad Commission.....	0	2	12
Crossings entirely eliminated.....	2	8	34
Grade crossings eliminated by grade separation.....	2	5	30
Crossings improved.....	4	16	118
Estimated cost of crossing improvements satisfactorily adjusted.....	\$ 45,000	\$ 122,400	\$ 450,110
Total estimated amount appropriated by railroad companies for crossing improvements.....	20,748	56,000	248,500
Total estimated amount appropriated from public funds for crossing improvements.....	23,801	66,200	201,282
Average percentage of cost paid by railroad companies for crossing improvements.....	45%	40%	50%
Average percentage of cost paid from public funds for crossing improvements.....	55%	54%	45%

The crossing projects listed include all of the crossings which have been referred to the Commission since 1914. Many of these projects have been satisfactorily adjusted and completed.

From the foregoing tabulation it will be noted that the crossing work accomplished and the expenditures made for crossing improvements since 1914 are very small in view of the large number of crossings in this state. It will be necessary to greatly increase the number of crossings improved each year or thousands of people will have lost their lives before there is any appreciable decrease in the number of grade crossings on our highways.

Methods of Handling Railroad Crossing Complaints.

Many applications are received each year from highway officials, associations and individuals asking for assistance in securing the improvement of railroad crossings. These applications in general are referred to the district engineers for investigation and if found meritorious are assigned a project number and a detailed investigation is made. If it develops from the investigation that a survey and plan are necessary one of the Commission's engineers is assigned to the county to secure this information. The plans are then prepared by the Commission and copies of the plans and estimates of cost furnished to the county and railroad company.

In many instances it is possible to adjust a complaint by correspondence but in the event that the improvement contemplated is of such character that it cannot be so adjusted the usual procedure is to arrange a conference at the site of the crossing between those interested in the improvement. At this conference the plans for the improvement and the distribution of cost between the interested parties are taken up and discussed.

It has been found possible through this procedure to adjust many of the crossing projects. The statutes provide that in the event of a disagreement between the parties interested in the improvement they may appeal to the Board of Railroad Commissioners for final decision.

The dissimilarity of the projects which come up for improvement makes it impractical to attempt to fix any uniform method for determining the percentage to be paid by the public and the railroad company. In so far as possible the adjustment is made on the basis of the benefits which each derive from the improvement.

Distribution of Dangerous Crossings.

By far the greater majority of the crossings listed for improvement during the past few years have been grade crossings. However, there are many complaints received and investigated by the

Commission referring to dangerous conditions existing at undergrade and overhead crossings. The crossings listed for improvement are classified as to type as follows:

DISTRIBUTION AND PERCENTAGE OF CROSSINGS LISTED FOR IMPROVEMENT OR IMPROVED TO DECEMBER 1, 1929.

Type of Crossing	Number Listed 1929	Distribution of original crossings as listed by Commission	
		Number	Percentage
Grade	25	334	75
Overhead	2	41	9
Undergrade	11	99	14
New crossings	0	5	1
Total	39	441	100%

DISTRIBUTION OF CROSSING IMPROVEMENTS ACCORDING TO THE PLANS AND RECOMMENDATIONS OF THE COMMISSION DECEMBER 1, 1929.

Type of Crossing	Eliminated		Improved		Grade Separation		Total number
	No.	%	No.	%	No.	%	
Grade	75	27	121	43	84	30	280
Overhead	2	8	32	12	—	—	36
Undergrade	5	9	48	91	—	—	53
New crossings	—	—	—	—	—	—	—
Total number	83	—	202	—	84	—	369
Percentage of total	—	22	—	55	—	23	—

DISTRIBUTION OF CROSSING IMPROVEMENTS SATISFACTORILY ADJUSTED TO DECEMBER 1, 1929.

Type of Crossing	Eliminated		Improved		Grade Separation		Total number
	No.	%	No.	%	No.	%	
Grade crossings	24	23	86	58	28	19	148
Overhead	2	9	21	91	—	—	23
Undergrade	2	6	29	94	—	—	31
New crossings	—	—	—	—	—	—	—
Total number	28	—	136	—	28	—	192
Percentage of total	—	19	—	67	—	14	—

Methods of Improvement.

There are a number of possible ways of improving each of the three types of crossings which we have on our highways as follows:

Grade Crossings—

1. Elimination of crossings by relocation of highway.
2. Separation of railroad and highway grades.
3. Relocation of highway to divert major portion of traffic from the crossing.

4. Removal of obstructions or reduction of grades interfering with clear view of approaching trains and vehicles.
5. Installation of crossing gates or adequate protection to the traveling public on crossings which cannot be made reasonably safe by one or more of the methods mentioned above.

Overhead Crossings—

1. Elimination of crossings by relocation of highway.
2. Construction of substantial overhead bridges capable of carrying the standard loadings and provided with roadways adequate to accommodate the traffic.
3. Reduction of steep approach grades to facilitate the hauling of heavy loads and to obtain better view of approaching vehicles on the highways.
4. Elimination of short turns and obstructed views of the approaches of overhead crossings.
5. Relocation of highway to divert traffic from overhead crossings which cannot be put in a safe condition for travel by one or more of the methods of improvement suggested above.

Undergrade Crossings—

1. Elimination of crossings by relocation of highway.
2. Provision for an adequate horizontal and vertical clearance where the highway passes under the railroad.
3. Removal of obstructions interfering with a clear view of approaching vehicles on the highway.
4. Improvement of drainage or hard surfacing so that roadway beneath the track will be properly drained at all times of the year.
5. Relocation of highway to divert the traffic in the event that the dangerous condition cannot be satisfactorily remedied by one of the methods indicated above.

Recommendations for Crossing Improvements.

The minimum requirements as adopted by the Commission for grade, undergrade and overhead crossings are given in detailed form below:

Grade Crossings—

Location of crossing signs at all grade crossings a minimum distance of 300 ft. from the crossing.

Maximum approach grade to the crossing of 6 per cent.

Level approach grade on either side of the tracks of 25 ft.

Minimum width of planking measured at right angles to the center line of the highway of 24 ft. on the Primary Road System and 20 ft. on the Secondary Road System.

Clear view which allows a person in a vehicle 200 ft. from the crossing to observe an approaching train at least an equal distance from the crossing.

Undergrade Crossings.

Minimum vertical clearance of 13 ft. with a recommended clearance of at least 14 ft. wherever practical.

Minimum horizontal clearance for temporary construction of 18 ft. measured at right angles to the highway.

Minimum horizontal clearance for permanent construction of 24 ft. for crossings on the Primary Road System and 20 ft. for crossings on the Secondary Road System measured at right angles to the highway.

Clear view which will permit one vehicle on the highway to observe another vehicle approaching a minimum distance of 200 ft.

Overhead Crossings—

Minimum vertical distance from top of rail to low steel of 22 ft. A bridge structure capable of safely carrying the Commission's standardized loadings.

Minimum width of roadway for temporary construction of 18 ft. Minimum width of roadway for permanent construction on the Primary Road System of 20 ft. and for the Secondary Road System of 18 ft.

Changes in grade on the bridge structure or approaches not to exceed 2% between bents or between end span and approach grade.

Clear view which will permit one vehicle on the highway to observe another vehicle approaching for a minimum distance of 200 ft.

Distribution of Crossing Improvements.

A distribution of crossing improvements according to the number of crossings in the various road and railroad systems in the state is given in tabulated form below:

DISTRIBUTION OF CROSSING PROJECTS LISTED ON ALL HIGHWAYS OUTSIDE OF CORPORATION LIMITS OF CITIES AND TOWNS.

Railroads	No. of crossings on primary road system	No. of crossings on county road system	No. of crossings on township road system	Total number of crossings	Total mileage in state
C., R. I. & P.	178	196	1,531	1,875	2,366
C., M. & St. P.	127	130	1,271	1,528	2,063
C., B. & Q.	123	111	950	1,187	2,069
C. & N. W.	91	90	1,210	1,391	1,529
C. G. W.	25	71	690	786	1,063
M. & St. L.	31	77	585	693	828
I. C.	53	35	449	537	537
Wabash	21	21	141	183	237
Great Northern	7	7	58	65	103
C., St. P., M. & O.	12	7	62	71	139
Misc.—R. R. and Interurban	50	80	200	300	451
Total	711	788	7,177	8,676	14,138

It will be noted that the distribution of crossings listed for improvement is almost in direct ratio to the total mileage of track in each of the railroad systems.

PLANS FOR FUTURE CROSSING WORK.

Surveys have been completed and plans are in the course of preparation on a number of important crossing improvements. It is the policy of the Commission to secure if possible the improvement of the crossings located on important highways and main line railroads as rapidly as practicable. Other improvements requiring a nominal expenditure will be given attention by the Commission but the more important crossings will be given first consideration.

Chapter VI. Department of Road Administration.

During the period covered by this report forty-eight requests have been made for a modification of the county road system in twenty-eight counties, thirty-seven of which have been approved, resulting in a net increase of 138.45 miles in the county road system; also fifty-five proposed modifications of the primary road system in thirty-eight counties have been approved, resulting in a net increase of 209.4 miles in the primary road system; ninety-eight projects, contemplating the improvement of 1,438.81 miles of primary road in sixty-three counties, have been outlined by resolution of the board of supervisors; forty-seven federal aid project statements, involving the improvement of 892.27 miles of road at an estimated cost of \$9,360,608.15, have been approved by the Bureau of Public Roads; eighty-three primary road project statements, involving the improvement of 1,167.16 miles of road at an estimated cost of \$10,289,946.68, have been approved by the Highway Commission; plans, specifications and estimates on forty-seven federal aid projects, contemplating the improvement of 665.48 miles of road at an estimated cost of \$13,349,611.54, have been submitted to the Bureau of Public Roads; project agreements, whereby \$5,605,768.66 of federal aid funds have been obligated for the construction of forty-nine federal aid projects, have been executed by the Secretary of Agriculture; lettings held on eighty-six projects in sixty counties have resulted in the awarding of 207 contracts, 202 of which, totaling \$11,450,568.02, have been approved, and five of which, totaling \$761,452.33, have been disapproved; fifty-nine contracts, totaling \$853,504.23, for road work other than federal aid or primary road projects, have been approved, and three such contracts, totalling \$22,577.10, have been disapproved; and fifty-five secondary road districts, for the gravel surfacing of 302.92 miles of the secondary road system, have been established.

Changes in the County Road System—Refer to Schedule Five.

During the period covered by this report forty-eight separate requests by boards of supervisors in twenty-eight different counties for a modification of the county road system have been passed upon

by the Commission. Thirty-seven of these requests were approved, resulting in the addition of 143.95 miles to the county road system, and the removal of 5.50 miles from the county road system or a net increase of 138.45 miles. The most extensive addition to the county road system approved was in Story county, where the original county road system has all been constructed to finished grade.

Projects Outlined—Refer to Schedule Six.

Ninety-eight projects, proposing the improvement of 1,438.81 miles of primary road, have been outlined by resolution of the board of supervisors in sixty-three counties. Eleven of these projects contemplate hard surfacing 140.43 miles of road; thirty-one projects contemplate gravel surfacing 351.74 miles of road; nine projects contemplate the improvement, by tile drainage only, of 177.54 miles of road, while 769.10 miles of the total is to be improved by constructing to finished grades and providing the necessary drainage, with no surfacing contemplated. For convenience of administration, five of these projects have been designed as federal aid projects, while the remaining ninety-three are being administered as primary road projects.

Revision in Projects Outlined—Refer to Schedule Seven.

Eleven projects outlined by resolution of the board of supervisors, and classified in the 1919 annual report as federal aid projects, have since been classified as primary road projects. These eleven projects contemplate the improvement of 206.74 miles, 14.59 miles of which are proposed to be hard surfaced, 7.25 miles to be gravel surfaced and the remaining 184.90 miles to be improved as earth roads by constructing to finished grades and providing the necessary drainage.

Federal Aid Projects Approved—Refer to Schedule Eight.

Forty-seven federal aid projects, contemplating the improvement of 892.27 miles of road, at an estimated cost of \$9,360,608.15, have been approved by the Bureau of Public Roads. Thirteen of these projects contemplate the hard surfacing of 118.79 miles of road, eight projects contemplate the gravel surfacing of 94.65 miles of road, while twenty-six of the projects contemplate the improvement by constructing to finished grades and providing the necessary drainage with no surfacing contemplated on 678.83 miles of road.

Modification in Projects Approved—Refer to Schedule Nine.

Four federal aid projects reported as approved by the Bureau of Public Roads in the 1919 annual report have been revised as to the amount of federal aid requested. The net result of the revisions made on these four projects is that the amount of federal aid requested has been reduced by \$224,400.00.

Primary Road Projects Approved—Refer to Schedule Ten.

Eighty-three primary road projects, contemplating the improvement of 1,167.16 miles of road at an estimated cost of \$10,289,946.68, have been approved by the Commission. Nine of these projects contemplate the hard surfacing of 72.31 miles of road, twenty-one projects contemplate the gravel surfacing of 228.15 miles of road, eight of the projects contemplate the improvement by tile drainage only on 169.79 miles of road, while 696.91 miles will be improved by constructing to finished grades and providing the necessary drainage, with no surfacing contemplated.

Plans, Specifications and Estimates on Federal Aid Projects Submitted—Refer to Schedule Eleven.

Plans, specifications and estimates have been submitted to the Bureau of Public Roads on forty-seven federal aid projects, involving the improvement of 665.48 miles of road at an estimated total cost of \$13,349,611.54. Nineteen of these projects contemplate the hard surfacing of 216.51 miles of road, six of the projects contemplate the gravel surfacing of 68.51 miles of road, while the improvement contemplated on the remaining 380.46 miles consists of constructing to finished grades and providing the necessary drainage, with no surfacing involved.

Plans, Specifications and Estimates on Primary Road Projects Submitted—Refer to Schedule Twelve.

Plans, specifications and estimates have been submitted to the boards of supervisors on thirty-six primary road projects, involving the improvement of 364.24 miles of road, at an estimated total cost of \$3,686,882.37. Seven of these projects contemplate the hard surfacing of 39.68 miles of road, thirteen projects contemplate the gravel surfacing of 132.60 miles of road, five projects contemplate improvement by tile drainage only on 103.82 miles, while the improvement contemplated on the remaining 88.14 miles consists of constructing to finished grades and providing the necessary drainage, with no surfacing involved.

Project Agreements Executed—Refer to Schedule Thirteen.

Project agreements whereby \$5,605,768.66 of federal funds were set aside as the Federal Government's share of the cost of construction on forty-nine projects were executed by the Secretary of Agriculture and the Highway Commission. The work contemplated in these forty-nine projects involves the improvement of 629.59 miles of road, 236.00 miles by hard surfacing, 80.27 miles by gravel surfacing and the remaining 313.32 miles by constructing to finished grades and providing the necessary drainage with no surfacing included.

Summary of Work on Federal Aid Projects.

A summary of the work that has been done on federal aid projects since the enactment of federal legislation initiating work under this system is as follows:

One hundred and five projects proposing the improvement of 1,722.04 miles of road in eighty-five counties at a total estimated cost of \$17,147,447.46 have been approved by the Bureau of Public Roads. Federal aid approved in the project statements for these projects amounts to a total of \$6,886,537.76. Of the total mileage, 261.83 miles are to be improved by hard surfacing, 219.68 miles by gravel surfacing, and the remaining 1,240.53 miles by constructing to finished grades and providing the necessary drainage, with no surfacing included.

Plans, specifications and estimates on seventy-seven of these projects in sixty-five counties, involving the improvement of 1,045.63 miles, have been submitted to the Bureau of Public Roads. Of this total mileage, 272.58 miles are to be improved by hard surfacing, 137.26 miles by gravel surfacing, and 635.79 miles by constructing to finished grades and providing the necessary drainage. It will be noted that the mileage of projects involving hard surfacing on which plans, specifications and estimates have been submitted exceeds the mileage of projects involving hard surfacing, listed as approved by the Bureau of Public Roads. This is due to the fact that project No. 41 in Floyd county, originally a gravel surfacing project approximately twelve miles in length, was changed to a hard surfacing project, without a formal modification of the project statement.

Project agreements whereby \$6,293,839.98 of federal funds have been obligated for the construction of seventy-one projects in sixty-one counties have been executed by the Secretary of Agri-

culture. The amount of federal funds thus far available, which, in accordance with the provisions of the federal statutes, must be obligated by project agreement by July 1, 1921, is \$5,058,014.40. In this really most essential phase in the administration of federal funds, the Commission is now approximately one year ahead of the schedule which would have to be maintained to secure to the State's credit its full quota of funds allotted. The work covered by these project agreements consists of 248.23 miles of hard surfacing, 134.35 miles of gravel surfacing and constructing to finished grades and providing the necessary drainage on 556.23 miles. In Chapter VIII of this report will be found detailed information regarding construction work, and in Chapter XIV detailed information regarding expenditures on each of the projects thus far placed under construction.

Lettings Held—Contracts Awarded—Contracts Approved—Refer to Schedule Fourteen.

Lettings held on eighty-six primary road and federal aid projects in sixty counties, have resulted in the awarding of 207 contracts, 202 of which, totaling \$11,450,568.02, have been approved and five of which, totaling \$761,452.33, have been disapproved. Detailed information regarding the unit quantities and prices involved and the contracts awarded is given in Schedule 14. General information as to location of road, mileage involved and approximate quantities on each project follows—

Adair County—Primary Road Project No. 28.

On July 1, 1920 bids were received and contracts awarded for grading and draining approximately 11.83 miles of Greenfield-Menlo road involving 162,707 cubic yards of excavation, 23,110 lineal feet of six-inch tile drain and 2,270 lineal feet of eight-inch tile drain and two tile intakes.

Adams County—Federal Aid Project No. 26.

On June 16, 1920, bids were received and contracts awarded for grading and draining approximately ten miles of primary road from Cornsaw west to county line, involving 233,495 cubic yards of excavation, 1,215 feet of tile drain and five tile intakes.

Appanoose County—Federal Aid Project No. 27.

On February 12, 1920, bids were received and contract awarded for grading on the Waubonsie Trail, five and one-half miles each way from Centerville, involving 101,393 cubic yards of earth excavation.

Benton County—Federal Aid Project No. 58.

On September 2, 1920, bids were received for grading, draining and paving 8.88 miles and draining and grading 9.01 miles additional, the

paving being north and south of Vinton, and south and northeast from Belle Plaine, and the grading and draining only from Lincoln Highway north 9.01 miles toward Vinton. On October 20, 1920, bids were received again and contract awarded for the paving work as only the earth work was awarded at the first letting.

Black Hawk County—Federal Aid Project No. 62.

On February 10, 1920, bids were received for grading, draining and paving 17.17 miles of the Hawkeye Highway, involving 49,146 cubic yards of excavation, 181,475 square yards of pavement and 71,692 lineal feet of tiling. The tile work was awarded at this letting and another letting was held on March 4, 1920 for the balance of the work. No award has been made on the grading and paving work included in this project.

Black Hawk County—Primary Road Project No. 51.

On August 13, 1920, bids were received and contracts awarded on a tile drainage project between Waterloo and Hudson, involving 42,296 lineal feet of six-inch tile drain, 4,785 lineal feet of eight-inch tile drain and three intakes.

Boone County—Federal Aid Project No. 65.

On April 30, 1920, bids were received and contracts awarded for draining, grading and graveling 11.51 miles of primary road from Ogden south to the county line. This section of the project involves 31,504 cubic yards of excavation, 29,450 lineal feet of six-inch tile drain, 2,175 lineal feet of eight-inch tile drain, thirty-two tile intakes and 16,516 cubic yards of gravel surfacing.

On November 8, 1920, bids were received and contracts awarded for grading, draining and graveling 10.57 miles of the Jordan-Webster City road. This section of the project involves 34,686 cubic yards of excavation, 47,849 feet of six-inch tile, 1,076 feet of ten-inch tile, forty tile intakes and 15,855 cubic yards of gravel surfacing.

Boone County—Primary Road Project No. 58.

On November 8, 1920, bids were received for grading, draining and graveling 13.65 miles of the Boone-Madrid road requiring 71,583 cubic yards of excavation, 71,300 feet of six-inch tile, 800 feet of eight-inch tile, fifty-four tile intakes and 20,530 cubic yards of gravel surfacing. Contracts were awarded for draining and grading.

Buchanan County—Federal Aid Project No. 5.

On February 11, 1920, bids were received for grading and paving eight miles of the Hawkeye Highway, four miles each way from Independence. Estimated quantities 20,279 cubic yards of excavation and 84,090 square yards of pavement. No awards were made.

Buena Vista County—Primary Road Project No. 18.

On June 29, 1920, bids were received and contracts awarded for draining, grading and graveling 24.52 miles of the Marathon-Linn Grove primary road. Estimated quantities 12,957 cubic yards of excavation, 27,650 cubic yards of gravel surfacing and 99,380 lineal feet of tile drain.

Buena Vista County—Federal Aid Project No. 37.

On July 20, 1920, bids were received and contracts awarded for draining and graveling 12.845 miles on the Okoboji Trail north and south through Rembrandt and the Grant Highway west from Alta, requiring 19,267 cubic yards of gravel, 22,000 feet of six-inch tile, fifty feet of twelve-inch tile and six tile intakes.

Butler County—Federal Aid Project No. 85.

On June 25, 1920, bids were received and contracts awarded for grading, draining and graveling a total of 12.85 miles extending north, south and east from Allison. Estimated quantities 44,740 cubic yards of excavation, 53,575 feet of six-inch tile, 685 feet of twelve-inch tile, two tile intakes and 19,254 yards of gravel surfacing.

Calhoun County—Primary Project Nos. 5 and 16.

On April 6, 1920, bids were received and contracts awarded for graveling and draining three miles of Lake City-Lohrville road, one mile of Lake City-Rockwell City road and 10.6 miles of Hawkeye Cut-Off west of Rockwell City. Estimated quantities: 21,900 cubic yards of gravel, 21,968 feet of six-inch tile and 1,400 feet of eight-inch tile.

Carroll County—Primary Project No. 14.

On November 10, 1920, bids were received and contracts awarded for grading and draining 10.96 miles of the Dedham-Templeton road, involving 119,447 cubic yards of excavation, 240 feet of twelve-inch tile, 4,200 feet of six-inch tile and four tile intakes.

Carroll County—Federal Aid Project No. 99.

On November 10, 1920, bids were received and contracts awarded for grading and draining 8.96 miles of the Dedham-Coon Rapids road, requiring 131,085 cubic yards of excavation, 2,885 feet of six-inch tile and one tile intake.

Cerro Gordo County—Federal Aid Projects Nos. 61 and 115.

On March 17, 1920, bids were received and contracts awarded for paving and incidental work on Jefferson Highway from Mason City south to county line, and on North Iowa Pike from Mason City east to county line and Clear Lake west to county line, a total distance of 28.12 miles, involving 73,097 cubic yards of excavation, 5,294 feet of curb, 299,444 square yards of paving and 67,934 lineal feet of tiling.

Cherokee County—Federal Aid Project No. 116.

On August 31, 1920, bids were received for draining and grading 14.03 miles of the primary road from Cherokee to the Plymouth county line, involving 90,384 cubic yards of excavation, 1,955 feet of six-inch tile, 1,290 feet of eight-inch tile and two tile intakes. Contract awarded for the earth work.

Clarke County—Federal Aid Project No. 33.

On May 6, 1920, bids were received and contracts awarded for grading and draining 8.45 miles of the Jefferson Highway from Osceola south to the county line, requiring 97,410 cubic yards of excavation,

2,860 feet of six-inch tile, 200 feet of twelve-inch tile and three tile intakes.

Clinton County—Federal Aid Project No. 18.

On September 15, 1920, bids were received for paving and incidental work on 17.58 miles of the Clinton-DeWitt-Grand Mound road, involving 56,956 cubic yards of excavation, 183,434 square yards of paving, 31,919 feet of six-inch tile, 5,950 feet of eight-inch tile and ten tile intakes. No awards were made at letting but later private contracts were awarded for this work.

Dallas County—Primary Project No. 33.

On June 30, 1920, bids were received and contracts awarded for draining and grading 4.47 miles on the Woodward-Bouton road involving 18,530 cubic yards of excavation, 17,200 feet of six-inch tile, 2,460 feet of eight-inch tile and ten tile intakes. On September 17, 1920, bids were received and contracts awarded for grading and draining 2.67 miles on the Bouton-Perry and Perry-Ogden road, requiring 48,553 cubic yards of excavation, 5,430 feet of six-inch tile and eight tile intakes.

Davis County—Federal Aid Project No. 50.

On August 11, 1920, bids were received for grading and draining 16.32 miles from Bloomfield north to the county line, involving 147,444 cubic yards of excavation, 2,120 feet of six-inch tile, seventy feet of twelve-inch tile and five tile intakes. Contract was awarded for earth-work.

Delaware County—Federal Aid Project No. 4.

On June 11, 1920, bids were received and contracts awarded for tile drainage on federal aid project No. 4, located on the Grant Highway from Manchester east 12.62 miles. Estimated quantities, 19,264 feet of six-inch tile, 1,025 feet of eight-inch tile and 1,300 feet of ten-inch tile.

Des Moines County—Federal Aid Project No. 32 and Primary Project No. 53.

On August 13, 1920, bids were received for grading, draining and paving 7.24 miles on the Mount Pleasant road from West Burlington west and the Agency-Blue Grass Cut-off road, requiring 35,036 cubic yards of excavation, 77,364 square yards of paving, 100 feet of eight-inch tile, 22,235 feet of six-inch tile, 5,895 feet of eight-inch tile and eight tile intakes. The tile drainage work was awarded at the letting and later a private contract for the earth work was awarded.

Dickinson County—Primary Project No. 55.

On May 26, 1920, bids were received for grading and draining 1.5 miles of the Spirit Lake-Jackson road, involving 7,762 cubic yards of excavation, 5,009 feet of six-inch tile and eight intakes. Bids were again received on August 11, 1920, for the tile drainage. Contract for earth work awarded at first letting and tile work at second letting.

Dickinson County—Federal Aid Project No. 68.

On June 16, 1920, bids were received for grading, draining and paving on 4,803 miles of road from Milford south to county line, involving 9,612 cubic yards of excavation, 51,050 square yards of paving, 3,350 feet of six-inch tile and eight tile intakes. Bids were again received on August 11, 1920, for the tile drainage work. Contract was awarded on grading and paving work at first letting and tile work at the second letting.

Dubuque County—Federal Aid Project No. 17—Division A.

On July 21, 1920, bids were received for grading and draining 21,195 miles of the Dubuque-Cascade road involving 151,258 cubic yards earth excavation, 1,666 cubic yards loose rock excavation, 71,479 feet six-inch tile, 480 feet eight-inch tile, 995 feet of twelve-inch tile and fifteen tile intakes. Private contracts were awarded for excavation and tile labor.

Emmet County—Primary Road Project No. 57.

On July 28, 1920, bids were received for draining 38.7 miles and rounding corners of all of the primary road system except the first four miles east of Estherville. Estimated quantities 11,090 cubic yards excavation, 3,810 feet of ten-inch tile, 243,985 feet of six-inch tile and ninety-four tile intakes. Part of the tile work was awarded at this letting and another portion at a letting held on August 24, 1920.

Emmet County—Federal Aid Project No. 49.

On July 28, 1920, bids were received for the tile drainage work on grading, draining and paving project extending approximately four miles east from Estherville on the Imperial Highway. Estimated quantities, 31,640 feet of six-inch tile and five tile intakes. Contracts were awarded.

Floyd County—Federal Aid Project No. 41.

On December 8, 1919, bids were received for paving and incidental work on 11.54 miles of the North Iowa Pike from Charles City to Rudd. Estimated quantities 48,066 cubic yards of excavation, 131,034 square yards of paving, 3,519 feet of eight-inch tile and 48,933 feet of six-inch tile. Bids were again received on this project on March 18, 1920. Contracts on a portion of the work were awarded at the second letting and the remainder of the work was later awarded by private contract.

Floyd County—Primary Project No. 73.

On August 3, 1920, bids were received on tile drainage on various parts of the primary road system, requiring 1,000 feet of five-inch tile, 11,900 feet of six-inch tile, 4,500 feet of seven-inch tile, 4,000 feet of eight-inch tile and 1,900 feet of ten-inch tile. Contracts were awarded.

Floyd County—Primary Project No. 63.

On November 30, 1920, bids were received for paving and incidental work on 5.56 miles of the North Iowa Pike between Rudd and Nora Springs, involving 26,694 cubic yards of excavation, 25,892 feet of

six-inch tile, 8,399 feet of eight-inch tile, six tile intakes and 58,743 square yards of paving. All bids rejected.

Franklin County—Federal Aid Project No. 105.

On September 22, 1920, bids were received for grading, draining and graveling 9.84 miles of primary road from Coulter east through Hampton, requiring 51,209 cubic yards of excavation, 52,148 feet of six-inch tile, 2,800 feet of eight-inch tile, 100 feet of twelve-inch tile, eighteen intakes and 14,766 cubic yards of gravel surfacing. Contracts were awarded for the grading and draining work.

Fremont County—Federal Aid Project No. 77.

Bids were received and contracts awarded on August 3, 1920, for grading and draining 18.7 miles of the Hamburg-Tabor primary road, requiring 256,669 cubic yards of excavation, 120 feet of twelve-inch tile and two tile intakes.

Fremont County—Primary Road Project No. 84.

On October 22, 1920, bids were received and contracts awarded for grading Section A of this project, which consists of the first mile of the Sidney-Shenandoah road west from the Page county line. This section requires 29,924 cubic yards of excavation.

Greene County—Federal Aid Project No. 39.

On December 4, 1919, bids were received and contracts awarded on 6.47 miles of grading and paving on the Lincoln Highway east and west of Jefferson and north from Jefferson. Estimated quantities, 17,442 cubic yards of excavation and 68,450 square yards of paving. On this same date bids were received for grading and draining about one mile situated at the Danger Hill relocation west of Jefferson and the Head Memorial bridge relocation east of Jefferson, also the tile drainage work on all of the project. Estimated quantities, 35,786 cubic yards excavation, 4,380 feet of six-inch tile and three tile intakes. On this latter portion bids were again received on March 18, 1920, at which time contracts for the grading work were awarded.

Guthrie County—Federal Aid Project No. 51.

On August 24, 1920, bids were received and contracts awarded for grading and draining 12.39 miles of the primary road from Guthrie Center west to the county line. Estimated quantities, 184,280 cubic yards of excavation, 16,985 feet of six-inch tile, 600 feet of twelve-inch tile and ten tile intakes.

Grundy County—Federal Aid Project No. 19.

On July 8, 1920, bids were received and contracts awarded for grading and draining 14.11 miles of primary road extending north of Grundy Center, west of Grundy Center and east from Grundy Center to the Black Hawk county line. Estimated quantities, 61,988 cubic yards of excavation, 44,730 feet of six-inch tile, 5,700 feet of eight-inch tile, 800 feet of ten-inch tile and fourteen tile intakes.

Hamilton County—Primary Project No. 17.

On September 20, 1920, bids were received and contracts awarded for draining and graveling the primary road from Stanhope north five

miles, requiring 7,558 cubic yards of gravel surfacing, 1,600 feet of five-inch tile and 26,900 feet of six-inch tile.

Hamilton County—Federal Aid Project No. 67.

On October 4, 1920, bids were received and contracts awarded for the tile drainage work on the primary road from Webster City east to the Hardin county line, requiring 43,029 feet of six-inch tile, 800 feet of eight-inch tile, 140 feet of twelve-inch tile and fifty-eight tile intakes. On November 16, 1920, bids were received and a contract awarded for grading that part of this project that includes the first 11.09 miles extending from Webster City east and requiring 55,789 cubic yards of excavation.

Hardin County—Primary Project No. 88.

On November 23, 1920, bids were received and contract awarded on Section A of this project, involving graveling 4.11 miles of the Grant Highway between Iowa Falls and Alden and requiring 6,165 cubic yards of gravel surfacing.

Henry County—Federal Aid Project No. 56.

On June 29, 1920, bids were received on grading and draining 20.62 miles, located on the Blue Grass road from Mount Pleasant to the east county line and from Mount Pleasant north to county line, requiring 99,282 cubic yards of excavation, 63,843 lineal feet of six-inch tile, 14,990 feet of eight-inch tile, 2,570 feet of ten-inch tile, 230 feet of twelve-inch tile and forty-six tile intakes. All bids were rejected. At another letting on July 20, 1920, bids were again rejected and later private awards were made.

Humboldt County—Federal Aid Project No. 48.

On March 2, 1920, bids were received for paving and incidental work on the primary road through Dakota City and from Humboldt west, a total distance of 1.85 miles, requiring 23,208 cubic yards of excavation, 15,933.6 square yards of paving, 6,721 feet of curb, four water flumes, 1,515 feet of six-inch tile, 2,090 feet of ten-inch tile and seventy feet of fourteen-inch tile. At this letting a contract was awarded for the earth excavation but this contract was not approved by the Commission. Later all of the work in this project was awarded privately.

Ia County—Federal Aid Project No. 80.

On September 7, 1920, bids were received and contracts awarded for grading and draining 18.99 miles from Holstein to the Sac county line, involving 173,052 cubic yards of excavation, 16,480 feet of six-inch tile, 1,500 feet of seven-inch tile, 3,375 feet of eight-inch tile and one tile intake.

Johnson County—Federal Aid Project No. 9 and 128.

On June 23, 1920, bids were received and contracts awarded for paving and incidental work on 3.64 miles of the River to River road from Iowa City northwest through Coralville and west. Estimated quantities 14,022 cubic yards of excavation, 1,280 feet of eight-inch tile, 40,241 square yards of paving and 2,153 feet of curb and gutter.

Keokuk County—Federal Aid Project No. 34.

On August 20, 1920, bids were received and contract awarded for grading and draining the west 3.03 miles of the primary road west of Sigourney, involving 38,273 cubic yards of excavation, 1,950 lineal feet of six-inch tile, sixty feet of twelve-inch tile and three tile intakes.

Kossuth County—Federal Aid Project No. 11.

On April 27, 1920, bids were received on grading, draining and paving 21.30 miles of the Daniel Boone Trill from Algona north. Estimated quantities 35,382 cubic yards of excavation, 225,213 square yards of paving, 990 feet of five-inch tile, 48,030 feet of six-inch tile and forty-six tile intakes. All bids were rejected except for the tile drainage work.

Linn County—Federal Aid Project No. 22.

On March 11, 1920, bids were received for paving and incidental work on the Cedar Rapids-Mount Vernon road involving approximately six and one-half miles and requiring 7,800 cubic yards of excavation, 6,800 feet of curb and 70,341 square yards of paving. Contract was awarded to the Pine Grove Contracting Company but afterwards annulled account of failure to put up satisfactory bond and contract awarded privately to H. W. Horst Company.

Linn County—Federal Aid Project No. 96.

On August 10, 1920, bids were received and contracts awarded for grading and draining 12.40 miles on the Lincoln Highway from Cedar Rapids west and from Cedar county line northwesterly toward Marion. Estimated quantities 62,685 cubic yards excavation, 33,190 feet of six-inch tile, 100 feet of twelve-inch tile and three tile intakes.

Lyon County—Federal Aid Project No. 110.

On September 21, 1920, bids were received for grading and draining 22.8 miles of the Lester-Rock Rapids-Osceola county line road, requiring 197,360 cubic yards of excavation, 48,046 feet of six-inch tile, 1,070 feet of eight-inch tile, 1,330 feet of twelve-inch tile and ten tile intakes. A second letting on this project was held on September 27, 1920 and contract for earth work awarded.

Lucas County—Federal Aid Project No. 63—Sections A and D.

On September 27, 1920, bids were received for grading and draining five and one-fourth miles, being two and one-fourth miles from Chariton south and three miles from Lucas east. Estimated quantities, 103,625 cubic yards of excavation, 850 feet of six-inch tile. A contract for earth work was awarded.

Marion County—Federal Aid Project No. 7.

On March 3d, a private contract was awarded for constructing 9,000 feet of guard rail on this federal aid project which radiates out of Marion four ways.

Mills County—Federal Aid Project No. 15.

On September 15, 1920, bids were received for grading and draining 12.10 miles of the Glenwood-Hastings road requiring 216,751 cubic

yards of excavation, 110 feet of six-inch tile, 160 feet of twelve-inch tile and two tile intakes. Contract was awarded.

Muscatine County—Federal Aid Project No. 40.

On July 15, 1920, bids were received for 19.36 miles of grading and draining on the River to River road from the west county line through Moscow and the Muscatine-Davenport road northeast from Muscatine. Estimated quantities, 145,311 cubic yards of excavation, 20,860 feet of six-inch tile, 2,475 feet of twelve-inch tile, 1,150 feet of ten-inch tile, sixty feet of eight-inch tile, thirty tile intakes and relaying 1,590 feet of six-inch tile. Contract awarded for part of the grading and all of the tiling at this letting. On August 4, 1920, a letting was held and later a private contract awarded for the balance of the grading.

Osceola County—Primary Project No. 15

On July 27, 1920, bids were received for grading 22.54 miles on the Sibley-Allendorf-Ocheyedan-Sanborn road, involving 98,262 cubic yards of earth excavation. All bids were rejected and bids again received on August 11, 1920, at which time a contract was awarded.

O'Brien County—Federal Aid Project No. 43

On March 19, 1920, bids were received and contracts awarded for grading, draining and paving on the North Iowa Pike across the county. Estimated quantities, 66,635 cubic yards of excavation, 237,054 square yards of paving, 55,000 feet of six-inch tile, 3,600 feet of seven-inch tile, 1,400 feet of eight-inch tile and twenty-nine tile intakes.

Palo Alto County—Federal Aid Project No. 109.

On March 3, 1920, bids were received for paving and incidental work for 11.05 miles of the Emmetsburg to Mallard road. Estimated quantities 43,220 cubic yards of earth excavation, 10,330 cubic yards of trench excavation, 115,324 square yards of paving, 61,215 feet of six-inch tile, 1,200 feet of twelve-inch tile and twenty-two tile intakes. All bids were rejected and later private contracts were awarded on all the various items of work included in this project.

Plymouth County—Federal Aid Project No. 38

On November 9, 1920, bids were received and contracts awarded for grading and draining 20.84 miles of primary road from Merrill northeast to LeMars and thence east to the county line, requiring 156,364 cubic yards of excavation, 6,820 feet of six-inch tile and 2,750 feet of eight-inch tile.

Pocahontas County—Primary Project No. 7.

On March 16, 1920, bids were received and contracts awarded for grading 5.87 miles on the Pocahontas-Emmetsburg road and the Havelock road, requiring 33,130 cubic yards of excavation. On September 29, 1920, bids were received and contracts awarded for tile drainage work on this project, estimated quantities being 37,000 feet of six-inch tile and thirteen intakes.

Pocahontas County—Primary Project No. 20

September 29, 1920, bids were received and contracts awarded for grading approximately four miles and graveling and draining approxi-

mately twelve miles of the Havelock-Laurens-Marathon road, requiring approximately 18,934 cubic yards of excavation, 18,000 cubic yards of gravel surfacing, 75,960 feet of six-inch tile and thirty-three tile intakes.

Polk County—Primary Project No. 3.

On February 16, 1920, bids were received and contracts awarded for grading four and one-fourth miles of the Carlisle road extending from Des Moines southeast to the county line and requiring 17,500 cubic yards of excavation.

Polk County—Federal Aid Project No. 104

On February 16, 1920, bids were received and contracts awarded for paving and incidental work on 6.57 miles of the Des Moines-Ankeny road, involving 23,486 cubic yards of excavation, 76,940 square yards of paving, 6,440 feet of six-inch tile, fifty feet of eight-inch tile and six intakes.

Polk County—Federal Aid Project No. 89

On February 16, 1920, bids were received and contracts awarded on one section of this project, being 2.75 miles of the Indianola road from Des Moines to south county line. Estimated quantities 4,315 cubic yards of excavation and 31,175 square yards of paving. On April 3, 1920, bids were received and contract awarded for paving on the White Pole road from Des Moines west to the county line, involving 6,641 cubic yards of excavation and 48,659 square yards of paving.

Pottawattamie County—Federal Aid Project No. 46

On March 18, 1920, bids were received for grading and draining 2.65 miles on the Lincoln Highway at Honey Creek Hill, requiring 55,250 cubic yards of excavation and 275 feet of twelve-inch tile. All bids rejected and later private contract was awarded.

Sac County—Primary Road Project No. 10

On May 4, 1920, bids were received and contracts awarded for graveling and draining 7.15 miles of the Lake View-Arthur road, involving 15,750 cubic yards of gravel surfacing and 17,350 lineal feet of six-inch tile drain.

Sac County—Primary Road Project No. 11

On May 4, 1920, bids were received and contracts awarded for graveling and draining 11.24 miles of the Sac City-Storm Lake road, requiring 16,860 cubic yards of gravel surfacing and 20,350 feet of six-inch tile drain.

Sac County—Primary Road Project No. 12.

On May 4, 1920, bids were received and contracts awarded for graveling and draining 13.17 miles of the Lake View-Carroll road, requiring 15,765 cubic yards of gravel surfacing and 46,100 feet of six-inch tile drain.

Scott County—Federal Aid Project No. 54

On March 25, 1920, bids were received for paving and incidental work on 4.47 miles of the Davenport-Durant road. Estimated quanti-

ties, 6,329 cubic yards of excavation and 47,164 square yards of paving. A contract was awarded for this work but same was later cancelled.

Scott County—Federal Aid Project No. 114

On March 25, 1920, bids were received and contracts awarded for paving and incidental work on the Davenport-New Liberty road, 6.44 miles, the Davenport-Mount Joy-Gambril road, 5.38 miles. Davenport-Princeton road, 5.42 miles, a total of 17.24 miles. Total estimated quantities 54,335 cubic yards of earth excavation, 9,442 cubic yards loose rock excavation, 262 cubic yards solid rock excavation, 180,950 square yards of pavement, 26,360 feet of six-inch tile, 8,660 feet of eight-inch tile, 2,230 feet of ten-inch tile and 150 feet of fifteen-inch tile.

Scott County—Federal Aid Project No. 55

On September 1, 1920 bids were received and contracts awarded for grading and draining 13.38 miles of the Harrison Street-New Liberty road and 2.24 miles of the Davenport-Mount Joy road. Estimated quantities, 82,134 cubic yards of excavation, 48,067 feet of six-inch tile, 8,000 feet of eight-inch tile, 5,100 feet of ten-inch tile, 2,195 feet of twelve-inch tile, fifty feet of fifteen-inch tile and twenty-one tile intakes.

Shelby County—Primary Road Project No. 42—Division A

On July 6, 1920, bids were received for grading and draining 11.09 miles of the primary road from Harlan west to the county line. All bids were rejected at this letting and later a private contract was awarded for the earth excavation.

Sioux County—Federal Aid Project No. 84

On March 20, 1920, a letting was held for paving and incidental work on 2.94 miles of the Alton-Orange City road, requiring 6,901 cubic yards of excavation, 31,180 square yards of paving and 2,200 feet of tile. No bids were received at this letting. Later a private contract was awarded for the grading and paving, but was cancelled on account of doubt as to legality of contract. A letting was again held on April 15, 1920 and contract awarded and approved for the earth excavation and paving.

Sioux County—Primary Project No. 26

On April 15, 1920, bids were received for grading, draining and paving 2.19 miles of the North Iowa Pike between Hull and Perkins. Estimated quantities 7,305 cubic yards of excavation, 23,191 square yards of paving, 3,830 feet of six-inch tile and three tile intakes. Contract was awarded for grading and paving and later private contract was awarded for the tile drains.

Story County—Primary Project No. 62.

On August 16, 1920, bids were received for tile draining the Lincoln Highway, the Wilson Highway from Ames south to the county line and Jefferson Highway from Colo north to the county line. Estimated quantities 242,700 feet of six-inch tile drain, 5,900 feet of eight-inch tile, 550 feet of ten-inch tile, 650 feet of six-inch sewer pipe and

117 intakes. No contracts were awarded at this letting but later private contracts for the entire project were entered into.

Van Buren County—Federal Aid Project No. 60.

On August 12, 1920, bids were received for grading and draining 12.75 miles of the primary road from Keosauqua north to the county line. Estimated quantities, 106,121 cubic yards of earth excavation, 1,500 cubic yards of rock excavation, 14,230 feet of six-inch tile, 7,950 feet of eight-inch tile, 740 feet of ten-inch tile, 110 feet of twelve-inch tile and thirty intakes. No awards were made and at a later letting on August 25, 1920, all bids were rejected and a private contract later entered into.

Wapello County—Federal Aid Project No. 42

On March 6, 1920, bids were received for grading and draining 10 1/4 miles of primary road, including the road from Ottumwa to the Davis county line and the first three miles of the Air Line road west of Ottumwa. Estimated quantities, 135,924 cubic yards of excavation, 195 feet of twelve-inch tile drain and two tile intakes. All bids were rejected at this letting and also at a second letting on March 24, 1920. Later a private contract for the earth excavation was entered into.

Webster County—Federal Aid Project No. 13

On April 29, 1920, bids were received for draining and graveling six miles of the Fort Dodge-Duncombe road, requiring 9,133 cubic yards of gravel surfacing, 4,500 feet of six-inch tile and twenty-four tile intakes. No awards were made at this letting. Later private contracts were entered into for the gravel work. A letting was held on November 4, 1920 for 24,000 feet of six-inch tile and 3,200 feet of eight-inch tile on this project and contracts awarded.

Webster County—Primary Project No. 25

On June 28, 1920, bids were received for tile drainage and excavation on approximately seven miles of the Grant Highway from the west county line easterly involving 40,320 cubic yards of excavation, 1,972 feet of eight-inch tile, 43,235 feet of six-inch tile and eleven tile intakes. A contract was awarded for the earthwork at this letting and later a private contract for the tile labor. On November 4, 1920, bids were received and contract awarded for 28,000 feet of six-inch tile.

Winnebago County—Federal Aid Project No. 30

On February 2, 1920, bids were received for grading, draining and graveling 7.45 miles of the Forest City-Thompson road, requiring 30,942 cubic yards of excavation, 11,175 cubic yards of gravel, 19,100 feet of six-inch tile and four intakes. Contracts were awarded and after modification as to the price on tile drainage work contracts were all approved.

Winnebago County—Primary Project No. 2

On August 3, 1920, bids were received for rounding corners, draining and graveling 18.44 miles on the Wilson Highway from Forest City to the state line requiring 15,257 cubic yards of excavation, 74,355 feet of six-inch tile and 27,660 cubic yards of gravel. A second letting was

held on the earthwork on September 1, 1920. Later private contracts were awarded and approved on all of the work not awarded at the first letting.

Woodbury County—Federal Aid Project No. 2

A private contract was entered into on July 26, 1920, for guard rail construction on this project which has been described in previous reports.

Woodbury County—Primary Project No. 45

On June 2, 1920, a letting was held for paving fourteen miles of the Sioux City-Moville road, requiring 46,841 cubic yards of excavation, 158,758 square yards of paving, 1,500 feet of tile and forty-four intakes. No bids were received.

Wright County—Federal Aid Project No. 29

On December 3, 1919 bids were received for grading, draining and graveling 10.67 miles situated on the Eagle Grove-Goldfield-Clarion road and four miles of the Clarion-Belmond road, all requiring 78,858 cubic yards of excavation, 4,300 feet of ten-inch tile, 6,024 feet of eight-inch tile, 75,696 feet of six-inch tile, ten tile intakes and 36,679 cubic yards of gravel surfacing. Contracts were awarded at this letting for the draining and grading. On August 25, 1920, bids were received again for the graveling on this project and contract was awarded for the portion between Eagle Grove and Goldfield. Another letting was held for the graveling on the balance of this project on September 3, 1920, but no awards made. Later a private contract was entered into for the graveling between Clarion and Goldfield.

Contracts approved aside from contracts on Federal Aid and Primary Road Projects.—Refer to Schedule Fifteen.

Fifty-nine contracts, totaling \$853,504.23, for work aside from federal aid or primary road projects were approved, and three such contracts, totaling \$22,577.10, were disapproved. Among this number are included contracts for work in connection with secondary road districts, as well as for work let privately after bids had been received. In a number of counties, contracts for road work are let subject to the approval by the Commission, even though such approval is not required.

Secondary Road District Established—Refer to Schedule Sixteen.

Fifty-five secondary road districts, for the gravel surfacing of 302.92 miles of road in seventeen counties, have been established by resolution of the board of supervisors. This provision for gravel surfacing secondary roads continues to be very popular, especially in that section of the state where local deposits of gravel suitable for gravel surfacing work are available. Inability on the part of the townships to finance the cost of grading and draining required on township roads, also the township's share of the cost of the gravel surfacing, limits the mileage of township

roads that can be improved through the medium of secondary road districts.

Standard Specifications

Revised standard specifications for construction work on the primary road system have been issued, also revised standard specifications covering grading, draining and gravel surfacing work on the secondary road system. The specifications for construction work on the primary road system consists of a series of pamphlets. Specifications for any particular project are prepared by assembling in a folder the pamphlets covering all classes of construction work on which bids are desired. This method of preparing specifications has been found very satisfactory, as it permits revisions to be made in the specifications for any particular type of construction, without interfering with the specifications for other types of construction.

SCHEDULE FIVE
COUNTY ROAD CHANGES AND ADDITIONS.

County	Date filed with commission	Date of action by commission	Was Board's action approved	Miles added to county system	Miles deducted from county system
Boone	Dec. 10, 1919	Apr. 30, 1920	Yes	2.125	.....
Clayton	Sept. 1235	Oct. 28, 1920	Yes	7.00	.....
Dallas	Feb. 25, 1920	Mar. 9, 1920	Yes	3.25	.....
Deaatur	Oct. 24, 1919	Jan. 6, 1920	No	.....	.....
Emmet	Mar. 18, 1920	Aug. 5, 1920	No	.....	.....
Fremont	Jan. 12, 1920	Aug. 25, 1920	No	.....	.....
Fremont	Mar. 5, 1920	Aug. 5, 1920	Yes	5.75	.....
Grundy	Mar. 15, 1920	April 29, 1920	No	.....	.....
Hardin	Jan. 28, 1920	Feb. 12, 1920	Yes	.....	0.50
Jasper	.....	.....	Yes	2.00	.....
Jasper	July 29, 1920	July 29, 1920	Yes	2.333	.....
Jasper	Nov. 1, 1919	Dec. 21, 1919	Yes	1.00	.....
Jasper	Jan. 6, 1920	Jan. 22, 1920	Yes	.....	0.20
Johnson	Mar. 22, 1920	Aug. 5, 1920	Yes	2.50	.....
Lee	Mar. 11, 1920	April 1, 1920	Yes	4.75	.....
Lee	April 24, 1920	May 6, 1920	Yes	19.75	.....
Louisia	June 16, 1920	July 22, 1920	No	.....	.....
Lyon	Dec. 11, 1919	April 1, 1920	Yes	2.125	.....
Lyon	Dec. 11, 1919	Dec. 21, 1919	Yes	0.50	.....
Lyon	April 28, 1920	May 6, 1920	Yes	3.25	.....
Lyon	July 9, 1920	Aug. 25, 1920	Yes	.....	1.00
Madison	.....	.....	.....	.....	.....
Marion	April 8, 1919	June 10, 1920	Yes	11.00	.....
Marshall	April 12, 1920	April 29, 1920	Yes	2.00	.....
Marshall	July 9, 1920	July 30, 1920	Yes	0.75	.....
Monroe	.....	.....	.....	.....	.....
Monroe	July 26, 1920	July 28, 1920	Yes	0.25	.....
Osceola	Jan. 19, 1920	April 1, 1920	Yes	1.50	.....
Osceola	Aug. 23, 1920	Nov. 4, 1920	Yes	1.00	.....
Palo Alto	June 15, 1920	Aug. 5, 1920	Yes	1.00	.....
Plymouth	July 21, 1919	Aug. 25, 1920	Yes	.....	2.00
Pocahontas	.....	.....	.....	.....	.....
Pocahontas	July 8, 1920	July 28, 1920	Yes	1.50	.....
Polk	April 28, 1920	April 29, 1920	Yes	1.25	.....
Polk	Aug. 4, 1920	Aug. 5, 1920	Yes	1.00	.....
Polk	Aug. 13, 1920	June 10, 1920	Yes	5.50	.....

SCHEDULE FIVE--(CONTINUED)

County	Date filed with commission	Date of action by commission	Was Board's action approved	Miles added to county system	Miles deducted from county system
Polk	Feb. 17, 1929	Mar. 11, 1929	Yes	5.00	-----
Polk	July 18, 1919	Dec. 23, 1919	Yes	4.50	-----
Pottawattamie	Aug. 9, 1929	Sept. 23, 1929	No	-----	-----
Pottawattamie	Aug. 9, 1929	Nov. 4, 1929	Yes	7.25	-----
Pottawattamie	July 8, 1929	July 29, 1929	No	-----	-----
Pottawattamie	May 20, 1929	June 10, 1929	No	-----	-----
Story	Feb. 23, 1929	Mar. 11, 1929	No	-----	-----
Story	Feb. 23, 1929	Mar. 11, 1929	Yes	31.80	-----
Story	Mar. 8, 1929	Mar. 11, 1929	Yes	4.00	-----
Van Buren	June 16, 1929	July 22, 1929	No	-----	-----
Winneshago	Feb. 9, 1929	April 1, 1929	Yes	6.00	-----
Winneshago	April 14, 1929	May 27, 1929	Yes	0.58	-----
Worth	July 7, 1919	May 27, 1929	Yes	1.50	-----
Worth	Aug. 7, 1929	June 24, 1929	Yes	0.25	-----

SCHEDULE SIX

PROJECTS OUTLINED BY RESOLUTION OF BOARD OF SUPERVISORS.

County	Project No.		Length in Miles				Total
	Fed.	Pr.	Grading	Gravel	Paving	Tiling	
Adair		116	\$ 11.50				\$ 11.50
Adams		60	14.00				14.00
Appanoose		78	11.25				11.25
Black Hawk		53				6.18	6.18
Boone		30	18.00				18.00
Boone		58	13.00	13.00			26.00
Boone		61				6.74	6.74
Boone		94	2.50	2.50			5.00
Buena Vista		93		4.99			4.99
Borhanan		66	11.25				11.25
Butler		71	12.75	12.75			25.50
Buena Vista		18	1.50				1.50
Calhoun		96		11.00			11.00
Calhoun		16		10.60			10.60
Calhoun		65	5.00	18.00			23.00
Calhoun		107		6.25			6.25
Carrroll		9	23.50				23.50
Carrroll		14	11.00				11.00
Cass		47	17.00				17.00
Cherokee		98	1.00	11.50			12.50
Cedar		114	29.00				29.00
Clarke		31	14.25				14.25
Clay		56	7.00	7.00			14.00
Clayton		70	21.50				21.50
Crawford		8	17.00				17.00
Dallas		169		16.80			16.80
Dallas		110	41.75				41.75
Des Moines		53	2.42		2.42		4.84
*Des Moines		32	-1.71		-1.71		-3.42
Dickinson		55	1.50				1.50
Emmet		57				38.70	38.70
Floyd		63	8.50		8.50		17.00
Floyd		73				5.40	5.40
Franklin		46	10.50				10.50
Fremont		84	15.00				15.00
*Guthrie		*51	+3.00				+3.00
Greene		24	36.00		36.50		72.50
Grundy		48	19.50				19.50
Guthrie		52	15.00				15.00

SCHEDULE SIX--(CONTINUED)

County	Project No.		Length in Miles				Total
	Fed.	Pr.	Grading	Gravel	Paving	Tiling	
Hamilton		17		5.00			5.00
Hamilton		79	17.00	17.00			34.00
Hardin		88	5.67	37.74		16.26	59.67
Hancock		105	24.50		24.50		49.00
Howard		102		1.00			1.00
Howard		104				27.00	27.00
Humboldt		101		6.00			6.00
Ia		77	13.00				13.00
Jasper		107	32.00	15.00			47.00
Jasper		99	26.00				26.00
Johnson		35	18.75				18.75
Johnson		97	1.57				1.57
Johnson	128		2.50		2.50		5.00
Jones		80	2.00				2.00
Jones		81	21.00				21.00
Lee		98	8.90	8.90			17.80
Lee	96		12.75				12.75
Linn		75	10.50				10.50
Lyon		85	16.00				16.00
Madison		36	13.00				13.00
Marshall		13	8.25				8.25
Monroe		78	8.00				8.00
Montgomery		66	17.75				17.75
*O'Brien		09	28.30		28.30		56.60
Oswella		15	22.50				22.50
*Plymouth		39	-7.25				-7.25
Pocahontas		74	13.75				13.75
Pocahontas		7	5.87				5.87
Pocahontas		20	30.75				30.75
Pocahontas		90	15.00	15.00			30.00
Pocahontas		91			30.75		30.75
Polk		59	8.50				8.50
Polk		72	15.13				15.13
Polk	89		7.22		7.22		14.44
Polk		115	3.75				3.75
Pottawattamie		40	27.78		27.78		55.56
Pottawattamie		21	22.00				22.00
Pottawattamie		92	23.25				23.25
Pottawattamie		9	9.50				9.50
Sac		10		8.50			8.50
Sac		11		11.75			11.75
Sac		12		18.25			18.25
Scott		86		1.50			1.50
*Scott	*53	50	26.95				26.95
*Scott			-1.67				-1.67
Shelby	114		+2.32		+2.32		+4.64
Sioux		42	23.75				23.75
Sioux		26	2.10		2.10		4.20
Socastone		67	2.00				2.00
Socastone		83	23.30				23.30
Van Buren		62				43.80	43.80
Wapello		118	15.50				15.50
Warren		54	18.00				18.00
Webster		44	15.50				15.50
Webster		25	17.00				17.00
Webster		54	15.95				15.95
Webster		108		2.50		9.25	11.75
Winneshago		111		7.00			7.00
Woodbury		51				21.21	21.21
Worth		82	7.50				7.50
Worth		82	14.00	14.00			28.00
Wright	134		8.50	8.50			17.00
Wright		19	8.50	8.50			17.00
Totals	5	93	\$ 1,064.10	\$ 351.74	\$ 140.43	\$ 177.54	\$ 1,438.81

*Modification of projects as listed in previous reports.

SCHEDULE SEVEN

PROJECTS OUTLINED BY RESOLUTION OF BOARD OF SUPERVISORS CLASSIFIED IN 1919 ANNUAL REPORT AS FEDERAL AID PROJECTS AND NOW CLASSIFIED AS PRIMARY ROAD PROJECTS

County	Former F. A. No.	Assigned Pr. Road Project No.	Length in Miles			Total
			Grading	Gravel	Paving	
Adair	95	23	15.50			15.50
*Allamakee	126	29-113	7.35		7.35	7.35
Clay	73	32	7.24		7.24	7.24
Dallas	101	33	22.25	7.25		22.25
Harrison	82	34	19.50			19.50
Johnson	102	35	18.75			18.75
Mills	113	37	8.00			8.00
Monona	66	38	39.40			39.40
Page	100	27	16.50			16.50
Plymouth	112	39	27.50			27.50
Poweshiek	119	41	24.75			24.75
Total	11 projects		206.74	7.25	14.59	206.74

*Allamakee project originally designated as Federal Aid No. 126 has since been divided into two portions, the portion north of Postville being Primary Road Project No. 29 and the portion north of Waukon being now Primary Road Project No. 113.

SCHEDULE EIGHT

FEDERAL AID PROJECTS STATEMENTS APPROVED BY BUREAU OF PUBLIC ROADS

County	Project No.	Length in Miles			Total	Estimated Cost	Federal Aid Requested
		Grading	Gravel	Paving			
Benton	58	17.89		8.79	17.89	\$ 380,939.62	\$ 190,400.00
Boone	65	22.50	22.50		22.50	132,557.70	66,200.00
Butler	85	15.62	15.62		15.62	162,410.38	81,200.00
†Clinton	18	17.58		17.58	17.58	820,940.34	323,513.55
Carroll	99	8.88			8.88	82,940.00	41,400.00
Clayton	74	32.20			32.20	160,050.00	10,000.00
Cherokee	116	14.00			14.00	43,912.00	21,900.00
Cedar	57	24.20			24.20	85,954.00	12,900.00
Cerro Gordo	115	22.07		22.07	22.07	974,098.40	441,400.00
Decatur	122	10.00			10.00	63,607.50	31,800.00
Delaware	103	13.30	13.30		13.30	95,942.00	7,900.00
*Des Moines	32	2.07		2.07	2.07	198,619.85	
Dickinson	68	5.00		5.00	5.00	247,445.00	100,000.00
Emmet	49	3.95		3.95	3.95	154,670.45	77,300.00
Fayette	59	35.85			35.85	140,646.00	70,300.00
Franklin	105	9.75	9.75		9.75	68,168.37	34,000.00
Grundy	19	14.30			14.30	53,075.00	26,500.00
*Guthrie	51	2.67			2.67	100,340.80	
Hamilton	67	20.90			20.90	70,455.00	35,200.00
Humboldt	48	1.87	.60	1.23	1.87	78,324.12	37,400.00
Humboldt	117	40.83			40.83	49,830.00	24,900.00
Ida	80	19.50			19.50	73,040.00	36,500.00
Iowa	90	26.20			26.20	123,090.00	11,500.00
Jasper	64	31.50			31.50	136,785.00	18,300.00
Jefferson	120	6.90			6.90	45,278.00	22,600.00
Johnson	128	2.54		2.54	2.54	115,060.00	50,000.00
Jones	86	25.20			25.20	103,697.00	11,800.00
Kossuth	66	34.23			34.23	121,594.00	60,700.00
Kossuth	111	22.31		22.31	22.31	881,565.96	440,000.00
Linn	96	12.75			12.75	45,391.50	22,000.00
Louisa	53	23.40			23.40	132,682.00	66,300.00
Lucas	63	23.15			23.15	169,125.00	84,500.00
Lyon	110	23.00			23.00	69,800.00	34,900.00
Mahaska	70	27.76			27.76	159,060.00	19,500.00
Marshall	23			6.00	6.00	226,512.00	113,200.00
Mitchell	45	15.88	15.88		15.88	101,963.70	15,900.00
Muscatine	40	20.59			20.59	46,604.25	23,300.00
Muscatine	87	29.10			29.10	92,653.00	46,300.00
Polk	89	7.22		7.22	7.22	385,832.70	144,400.00
Ringgold	123	12.00			12.00	103,070.00	51,500.00
Scott	55	19.33			19.33	85,052.00	42,500.00
Story	72	20.50	8.50		20.50	84,634.00	42,000.00
Scott	114	17.23		17.23	17.23	938,948.20	344,600.00
Tama	47	30.00			30.00	115,890.50	57,900.00
Taylor	81	19.25			19.25	142,780.00	11,300.00
Union	83	24.00			24.00	193,842.00	16,900.00
Wayne	91	17.80			17.80	110,836.00	55,400.00
Winneshiek	98	27.20			27.20	149,855.00	14,800.00
Woodbury	78	2.80		2.80	2.80	120,436.80	56,000.00
Worth	134	8.50	8.50		8.50	83,751.25	41,800.00
Total	47	886.27	94.65	118.79	892.27	\$9,360,608.15	\$3,591,513.55

*Modification over that reported in 1919 annual report. Quantities are in addition to those reported previously.

†Project No. 18, Clinton county replaces an 18.3 mile grading and graveling project approved in 1918. Estimated cost and amount of Federal Aid requested are amounts in excess of original estimate of cost and Federal Aid askings.

IOWA STATE HIGHWAY COMMISSION

SCHEDULE NINE

FEDERAL AID PROJECTS APPROVED BY THE BUREAU OF PUBLIC ROADS, INCLUDED IN THE 1919 ANNUAL REPORT AND SUBSEQUENTLY REVISED AS TO THE AMOUNT OF FEDERAL AID REQUESTED

County	Project No.	Federal Aid First Requested	Revised Am't Federal Aid Requested	Net Decrease
Audubon	52	\$74,900.00	\$14,900.00	\$ 60,000.00
Chickasaw	75	43,400.00	13,400.00	30,000.00
Marion	75	61,900.00	11,900.00	50,000.00
*Monona	69	84,400.00	Withdrawn	84,400.00
Total Decrease				\$224,400.00

*Monona project withdrawn as a Federal Aid project and administered as a primary road project.

SCHEDULE TEN

PRIMARY ROAD PROJECTS APPROVED BY HIGHWAY COMMISSION

County	Project No.	Length in Miles				Total	Estimated Cost
		Grading	Gravel	Paving	Tilling		
Adair	28	15.80				15.80	144,832.06
Adams	29	14.00				14.00	96,126.00
Allamakee	29	3.76		3.76		7.52	195,800.25
Allamakee	113	3.30		3.50		6.80	292,116.15
Appanoose	76	10.45				10.45	77,220.00
Black Hawk	51				6.18	6.18	12,540.00
Boone	55	13.69	13.69			27.38	189,542.78
Boone	61				9.74	9.74	39,775.22
Buena Vista	93		4.18			4.18	27,221.36
Buchanan	96	11.25				11.25	58,772.36
Butler	71	14.50	14.50			29.00	116,528.75
Buena Vista	18	1.50	24.62			26.12	65,465.49
Calhoun	16		10.90			10.90	28,625.00
Carroll	107	6.25	6.25			12.50	149,038.00
Carroll	14	11.00				11.00	162,330.00
Cass	47	17.00				17.00	74,494.00
Clark	1	15.40				15.40	270,197.60
Clay	32	7.67		7.67		15.34	45,850.35
Clay	56	6.32	6.32			12.64	63,391.50
Clayton	70	23.00				23.00	134,025.00
Crawford	8						129,071.57
Dallas	33	22.25	7.25			29.50	92,707.82
Dallas	190		16.82			16.82	

SCHEDULE TEN—(CONTINUED)

County	Project No.	Length in Miles				Total	Estimated Cost
		Grading	Gravel	Paving	Tilling		
Des Moines	23	2.42		2.42		4.84	122,940.39
DeKalb	85	1.50				1.50	7,351.74
Emmet	27				28.70	28.70	80,341.50
Floyd	63	8.07		8.07		16.14	388,908.25
Floyd	73				5.40	5.40	6,132.50
Franklin	40	10.50				10.50	51,986.00
Franklin	84	14.73				14.73	121,000.00
Grant	48	19.50				19.50	68,310.00
Grundy	32	15.00				15.00	124,520.00
Guire	17		5.00			5.00	43,212.50
Hamilton	27		4.50			4.50	55,386.85
Hardin	88	4.57	37.74		16.36	58.67	272,038.58
Harrison	34	21.10				21.10	197,300.00
Howard	102		1.00			1.00	5,547.50
Howard	103				28.50	28.50	61,817.25
Ia	101	13.25				13.25	51,045.00
Johnson	35	18.20				18.20	61,875.00
Johnson	97	1.57				1.57	19,589.00
Jones	80	9.00				9.00	14,935.75
Jones	81	21.90				21.90	163,628.75
Keosau	6	17.43				17.43	66,506.00
Lee	68	8.90	8.90			17.80	154,472.12
Lyon	85	16.15				16.15	97,612.50
Madison	28	12.50				12.50	187,280.00
Marshall	13	7.62				7.62	51,480.00
Miller	37	8.00				8.00	55,000.00
Monroe	78	8.00				8.00	61,850.00
Montgomery	65	16.00				16.00	115,935.00
Oceola	15	21.50				21.50	79,497.00
Page	27	23.25				23.25	594,985.00
Plymouth	39	39.25				39.25	89,787.50
Plymouth	74	13.45				13.45	69,715.00
Pocahontas	7	5.85				5.85	30,250.00
Pocahontas	20	10.00	10.92			20.92	67,144.82
Polk	1	1.50		1.50		3.00	88,388.30
Polk	40	39.50		39.50		79.00	1,614,277.50
Polk	59	3.50				3.50	16,744.20
Polk	71	15.13				15.13	70,229.50
Putnam	21	21.50				21.50	165,000.00
Putnam	22	21.00				21.00	196,470.00
Putnam	92	39.00				39.00	82,300.00
Putnam	41	24.00				24.00	102,850.00
Rice	10		7.15			7.15	43,070.00
Rice	11		11.24			11.24	56,388.75
Rice	12		13.17			13.17	47,465.00
Rice	85		1.50			1.50	12,797.80
Rice	42	23.75				23.75	182,482.50
Rice	26	2.19		2.19		4.38	194,617.50
Rice	27						2,900.00
Rice	81	23.20				23.20	87,725.00
Wapello	62				43.80	43.80	69,771.90
Warram	54	18.00				18.00	166,837.00
Warram	41	17.25				17.25	135,070.00
Webster	35	16.90				16.90	118,632.75
Webster	64	13.95				13.95	72,875.00
Woodbury	87				21.21	21.21	18,064.20
Woodbury	45	14.00		14.00		28.00	829,614.25
Woodbury	82	14.00	14.00			28.00	86,507.50
Woodbury	19	8.90	8.90			17.80	80,209.50
Totals	83	870.70	228.15	72.31	169.79	1,340.95	\$10,280,946.66

SCHEDULE ELEVEN

PLANS, SPECIFICATION AND ESTIMATES ON FEDERAL AID
PROJECTS SUBMITTED TO BUREAU OF PUBLIC ROADS

County	Project Number	Length in Miles				Estimated Cost	Federal Aid Requested
		Grading	Graveling	Paving	Total		
Adams	26	9.96			9.96	\$ 167,593.80	\$ 16,507.00
Black Hawk	62	17.17		17.17	17.17	817,455.81	543,400.00
Benton	58	17.89		17.89	17.89	496,123.83	150,460.00
Boone	65	22.08	22.08		22.08	182,489.78	65,300.00
*Buchanan	5	15.55		15.55	15.55	647,330.52	250,058.00
Buena Vista	37		12.845		12.845	50,843.98	22,000.00
Butler	85	15.70	15.70		15.70	126,191.33	62,700.00
Clinton	18	17.579		17.579	17.579	910,083.34	351,500.00
Carroll	99	8.96		8.96	8.96	83,175.34	41,000.00
Clarke	33	8.45		8.45	8.45	65,269.00	32,000.00
Cherokee	116	14.03		14.03	14.03	60,831.24	21,000.00
Cerro Gordo	115	22.07		22.07	22.07	1,000,894.72	441,000.00
Davis	50	10.321		10.321	10.321	196,333.26	71,150.00
Decatur	122	9.929		9.929	9.929	76,651.91	31,500.00
Des Moines	32	4.89		4.89	4.89	250,673.29	16,584.00
Dickinson	68	4.803		4.803	4.803	236,571.39	96,500.00
Dubuque	17-A	21.195		21.195	21.195	131,782.14	10,000.00
Emmet	49	3.942		3.942	3.942	200,461.80	75,800.00
Franklin	105	9.84	9.84		9.84	75,445.37	34,000.00
Freemont	77	18.07		18.07	18.07	147,034.67	73,500.00
Grundy	19	14.11		14.11	14.11	60,004.67	26,500.00
Guthrie	51-A	12.498		12.498	12.498	117,230.45	10,000.00
Hamilton	67	20.73		20.73	20.73	79,783.82	35,300.00
Hancock	94	24.35		24.35	24.35	1,257,107.00	478,000.00
Henry	55	20.62		20.62	20.62	91,796.04	45,300.00
Humboldt	48	1.85	0.54	1.31	1.85	88,588.35	28,127.31
Ida	80	18.99		18.99	18.99	118,048.21	35,300.00
Johnson	128	2.544		2.544	2.544	125,507.89	50,000.00
*Keokuk	34	3.03		3.03	3.03	29,869.22	
Kossuth	66-BC	23.34		23.34	23.34	114,847.97	17,000.00
Kossuth	111	21.31		21.31	21.31	965,091.59	428,300.00
*Linn	22	3.18		5.45	1.85	207,496.35	126,300.00
Linn	96	12.40		12.40	12.40	52,252.25	22,800.00
Lucas	63-ACD	11.71		11.71	11.71	125,799.15	60,800.00
Lyon	179	22.81		22.81	22.81	82,976.63	34,900.00
Marshall	23	5.93		5.93	5.93	272,232.05	118,500.00
Mills	15	13.10		13.10	13.10	125,031.96	17,453.35
Muscatine	40	19.28		19.28	19.28	105,297.41	55,300.00
O'Brien	43	22.50		22.50	22.50	1,063,248.45	450,000.00
Palo Alto	109	11.05		11.05	11.05	339,153.05	165,300.00
Plymouth	88-BC	20.84		20.84	20.84	97,873.27	45,000.00
Polk	89	7.22		7.22	7.22	340,179.67	144,000.00
Scott	55-AB	15.62		15.62	15.62	82,911.97	39,000.00
Scott	114	17.23		17.23	17.23	914,649.12	349,000.00
Union	83-ABCD	14.503		14.503	14.503	111,494.84	16,500.00
Van Buren	60	10.79		10.79	10.79	79,266.11	27,000.00
Wapello	42	10.50		10.50	10.50	90,818.66	45,400.00
Wayne	11-BCD	10.95		10.95	10.95	79,560.41	20,000.00
Winnebago	39	7.45	7.45		7.45	50,813.34	25,400.00
Woodbury	78	2.73		2.73	2.73	140,785.62	34,300.00
Totals	47*	662.74	68.51	216.51	665.48	\$ 13,349,611.54	\$ 5,321,224.21

*Buchanan county project No. 5 was originally a grading and graveling project and was so reported in the 1918 annual report. It is now a grading and paving project as shown above and estimated cost and federal aid requested are quantities in addition to those previously reported.

*Keokuk county project No. 34 was originally a grading project 12.21 miles in length. A relocation of 3.03 miles was made that shortened the project 0.58 mile. Estimated cost shown above is additional quantity to that previously reported.

*Linn county project No. 22 was originally a grading project of 17.83 miles with 10.30 miles of grading and 2 miles of paving. It has been modified to a grading project with 7.45 miles of paving. Quantities shown are additional to those reported in 1919.

SCHEDULE TWELVE

PLANS, SPECIFICATIONS AND ESTIMATES FOR PRIMARY ROAD
PROJECTS SUBMITTED TO BOARD OF SUPERVISORS

County	Project No.	Length in Miles					Estimated Cost
		Grading	Gravel	Paving	Tilling	Total	
Adair	28-A	11.83				11.83	\$ 124,001.75
Alamakee	29	3.41				3.41	182,919.11
Black Hawk	51			3.41		3.41	13,309.45
Boone	58	13.69	13.69		6.18	13.69	140,542.79
Buena Vista	61	1.50	34.32		9.74	9.74	12,304.32
Cahoon	5		4.00			4.00	24.52
Calhoun	16		10.00			10.00	14,282.40
Carroll	14	10.96				10.96	38,029.68
Clay	32	7.30		7.30		7.30	74,691.43
Des Moines	P-32	7.14	7.14			7.14	81,309.05
Dickinson	53	2.35		2.35		2.35	118,778.81
Emmet	52	1.50				1.50	7,351.74
Floyd	63			5.56	38.70	38.70	81,023.52
Franklin	73				5.40	5.40	290,219.00
Freemont	46	10.57				10.57	6,132.50
Hamilton	84-A	1.00				1.00	45,137.04
Hardin	17		5.04			5.04	18,458.20
Johnson	88-A	4.11				4.11	35,911.49
Keokuk	97	1.57				1.57	7,925.77
Osceola	15	22.50				22.50	19,225.25
Pocahontas	7	5.87	12.00			5.87	75,661.74
Pocahontas	20	4.00	12.00			4.00	35,655.10
Polk	3	4.25				4.25	81,140.18
Sac	49-A	4.80	7.15	4.80		4.80	19,395.00
Sac	10		11.24			11.24	280,584.73
Sac	11		7.15			7.15	42,801.50
Sac	12		11.24			11.24	56,835.15
Sac	15		13.17			13.17	44,991.10
Shelby	95		1.497			1.497	9,230.75
Story	42-A	11.09				11.09	133,328.14
Story	25	2.196		2.196		2.196	110,172.34
Wabasha	62				43.80	43.80	69,785.65
Winnebago	25-A	7.00				7.00	41,732.18
Woodbury	2		18.44			18.44	79,246.09
Woodbury	45	14.00		14.00		14.00	824,324.00
Totals	36	148.50	132.00	39.68	100.82	361.24	\$ 3,686,881.37

SCHEDULE THIRTEEN

PROJECT AGREEMENTS EXECUTED BY SECRETARY OF AGRICULTURE

County	Project Number	Length in Miles				Estimated Cost	Federal Aid Requested
		Grading	Graveling	Paving	Total		
Adams	26	9.96			9.96	\$ 107,593.80	\$ 16,507.00
Benton	58	17.89		8.88	26.77	505,252.01	100,400.00
Black Hawk	62	17.17		17.17	34.34	817,455.81	343,400.00
Boone	65	22.08	22.08		44.16	182,480.78	66,200.00
*Buchanan	5	12.62		15.56	28.18	647,330.52	289,038.05
Buena Vista	37		12.845		12.845	50,843.96	22,600.00
85-ABD	18	12.85			12.85	100,746.96	50,000.00
Clinton	35	17.579		17.579	35.158	911,244.00	351,800.00
Carroll	99	8.96			8.96	89,175.34	41,400.00
Clarke	33	8.45			8.45	65,399.00	32,900.00
Cherokee	116	14.03			14.03	69,861.24	21,900.00
Cerro Gordo	61	6.05		6.05	12.10	241,706.08	120,000.00
Cerro Gordo	115	22.07		22.07	44.14	1,049,594.72	441,600.00
Davis	4	10.321			10.321	106,333.26	31,150.00
*Delaware	4	14.65			14.65	-69,561.13	-2,747.35
Iowa Moines	32	4.89		4.89	9.78	299,678.29	15,584.30
Dickinson	68	4.803		4.803	9.606	286,571.39	93,000.00
Dubuque	17-A	21.195			21.195	31,782.14	50,000.00
Emmet	49	3.942		3.942	7.884	290,461.80	78,800.00
Floyd	41	12.40		12.40	24.80	504,290.16	248,000.00
Franklin	105	9.84		9.84	19.68	75,445.37	24,000.00
Fremont	77	18.07		18.07	36.14	147,084.66	73,500.00
Groene	39	7.41		7.41	14.82	92,359.82	116,200.00
Grundy	19	14.11			14.11	60,004.67	29,000.00
51-A	12, 498				12,498	117,820.45	50,000.00
Guthrie	67	20.73			20.73	113,139.30	53,200.00
Hamilton	56	20.62			20.62	91,796.04	45,500.00
Henry	80	18.99			18.99	110,548.21	56,500.00
Ida	48	1.85	0.54	1.31	1.85	88,588.35	28,127.50
Humboldt	128	2.54		2.54	5.08	128,397.83	50,000.00
Kossuth	111	21.31		21.31	42.62	996,001.59	426,200.00
Johnson	22	6.18		6.18	12.36	397,496.65	136,000.00
*Linn	96	12.40		5.45	17.85	62,358.35	22,800.00
Linn	96	12.40			12.40	62,358.35	22,800.00
Lucas	63-ACD	11.71			11.71	125,799.13	60,000.00
Lyon	110	22.81			22.81	82,976.63	34,900.00
Marshall	23	5.93		5.93	11.86	272,322.05	118,000.00
Mills	15	13.19			13.19	125,951.99	17,433.35
Muscatine	40	19.36			19.36	106,307.41	23,800.00
O'Brien	43	22.50		22.50	45.00	1,063,248.45	450,000.00
Palo Alto	306	11.05		11.05	22.10	389,133.65	189,000.00
Polk	80	7.22		7.22	14.44	340,179.07	144,400.00
Polk	104	6.57		6.57	13.14	339,418.29	131,000.00
Pottawattamie	46	2.65		2.65	5.30	28,519.65	13,400.00
Scott	54	8.46		8.46	16.92	379,289.02	169,000.00
Scott	55-AB	15.82			15.82	82,911.07	30,000.00
Scott	114	17.23		17.23	34.46	913,901.12	340,000.00
Van Buren	84	2.94		2.94	5.88	108,185.66	54,000.00
Wapello	60	10.79			10.79	82,569.11	27,000.00
Winnebago	42	7.45			7.45	90,646.27	45,000.00
Woodbury	30	7.45		7.45	14.90	90,813.34	45,000.00
Wright	29	14.67		14.67	29.34	160,785.82	84,000.00
Totals	49	616.75	89.27	230.00	926.02	\$ 12,546,281.30	\$ 5,905,768.50

*Buchanan county project No. 5 was originally a grading and graveling project and was so reported in the 1918 annual report. It has now been modified to a grading and paving project as shown above and estimated cost and federal aid allotted are amounts in addition to those previously reported.

*Delaware county was originally a 15 mile grading and graveling project and was so reported in the 1918 annual report. It has been modified by shortening the project 0.53 mile and eliminating the graveling. Estimated cost and federal aid allotted are amounts less than original.

*Linn county project No. 22 was originally a grading project of 17.83 miles with 10.50 miles of graveling and 2 miles of paving. It has been modified to a grading project with 7.45 miles of paving. Quantities shown, estimated cost and federal aid allotted are additional to amounts reported in 1919 annual report.

LETTINGS HELD, CONTRACTS AWARDED, CONTRACTS APPROVED AND CONTRACTS DISAPPROVED ON PRIORITY ROAD AND FEDERAL AID PROJECTS

County	Proj. No.	Fed. Fr.	Contractor	Item	Estimated Quantity	Unit Price	Amount	Total Amount Contract	Action By Com.	Date
Adair	58		C. C. Barnes Co.	Earth Excav.	162,797 cu. yds.	52c	\$ 84,607.64	\$ 84,607.64	Apprvd.	7-9-20
Adair	58		Chris Norgard	" " " " " "	3,270 ft.	1.80 rod	5,886.00	5,886.00	Apprvd.	10-11-20
Adair	58		Phelen-Shirley	Excav.	258,465 cu. yds.	48.75c	12,579.00	12,579.00	Apprvd.	9-11-20
Appanoose	57		Phelen-Shirley	Excav.	191,806 cu. yds.	64.5c	12,351.21	12,351.21	Apprvd.	9-11-20
Benton	58		J. H. Zeller	Excav.	10,807 cu. yds.	3.00	32,421.00	32,421.00	Apprvd.	10-25-20
Benton	58		Moore-Young Co.	Loose rock	248 cu. yds.	3.00	744.00	744.00	Apprvd.	10-25-20
Benton	58		Moore-Young Co.	Earth Excav.	14,511 cu. yds.	4.12 1/2	59,857.87	59,857.87	Apprvd.	10-25-20
Benton	58		Moore-Young Co.	Excav. pavy.	39,203 cu. yds.	4.35	170,533.05	170,533.05	Apprvd.	10-25-20
Black Hawk	51		McAndrew & Hannalls	Excav.	82,287 cu. yds.	4.35	357,456.15	357,456.15	Apprvd.	9-6-20
Black Hawk	51		Nicholson & Bunt	Excav.	4,286 ft.	15.3c	65,575.80	65,575.80	Apprvd.	9-6-20
Black Hawk	51		Hudson Lbr. Co.	" " " " " "	3	90.00	270.00	270.00	Apprvd.	9-21-20
Black Hawk	62		Wm. Sexton	" " " " " "	42,266 ft.	.075	3,170.25	3,170.25	Apprvd.	10-25-20
Black Hawk	62		Wm. Sexton	" " " " " "	117	1.17	136.89	136.89	Apprvd.	10-25-20
Black Hawk	62		Wm. Sexton	" " " " " "	1,170	2.34	2,737.80	2,737.80	Apprvd.	10-25-20
Boone	65		Pioneer Mfg. Co.	Excav.	12,960 ft.	.180	2,332.80	2,332.80	Apprvd.	2-12-20
Boone	65		Pioneer Mfg. Co.	" " " " " "	54,312 ft.	.117	6,354.50	6,354.50	Apprvd.	2-12-20
Boone	65		J. W. Bennett	" " " " " "	12,960 ft.	.170	2,203.20	2,203.20	Apprvd.	2-12-20
Boone	65		J. W. Bennett	" " " " " "	47,439 ft.	.170	8,064.63	8,064.63	Apprvd.	2-12-20
Boone	65		Chas. Loeckey	" " " " " "	9,000 ft.	1.25	11,250.00	11,250.00	Apprvd.	2-12-20
Boone	65		Chas. Loeckey	" " " " " "	3,075 ft.	2.00 rod	4,204.74	4,204.74	Apprvd.	2-12-20
Boone	65		Dutton & Erickson	" " " " " "	3,715 ft.	Unknown	Unknown	Unknown	Apprvd.	10-12-20
Boone	65		Dutton & Erickson	Excav.	31,053 cu. yds.	Unknown	Unknown	Unknown	Apprvd.	9-25-20
Boone	65		Lova Pipe - The Co.	" " " " " "	30,859 cu. yds.	8.8c	2,716.80	2,716.80	Apprvd.	9-1-20
Boone	65		Lova Pipe - The Co.	" " " " " "	31,053 cu. yds.	24.5c	7,607.99	7,607.99	Apprvd.	9-1-20
Boone	65		David J. Conn.	" " " " " "	15,875 cu. yds.	36c-15c	5,715.00	5,715.00	Apprvd.	9-1-20

SCHEDULE FOURTEEN—(CONTINUED)

County	Proj. No.		Contractor	Item	Estimated Quantity	Unit Price	Amount	Total Amount Contract	Action By Com.	Date
	Fed.	Pr.								
Boone	65		Munson & Sons	Gravel, 1 mile	16,516 cu. yds.	70c	11,561.20			
Boone	65		Dutton & Erickson	Gravel, 1/2 mile	148,644 cu. yds.	15c	22,296.60	33,857.80	Appvd.	5-3-20
Boone	65		Dallas County Clay Works	Excav.	31,504 cu. yds.	70c	22,052.80	32,838.00	Appvd.	5-3-20
Boone	65		Waugh & Tackman	6" Tile mtl.	29,450 ft.	8.5c	2,503.25			
Boone	65			8" Tile mtl.	2,175 ft.	13.5c	292.42	2,795.67	Appvd.	5-11-20
Boone	65			6" Tile mtl.	70,300 ft.	11c	7,733.00			
Boone	68		W. R. Grinnell	Earth Excav.	71,583 cu. yds.	21c	43,951.95	7,733.00	Appvd.	11-16-20
Boone	68		John Olson	6" & 8" Tile	72,100 ft.	11c	7,931.00	43,951.95	Appvd.	11-11-20
Buena Vista	18		J. E. Kughn & Sons	Intakes	54	20.00	1,080.00	9,001.00	Appvd.	11-30-20
Buena Vista	18		Humboldt Gravel & Tile Co.	Earth Excav.	12,957 cu. yds.	69c	8,940.33	8,940.33	Appvd.	8-25-20
Buena Vista	18		Nordstrom & Adams	6" Tile mtl.	99,380 ft.	11.8c	11,726.84	11,726.84	Appvd.	7-26-20
Buena Vista	18			6" Tile labor	18,310 ft.	14c	2,563.40			
Buena Vista	18			6" Tile labor	80,870 ft.	13.45	10,877.01			
Buena Vista	18			Intakes	42	40.00	1,680.00	15,148.41	Appvd.	7-3-20
Buena Vista	18		J. A. Dunkel	Gravel, 1 mile H.	20,900 cu. yds.	84c	17,556.00			
Buena Vista	18			Grav. Ad. 1/2 mi.	51,250 cu. yds.	24c	12,300.00			
Buena Vista	18			Strip. pits	2	55c	1.10	29,856.00	Appvd.	7-3-20
Buena Vista	18		Harrison Transportation Co.	Grav. 1 mi. H.	6,736 cu. yds.	90c	6,075.00			
Buena Vista	18			Grav. Ad. 1/2 mi.	13,360 cu. yds.	26c	3,500.00	9,585.00	Appvd.	7-3-20
Buena Vista	37		Mankato Con. Co.	Grav. 1 mi. H.	19,267 cu. yds.	87c	16,782.29			
Buena Vista	37			Grav. Ad. 1/2 mi.	73,654	24c	17,679.36	34,431.65	Appvd.	7-26-20
Buena Vista	37		Horatio Pitcher	Gravel	4,590 cu. yds.	25c	1,125.00	1,125.00	Appvd.	7-26-20
Buena Vista	37		Humboldt Gravel & Tile Co.	6" Tile mtl.	22,000 ft.	11.8c	2,596.00	2,596.00	Appvd.	7-26-20
Buena Vista	37		Nordstrom & Adams	6" Tile labor	14,380 ft.	14.45	2,077.91			
Buena Vista	37			6" Tile labor	7,620 ft.	14.30	1,127.70			
Buena Vista	37			12" Tile lbr.	50 ft.	30.0c	15.00			
Buena Vista	37			Intakes	6	50.00	300.00	3,620.67	Appvd.	7-26-20
Butler	85		Yegge, Morgan & Johnson	Gravel, 1 mile	19,254 cu. yds.	65c	18,209.30			
Butler	85			Grav. Ad. 1/2 mi.	99,000	28c	27,720.00	46,011.30	Appvd.	7-8-20
Butler	85		F. E. Shugart	Earth Excav.	44,740 cu. yds.	77.5c	34,673.50	34,673.50	Appvd.	7-19-20
Butler	85		Nicholson & Rhmt.	6" Tile labor	53,377 ft.	36c	8,413.90			
Butler	85			12" Tile lbr.	655 ft.	36c	234.30			
Butler	85			Intakes	2	50.00	100.00	8,878.20	Appvd.	8-9-20
Butler	85		R. H. Waugh	6" Tile mtl.	58,075 ft.	19.4c	5,170.75			
Butler	85			12" Tile mtl.	685 ft.	35c	239.75	5,410.50	Appvd.	7-19-20
Calhoun	5		A. R. Eno	Grav. H. 1 mi.	6,000 cu. yds.	64c	3,840.00			
Calhoun	5			Grav. Ad. 1/2 mi.	240,000	26c	62,400.00	66,240.00	Appvd.	4-12-20
Calhoun	5		S. M. Grant	Excav.	8,800 ft.	30c	2,640.00	2,694.00	Appvd.	4-16-20
Calhoun	15		S. M. Grant	6" Tile com.	13,168 ft.	33c	4,345.44			
Calhoun	15			6" Tile com.	1,400 ft.	37c	518.00	4,863.44	Appvd.	4-16-20
Calhoun	18		Snater Const. Co.	Gravel, H. 1 mi.	15,000 cu. yds.	90c	14,100.00			
Calhoun	18			Gravel, 1/2 mile	53,100	29c	15,399.00	29,799.00	Appvd.	4-12-20
Carroll	14		Peterson-Shirley & Gunther	Earth Excav.	119,447 cu. yds.	49.9c	59,494.80	59,424.80	Appvd.	11-11-20
Carroll	14		Peter Nielson	6" Tile mtl.	4,200 ft.	13.572c	568.00			
Carroll	14			12" Tile mtl.	240 ft.	21.92c	52.60			
Carroll	14			8" Tile lbr.	4,200 ft.	15c	63.00			
Carroll	14			12" Tile lbr.	240 ft.	35c	84.00	1,294.60	Appvd.	11-18-20
Carroll	99		Peterson, Shirley & Gunther	Excav.	181,685 cu. yds.	49.9c	91,472.81	91,472.81	Appvd.	11-11-20
Carroll	99		Peter Nielson	6" Tile labor	2,885 ft.	15c	432.75	65,214.70	Appvd.	11-11-20
Carroll	99			Intake	1	45.00	45.00			
Carroll	99			6" Tile drain	6,000 ft.	30c	1,800.00	840.45	Appvd.	11-24-20
Carroll	99			Excav.	8,584 cu. yds.	1.10	9,442.40	1,800.00	Appvd.	7-28-20
Cerro Gordo	10		S. M. Grant	Conc. pave.	31,222 sq. yds.	3.94	122,014.88	132,457.08	Appvd.	4-5-20
Cerro Gordo	10		Henkle Con. Co.	Excav.	8,822 cu. yds.	1.00	8,822.00			
Cerro Gordo	10			Curb	5,294 ft.	.85	4,499.90			
Cerro Gordo	10			Conc. pave.	34,785 sq. yds.	3.50	121,707.50	138,270.05	Appvd.	4-10-20
Cerro Gordo	115		Wm. O'Neil & Sons	Excav.	32,475 cu. yds.	1.00	32,475.00			
Cerro Gordo	115			Conc. pave.	131,653 sq. yds.	3.50	462,835.65	495,100.63	Appvd.	4-10-20
Cerro Gordo	115		H. W. Horst Co.	Excav.	31,000 cu. yds.	1.35	41,850.00			
Cerro Gordo	115			Conc. pave.	54,368.3 sq. yds.	3.74	203,337.44	230,995.04	Appvd.	4-5-20
Cerro Gordo	115		Henkle Con. Co.	Excav.	12,083 cu. yds.	1.10	13,291.30			
Cerro Gordo	115			Conc. pave.	47,415.2 sq. yds.	3.94	186,815.88	200,110.48	Appvd.	4-5-20
Cerro Gordo	115		John Cox	6" Tile labor	67,026 ft.	14.1c	9,449.66			
Cerro Gordo	115			8" Tile labor	840 ft.	115.20	96.24			
Cerro Gordo	115			12" Tile lbr.	225 ft.	25c	56.25	9,886.45	Appvd.	4-10-20
Cerro Gordo	115			6" Tile mtl.	67,060 ft.	9.25c	6,203.88			
Cerro Gordo	115			8" Tile mtl.	640 ft.	14.75c	9,460.00			
Cerro Gordo	115			12" Tile mtl.	225 ft.	30c	67.50	6,395.78	Appvd.	4-5-20
Cerro Gordo	115			Earth Excav.	90,384 cu. yds.	53c	47,905.52	47,905.52	Appvd.	9-6-20
Cerro Gordo	115			6" Tile labor	188 rod	40c ft. rod	75.20			
Cerro Gordo	115			6" Tile labor	133 rod	40c ft. rod	53.20	457.84	Appvd.	7-28-20
Cherokee	116		J. H. Miller	Excav.	97,410 cu. yds.	69c	67,212.90			
Cherokee	116			6" Tile dr.	2,800 ft.	45c	1,260.00			
Cherokee	116			12" Tile dr.	200 ft.	65c	130.00			
Cherokee	116			Intakes	3	25.00	75.00	68,704.90	Appvd.	5-8-20
Clarke	33		Cameron, Joyce Smith, Elder Co.	Excav.	97,410 cu. yds.	69c	67,212.90			
Clarke	33			6" Tile dr.	2,800 ft.	45c	1,260.00			
Clarke	33			12" Tile dr.	200 ft.	65c	130.00			
Clarke	33			Intakes	3	25.00	75.00	68,704.90	Appvd.	5-8-20

SCHEDULE FOURTEEN—(CONTINUED)

County	Proj. No.		Contractor	Item	Estimated Quantity	Unit Price	Amount	Total Amount Contract	Action By Com.	Date
	Fed.	Pr.								
Clinton	18		Koss Const. Co.	Excav.	10,796 cu. yds.	1.20	12,955.20	513,426.40	Appvd.	9-23-20
				Conc. pave.	42,971 sq. yds.	3.99	171,454.29			
				Excav.	23,882 cu. yds.	.98c	23,404.96			
				Conc. pave.	58,062 sq. yds.	4.00	232,348.00			
				Excav.	9,383 cu. yds.	1.35	12,667.05			
				Conc. pave.	42,351 sq. yds.	4.00	169,404.00			
Clinton	18		Koss Const. Co.	Excav.	12,856 cu. yds.	1.20	15,474.00	513,426.40	Appvd.	9-23-20
				Conc. pave.	40,050 sq. yds.	4.39	175,819.50			
				6" Tile mtl.	38,649 ft.	.14c	5,410.85			
				6" Tile labor	38,649 ft.	.16c	6,183.84			
				8" Tile mtl.	5,950 ft.	.19c	1,130.50			
				8" Tile labor	5,950 ft.	.22c	1,309.00			
Dallas	12		Redfield Erick & Tile Works	Intakes	10	.65.00	650.00	14,681.30	Appvd.	10-7-20
				6" Tile mtl.	12,000 ft.	8.8c	1,056.00	1,056.00	Appvd.	9-13-20
Dallas	33		Dallas County Clay Co.	6" Tile mtl.	5,430 ft.	8.5c	461.55	461.55	Appvd.	10-9-20
Dallas	33		E. W. Beeman	Excav.	18,530 cu. yds.	.70c	12,971.00	12,971.00	Appvd.	7-3-20
Dallas	33		E. W. Beeman	6" Tile labor	48,553 sq. yds.	.64½c	31,316.68	31,316.68	Appvd.	9-23-20
Dallas	33		F. O. Giesberg	6" Tile labor	17,300 ft.	.15c	2,595.00	2,595.00	Appvd.	7-3-20
Dallas	33		Dawson Cement Tile Co.	6" Tile mtl.	17,300 ft.	8.3c	1,427.00	1,427.00	Appvd.	7-3-20
Davis	50		Cox Bros.	8" Tile mtl.	2,460 ft.	.12c	295.20	1,722.80	Appvd.	7-6-20
Delaware	4		Gust. Nelson	Excav.	147,444 cu. yds.	.32c	78,145.28	75,145.32	Appvd.	8-16-20
Delaware	4		Cement Products Co.	6" Tile labor	19,254 ft.	.10.6c	2,042.00	2,343.90	Appvd.	6-17-20
				8" Tile labor	1,925 ft.	.12c	231.00			
				10" Tile lbr.	1,300 ft.	.15.6c	202.80			
				6" Tile mtl.	19,254 ft.	.10c	1,925.40			
				8" Tile mtl.	1,925 ft.	.15.8c	304.90			
				10" Tile mtl.	1,300 ft.	.22.3c	290.00			
Des Moines	32		Baxter, Willard & Pulver	6" Tile com.	13,132 sq. yds.	.32c	4,202.40	2,378.25	Appvd.	6-18-20
				8" Tile com.	5,895 sq. yds.	.43½c	2,564.32			
				Intakes	7	35.00	245.00			
				6" Tile com.	35,203 sq. yds.	.64½c	22,680.72			
				6" Tile com.	4,100 ft.	.22c	902.00			
				18" Tile com.	100 ft.	1.80	180.00			
Des Moines	32	33	Grimm & Steiman	Excav.	7,762 cu. yds.	.60c	4,657.20	1,527.00	Appvd.	8-16-20
				6" Tile comp.	5,000 ft.	.25c	1,250.00	5,132.02	Appvd.	6-17-20
Des Moines	32	33	Baxter, Willard & Pulver	Intakes	1	180.00	180.00	1,527.00	Appvd.	8-16-20
Dickinson	55		J. E. Kuglin & Sons	Excav.	7,762 cu. yds.	.60c	4,657.20	5,132.02	Appvd.	6-17-20
Dickinson	55		Milford Tile & Const. Co.	6" Tile comp.	5,000 ft.	.25c	1,250.00	1,520.00	Appvd.	9-29-20
Dickinson	55		Milford Tile & Const. Co.	Intakes	8	32.00	256.00	1,520.00	Appvd.	9-29-20
Dubuque	17		National Sewer Pipe Co.	6" Tile mtl.	3,250 ft.	.16c	520.00	213,163.25	Appvd.	9-29-20
				6" Tile labor	3,250 ft.	12½c	406.25			
				Intakes	8	35.00	280.00			
				Excav.	51,059 sq. yds.	1.20	61,270.80			
				6" Tile mtl.	71,479 ft.	3.0c	214,437.25			
				8" Tile mtl.	480 ft.	.19c	91.20			
Dubuque	17		W. R. Grinnell	12" Tile mtl.	965 ft.	.27½c	266.38	14,250.31	Appvd.	7-25-20
				Earth Excav.	151,258 cu. yds.	.24c	36,302.32			
				Loose rock	1,695 cu. yds.	.67c	1,135.45			
				8" Tile labor	71,479 ft.	.17c	12,151.43			
				8" Tile labor	480 ft.	.19c	91.20			
				12" Tile labor	965 ft.	.26c	250.70			
Emmet	57		J. A. McBeth	Intakes	10	75.00	750.00	118,301.19	Appvd.	8-16-20
				Excav.	1,300 cu. yds.	.88c	1,146.00			
				10" Tile mtl.	3,810 ft.	.23½c	895.35			
				6" Tile mtl.	245,080 ft.	.10c	24,508.00			
				Intakes	58,560 ft.	.15c	8,784.00			
				6" Tile lbr.	36	20.00	720.00			
Emmet	57		Cement Products Co.	Intakes	58	20.00	1,160.00	9,555.00	Appvd.	8-23-20
				6" Tile mtl.	3,810 ft.	.20c	762.00			
				6" Tile labor	183,350 ft.	14.9c	2,731.15			
				Intakes	58	40.00	2,320.00			
				6" Tile labor	31,640 ft.	15½c	4,904.20			
				Intakes	5	45.00	225.00			
Floyd	41		C. F. Ulrickson	6" Tile mtl.	31,640 ft.	22c	7,000.80	10,073.45	Appvd.	4-10-20
				8" Tile labor	3,519 ft.	9.35c	32,908.34			
				6" Tile labor	48,933 ft.	.10c	4,893.33			
				6" Tile mtl.	3,519 ft.	8.8c	3,092.27			
				8" Tile mtl.	48,933 ft.	13.9c	6,791.10			
				Excav.	15,000 cu. yds.	1.25	18,750.00			
Floyd	41		Garvey-Weyenberg Const. Co.	Conc. pave.	29,336 sq. yds.	4.30	126,938.80	188,184.80	Appvd.	4-12-20
				Excav.	12,881 cu. yds.	1.25	16,101.25			
				Conc. pave.	33,800 sq. yds.	4.33	146,354.00			
				Excav.	20,125 cu. yds.	1.15	23,143.75			
				Conc. pave.	57,848 sq. yds.	4.09	236,598.32			
				6" Tile labor	4,230 ft.	16½c	693.00			
Floyd	41		Garvey-Weyenberg Const. Co.	6" Tile labor	3,900 ft.	18c	702.00	259,742.07	Appvd.	4-12-20
				7" Tile labor	2,000 ft.	29c	580.00			
				10" Tile labor	1,000 ft.	45.00	45.00			
				6" Tile labor	1,900 ft.	22½c	427.50			
				Intakes	2,300 ft.	16c	368.00			
				6" Tile mtl.	52,148 ft.	11.8c	6,153.44			
Franklin	105		Otto Lehmann Harrison Transportation Company	8" Tile mtl.	2,800 ft.	21c	588.00	2,000.50	Appvd.	8-16-20
				12" Tile mtl.	100 ft.	45c	45.00			
				6" Tile mtl.	52,148 ft.	11.8c	6,153.44			
				8" Tile mtl.	2,800 ft.	21c	588.00			
				12" Tile mtl.	100 ft.	45c	45.00			
				6" Tile mtl.	52,148 ft.	11.8c	6,153.44			

SCHEDULE FOURTEEN—(CONTINUED)

County	Proj. No.		Contractor	Item	Estimated Quantity	Unit Price	Amount	Total Amount Contract	Action By Com.	Date
	Fed.	Pr.								
Franklin	105		Mankato Con. Co.	6" Tile labor	52,148 ft.	14.4c	7,509.31			
				8" Tile labor	2,800 ft.	18c	448.00			
				12" Tile labor	109 ft.	20c	20.00			
				Intakes	18	42.00	756.00	8,733.31	Appvd.	9-29-20
Franklin	105		J. E. Kughn & Sons	Excav.	51,209 cu. yds.	56c	28,677.04	28,677.04	Appvd.	9-29-20
Fremont	77		Geo. W. Condon	Excav.	257,000 cu. yds.	46.4c	119,248.00			
				12" Tile drain	120 ft.	Cost+15%				
				Intakes	2	Cost+15%		119,248.00	Appvd.	8-11-20
Fremont		84A	Geo. W. Condon	Excav.	29,924 cu. yds.	54c	16,158.96	16,158.96	Appvd.	10-26-20
Greene	39		F. E. Marsh & Co.	6" Tile drain	2,000 ft.	32½c	650.00	650.00	Appvd.	8-21-20
Greene	39		C. C. Barnes Co.	Excav.	35,786 cu. yds.	68c	24,334.48	23,334.48	Appvd.	8-29-20
Greene	39		G. W. Allison	Graveling	785 cu. yds.	1.00	785.00			
				Excav.	731 cu. yds.	80c	585.00		Appvd.	8-21-20
Greene	39		F. E. Marsh & Co.	Excav.	17,442 cu. yds.	1.00	17,442.00			
				Conc. pave.	68,400 sq. yds.	3.59	245,556.00	202,998.00	Appvd.	1-22-20
Grundy	19		Jas. Wolfe	6" Tile labor	44,730 ft.	14.9c	6,664.77			
				8" Tile labor	5,700 ft.	18c	1,026.00			
				10" Tile labor	800 ft.	20c	160.00			
				Intakes	24	45.00	1,080.00	8,000.77	Appvd.	7-19-20
Grundy	19		Cement Products Co.	6" Tile mtl.	44,730 ft.	12½c	5,591.25			
				8" Tile mtl.	5,700 ft.	16.8c	951.60			
				10" Tile mtl.	800 ft.	24c	192.00	8,740.85	Appvd.	7-19-20
Grundy	19		R. F. Smith & Co.	Excav.	61,988 cu. yds.	57c	35,333.16	35,333.16	Appvd.	7-19-20
Guthrie	51		Wickham Bros.	Excav.	354,280 cu. yds.	52.5	18,591.70			
				6" Tile drain	16,985 ft.	1.00	16,985.00			
				6" Tile drain	600 ft.	1.00	600.00			
				Intakes	10	10.00	100.00	114,432.00	Appvd.	9-20-20
Hamilton	17		Rose, Yegge, Johnson	Excav.	7,538 cu. yds.	5.66	42,665.00			
				Gravel—H. ¼ ml.	56,250 cu. yds.	18c	10,125.00	15,708.50	Appvd.	10-15-20
Hamilton	17		L. E. Rollins	5" Tile labor	1,600 ft.	13c				
Hamilton	17		Harrison, Transportation Co.	6" Tile labor	29,900 ft.	13c	3,705.00	3,705.00	Appvd.	10-15-20
Hamilton	67		National Sewer Pipe Co.	5" Tile mtl.	1,600 ft.	10c	160.00			
				6" Tile mtl.	26,900 ft.	12c	3,228.00	3,388.00	Appvd.	10-15-20
				8" Tile mtl.	43,000 ft.	15.7c	6,751.00			
				6" Tile mtl.	800 ft.	24c	6,735.55			
				6" Tile mtl.	800 ft.	24c	192.00			
				12" tile mtl.	140 ft.	40c	56.00	7,002.55	Appvd.	10-9-20
Hamilton	67		C. C. Barnes Co.	Excav.	35,789 cu. yds.	54c	30,126.06	30,126.06	Appvd.	11-24-20
Hamilton	67		C. A. McCoskey	12" Tile labor	45,000 ft.	13½c	6,075.00			
				8" Tile labor	800 ft.	20c	160.00			
				12" Tile labor	149 ft.	30c	44.70	7,700.91	Appvd.	10-9-20
Hardin	88		G. C. Sargent Co.	Intakes	58	30.00	1,740.00			
				Gravel—H. 1 ml.	6,155 ft.	83c	5,116.95			
Henry	86		J. W. Peed & Son	Gravel—H. ¼ ml.	2,800 ft.	23c	1,807.80	6,924.75	Appvd.	11-27-20
Henry	86		J. P. McCormick	Excav.	99,282 cu. yds.	70c	69,497.40	58,578.38	Appvd.	8-9-20
				6" Tile labor	63,843 ft.	20.75c	13,247.42			
				8" Tile labor	14,900 ft.	24.35c	3,630.07			
				10" Tile labor	2,570 ft.	34.85c	895.94			
				12" Tile labor	230 ft.	43.55c	99.70			
				Intakes	46	25.00	1,150.00	19,042.83	Appvd.	8-9-20
Humboldt*	48		Russell Condon	Excav.	23,298 cu. yds.	98c	22,743.84	*22,743.84	Reject	3-16-20
Humboldt	48		Emerson & Johnson	Excav.	22,208 cu. yds.	87c	19,334.96			
				Conc. pave.	15,933.5 sq. yds.	3.86	61,503.70			
				Curb	6,721.2 ft.	1.30	8,737.56			
				Waterflanges	4	50.00	200.00	91,007.22	Appvd.	3-30-20
Humboldt	48		John Drushella	6" Tile drain	1,515 ft.	32c	484.80			
				10" Tile drain	2,000 ft.	40c	800.00			
				14" Tile drain	79 ft.	62c	48.98			
Ida	80		A. L. Cook	Excav.	81,769 cu. yds.	49½c	40,443.55	1,176.70	Appvd.	3-5-20
Ida	80		Geo. W. Condon	Excav.	91,343 cu. yds.	52c	47,498.36	40,443.55	Appvd.	9-29-20
Johnson	9	128	Cameron, Joyce Smith Elder Co.	Excav.	91,343 cu. yds.	52c	47,498.36	47,498.36	Appvd.	9-14-20
				Excav.	14,022 cu. yds.	85c	11,918.70			
				Conc. pave.	40,241.2 sq. yds.	3.90	156,949.98			
				Curb and gutter	1,200 ft.	1.50	1,800.00			
				Curb and gutter	933 ft.	1.40	1,306.20			
				Entrance s/b.	20 sq. yds.	5.00	100.00			
Keokuk	34		J. E. McAndrew	8" Tile drain	1,280 ft.	90c	640.00	172,733.58	Appvd.	7-3-20
Keokuk	34		John Ritzinger	Excav.	118,000 cu. yds.	59c	69,600.00	66,080.00	Appvd.	2-8-20
				Excav.	34,773 cu. yds.	58c	20,168.34			
				Excav.	3,500 cu. yds.	1.25	4,375.00			
				6" Tile drain	1,950 ft.	27c	526.50			
				12" Tile drain	60 ft.	42c	25.20			
				Intakes	3	50.00	150.00	25,245.04	Appvd.	8-23-20
Kossuth	111		Humboldt Gravel & Tile Co.	5" Tile mtl.	900 ft.	7½c	74.25			
				6" Tile mtl.	48,030 ft.	10c	4,803.00	4,877.25	Appvd.	4-28-20
				5" Tile labor	48,030 ft.	15.9c	7,646.87			
				6" Tile labor	48,030 ft.	15.9c	7,646.87			
				Intakes	46	40.00	1,840.00	9,634.18	Appvd.	4-28-20
Linn	22		Henry W. Horst Co.	Conc. pave.	70,341 sq. yds.	4.09	286,899.29			
				Curb	9,800 ft.	1.61	15,778.00			
				Excav.	7,800 cu. yds.	1.29	10,162.00	350,909.29	Appvd.	5-20-20

SCHEDULE FOURTEEN—(CONTINUED)

County	Proj. No.		Contractor	Item	Estimated Quantity	Unit Price	Amount	Total Amount Contract	Action By Com.	Date
	Fed.	Pr.								
Linn	22		Pine Grove Contracting Co.	Conc. pave.	70,341 sq. yds.	4.14			Annuled	
				Curb	6,800 ft.	1.85				
				Excav.	7,800 cu. yds.	1.20	313,151.74	*313,151.74		8-15-20
Linn	96		E. B. Bartholomew	6" Tile labor	19,320 ft.	15.5c	2,994.60	2,994.60	Appvd.	10-13-20
Linn	96		John Herbert & Son	Excav.	62,685 cu. yds.	70c	43,879.50			
				S. R. Excav.	435 cu. yds.	3.00	1,305.00	45,184.50	Appvd.	8-11-20
Lucas	63		G. L. Roberts	Excav.	65,718 cu. yds.	57.5c	37,787.85			
				Excav.	37,907 cu. yds.	60c	22,744.20	60,532.05	Appvd.	9-29-20
Lyon	110		Ira Cox	Excav.	107,360 cu. yds.	57c	61,195.20	61,195.20	Appvd.	9-30-20
Marion	7		J. W. Ogle	Guardrail	9,000 ft.	23c	2,070.00	2,070.00	Appvd.	3-6-20
Mills	15		Geo. W. Condon	Excav.	79,677 cu. yds.	49c	39,041.73			
				Excav.	131,277 cu. yds.	44 ¹ / ₂ c	58,418.26			
				6" and 10" Tile	270 ft.					
				Intakes	2	Cost+15%				
Muscatine	40		Littig Const. Co.	Excav.	115,055 cu. yds.	55c	63,280.25	97,459.99	Appvd.	9-20-20
Muscatine	40		Jas. J. Ryan	6" Tile drain	20,800 ft.	28c	5,840.80	63,280.25	Appvd.	9-21-20
				12" Tile drain	2,475 ft.	69c	1,707.75			
				10" Tile drain	1,150 ft.	53c	609.50			
				8" Tile drain	60 ft.	39c	23.40			
				Relaying tile	1,590 ft.	30c	477.00			
				Intakes	22	65.00	1,430.00			
				Intakes	8	60.00	480.00	10,568.45	Appvd.	7-31-20
Muscatine	40		Littig Const. Co.	Excav.	30,256 cu. yds.	57c	17,245.92	17,245.92	Appvd.	7-26-20
O'Brien	43		Capital Const. Co.	Excav.	24,663 cu. yds.	1.25	30,828.75			
				Conc. pave.	87,894 sq. yds.	4.20	377,944.20	408,772.95	Appvd.	4-28-20
O'Brien	43		O'Rourke Eng. Co.	Excav.	26,588 cu. yds.	1.27	33,746.76			
				Conc. pave.	96,226 sq. yds.	4.32	418,720.32	452,467.08	Appvd.	4-10-20
O'Brien	43		J. H. Johnson	Excav.	15,384 cu. yds.	1.25	19,230.00			
				Conc. pave.	52,684 sq. yds.	3.94	207,574.96	226,804.96	Appvd.	5-3-20
O'Brien	43		Linus Johnson	6" Tile labor	55,300 ft.	11c	6,083.00			
				7" Tile labor	3,600 ft.	12c	432.00			
				8" Tile labor	1,400 ft.	13c	182.00	6,697.00	Appvd.	4-10-20
O'Brien	43		Milford Tile & Const. Co.	6" Tile mtl.	55,300 ft.	8.70c	4,809.87			
				7" Tile mtl.	3,600 ft.	10.8c	388.80			
				8" Tile mtl.	1,400 ft.	13.5c	189.00	5,438.67	Appvd.	4-10-20
Osceola	15		Lamoreaux Bros.	Excav.	98,262 cu. yds.	54.5c	53,552.79	53,552.79	Appvd.	8-19-20
Palo Alto	109		Berkler & McNulty	Excav.	Not stated	65c				
				Equipment		\$50 per day			Appvd.	5-10-20

IOWA STATE HIGHWAY COMMISSION

Palo Alto	109		J. F. Griffin	Gravel	25,227 cu. yds.	1.00	25,227.00	25,227.00	Appvd.	3-31-20
Palo Alto	109		Estherville Cem. Products Co.	6" Tile mtl.	28,515 ft.	7.41c	2,112.96			
				6" Tile mtl.	33,700 ft.	7.342c	2,474.25	4,587.21	Appvd.	3-22-20
Palo Alto	109		Berkler & McNulty	6" Tile labor	15,900 ft.	1.00 rod	1,512.56	1,512.56	Appvd.	3-31-20
Palo Alto	109		J. W. Green	6" Tile labor	44,876 ft.	95c rod				
				12" Tile labor	870 ft.	1.25	4,317.66	4,317.66	Appvd.	3-31-20
Palo Alto	109		National Const. Co.	Excav.	40,000 cu. yds.	70c	28,000.00	28,000.00	Appvd.	3-31-20
Palo Alto	109		Breton & Bauck	Conc. pave.	115,324 sq. yds.	3.25	374,803.00	374,803.00	Appvd.	3-31-20
Plymouth	38		A. L. Cook	Excav.	156,304 cu. yds.	45c	70,336.80	70,336.80	Appvd.	11-18-20
Pocahontas	7		Harrison Transportation Co.	6" Tile drain	37,000 ft.	26c	9,620.00			
Pocahontas	7		Edward Peterson Co.	Intakes	13	50.00	650.00	10,270.00	Appvd.	10-2-20
Pocahontas	20		Harrison Transportation Co.	Excav.	33,130 cu. yds.	70c	23,191.00	23,191.00	Appvd.	3-30-20
				Excav.	18,934 cu. yds.	68c	12,875.12			
				6" Tile drain	75,960 ft.	26c	19,749.60			
				Intakes	33	50.00	1,650.00			
				Gravel—H. 1 mi.	18,000 cu. yds.	85c	15,300.00			
				Gravel add. 1/2 mi.	75,000	24c	18,000.00	67,574.72	Appvd.	3-30-20
Polk	3		Sam Bowers	Excav.	17,500 cu. yds.	54c	9,450.00	9,450.00	Appvd.	4-6-20
Polk	72		G. F. Lambert	Excav.	43,000 cu. yds.	64.8c	27,907.00	27,907.00	Appvd.	4-12-20
Polk	72		W. R. Grinnell	Excav.	51,000 cu. yds.	70c	35,700.00	35,700.00	Appvd.	9-20-20
Polk	89		O'Rourke Eng. Co.	Excav.	6,641 cu. yds.	1.00	6,641.00			
Polk	80		Thos. Carey & Son	Conc. pave.	48,959 sq. yds.	4.03	196,095.77	202,736.77	Appvd.	4-10-20
				Excav.	4,315 cu. yds.	1.44	6,213.60			
Polk	104		Wright Const. Co.	Conc. pave.	31,775 sq. yds.	4.37	138,956.75	142,170.35	Appvd.	2-18-20
				Excav.	23,483 cu. yds.	1.48	34,759.28			
				Conc. pave.	78,940 sq. yds.	4.12	316,992.80			
				Drain tile	6,490 ft.	Cost+15%		351,752.08	Appvd.	2-18-20
Pottawattamie	46		Wickham Bridge & Pipe Co.	Excav.	55,250 cu. yds	64 ¹ / ₂ c	35,638.25			
				12" Tile drain	275 ft.	3.00	825.00			
Sac	10		E. I. Sargent	Grubbing	1,728 sq. yds.	1.50	2,592.00	39,053.25	Appvd.	3-24-20
				Gravel—H. 1 mi.	4,770 cu. yds.	1.10	5,247.00			
				Gravel; add 1/2 mi.	12,690 cu. yds.	29c	3,680.00			
				Gravel—H. 1 mi.	5,980 cu. yds.	96c	5,740.80			
				Gravel; add 1/2 mi.	34,800 cu. yds.	28c	9,744.00	24,412.70	Appvd.	5-8-20
Sac	10		Cement Products Co.	6" Tile mtl.	17,350 ft.	8.4c	1,457.40	1,457.40	Appvd.	5-8-20
Sac	10		Wm. Schenk	6" Tile labor	17,350 ft.	14c	2,429.00	2,429.00	Appvd.	5-8-20
Sac	11		E. I. Sargent	Gravel—H. 1 mi.	10,110 cu. yds.	96c	9,705.60			
				Gravel—H. 1/2 mi.	48,750 cu. yds.	28c	13,650.00			
				Gravel—H. 1 mi.	6,750 cu. yds.	96c	6,480.00			
				Gravel—H. 1/2 mi.	24,800 cu. yds.	28c	6,944.00	36,779.60	Appvd.	5-8-20
Sac	11		Wm. Schenk	6" Tile labor	20,350 ft.	14c	2,849.00	2,849.00	Appvd.	5-8-20
Sac	11		Cement Products Co.	6" Tile mtl.	20,350 ft.	8.4c	1,709.40	1,709.40	Appvd.	5-8-20
Sac	12		E. I. Sargent	Gravel—H. 1 mi.	19,765 cu. yds.	96c	18,974.40			
				Gravel—H. 1/2 mi.	38,625 cu. yds.	28c	10,815.00	29,789.40	Appvd.	5-8-20

DEPARTMENT OF ROAD ADMINISTRATION

SCHEDULE FOURTEEN—(CONTINUED)

County	Proj. No.		Contractor	Item	Estimated Quantity	Unit Price	Amount	Total Amount Contract	Action By Com.	Date
	Fed.	Pr.								
Sac		12	Cement Products Co.	6" Tile mtl.	4,000 ft.	8c	320.00			
Sac		11	Wm. Schenk	6" Tile mtl.	42,100 ft.	8.4c	3,536.40	3,856.40	Appvd.	5-8-20
Sac*		54	McCarthy Improvement Co.	6" Tile labor	46,100 ft.	14c	6,454.00	6,454.00	Appvd.	5-8-20
Scott		55	Littig Const. Co.	Excav.	6,329 cu. yds.			*267,952.22	Rejct.	
Scott		55	Jas. J. Ryan	Brick pave.	47,164 sq. yds.					
Scott		55	Jas. J. Ryan	Excav.	19,183 cu. yds.	52½c	10,071.07			
Scott		55	Jas. J. Ryan	Excav.	62,951 cu. yds.	63.9c	40,025.69	50,296.76	Appvd.	9-6-20
Scott		55	Jas. J. Ryan	6" Tile labor	48,067 ft.	18c	8,652.06			
Scott		55	Jas. J. Ryan	8" Tile labor	8,000 ft.	24c	1,920.00			
Scott		55	Jas. J. Ryan	10" Tile labor	5,100 ft.	32c	1,632.00			
Scott		55	Jas. J. Ryan	12" Tile labor	2,195 ft.	50c	1,097.50			
Scott		55	Jas. J. Ryan	15" Tile labor	50 ft.	1.00	50.00			
Scott		55	W. E. Martin & Son	Intakes	21	75.00	1,575.00	14,926.56	Appvd.	9-6-20
Scott		55	W. E. Martin & Son	6" Tile mtl.	48,067 ft.	13c	6,248.71			
Scott		55	W. E. Martin & Son	8" Tile mtl.	8,000 ft.	18½c	1,480.00			
Scott		55	W. E. Martin & Son	10" Tile mtl.	5,100 ft.	31c	1,581.00			
Scott		55	W. E. Martin & Son	12" Tile mtl.	2,195 ft.	42c	921.90			
Scott		55	W. E. Martin & Son	15" Tile mtl.	50 ft.	80c	40.00	10,271.61	Appvd.	9-6-20
Scott		114	Central Eng. Co.	Excav.	11,010 cu. yds.	1.35	14,833.50			
Scott		114	Central Eng. Co.	L. R. Excav.	7,555 cu. yds.	2.25	16,998.75			
Scott		114	Central Eng. Co.	Brick pave.	68,032 sq. yds.	5.93	403,429.76	435,292.01	Appvd.	4-19-20
Scott		114	Central Eng. Co.	Excav.	16,688 cu. yds.	1.25	20,960.00			
Scott		114	Central Eng. Co.	L. R. Excav.	1,820 cu. yds.	2.00	3,640.00			
Scott		114	Central Eng. Co.	S. R. Excav.	262 cu. yds.	6.00	1,572.00			
Scott		114	Central Eng. Co.	Brick pave.	56,118 sq. yds.	5.43	304,720.74	330,792.74	Appvd.	4-19-20
Scott		114	McCarthy Improvement Co.	Excav.	26,637 cu. yds.	1.50	39,955.50			
Scott		114	McCarthy Improvement Co.	L. R. Excav.	67 cu. yds.	2.00	134.00			
Scott		114	McCarthy Improvement Co.	Brick pave.	56,800 sq. yds.	5.53	313,944.00	357,033.50	Appvd.	4-19-20
Scott		114	W. E. Martin & Son	6" Tile mtl.	26,360 ft.	11c	2,899.60			
Scott		114	W. E. Martin & Son	8" Tile mtl.	8,630 ft.	16c	1,385.60			
Scott		114	W. E. Martin & Son	10" Tile mtl.	2,230 ft.	29c	646.70			
Scott		114	W. E. Martin & Son	15" Tile mtl.	150 ft.	75c	112.50	5,044.40	Appvd.	4-19-20
Scott		114	Geo. B. Fuller	6" Tile labor	26,360 ft.	18c	4,744.80			
Scott		114	Geo. B. Fuller	8" Tile labor	8,630 ft.	24c	2,078.40			
Scott		114	Geo. B. Fuller	10" Tile labor	2,230 ft.	32c	713.60			
Scott		114	Geo. B. Fuller	15" Tile labor	150 ft.	38c	57.00	7,593.80	Appvd.	4-19-20
Shelby		42	E. A. Wickham & Co.	Excav.	214,268 cu. yds.	50c	107,134.00	107,134.00	Appvd.	7-20-20

IOWA STATE HIGHWAY COMMISSION

Sioux		26	K. Van Twisk	6" Tile labor	3,830 ft.	17c	651.10	651.10	Appvd.	7-7-20
Sioux		26	Lake & Mosher	Excav.	7,305 cu. yds.	1.28	9,350.40			
Sioux*		84	Dean Eng. & Cont. Co.	Conc. pave.	23,191 sq. yds.	4.17	96,706.47	106,056.87	Appvd.	5-8-20
Sioux		84	Dean Eng. & Cont. Co.	Excav.	6,901 cu. yds.	1.25	8,626.25			
Sioux		84	Lake & Mosher	Conc. pave.	31,180 sq. yds.	3.84	119,731.20	*128,357.45	Rejct.	
Sioux		84	Lake & Mosher	Excav.	6,901 cu. yds.	1.22	8,419.22			
Story		62	Perry Swift	Conc. pave.	31,180 sq. yds.	3.89	121,290.20	129,709.42	Appvd.	5-3-20
Story		62	Perry Swift	6" Tile labor	11,850 ft.	1.25 Rod	897.64	897.64	Appvd.	10-15-20
Story		62	J. J. Brown	6" Tile labor	18,000 ft.	1.25 Rod	1,363.50	1,363.50	Appvd.	10-15-20
Story		62	Sam McHose	6" Tile mtl.	50,000 ft.	8½c	4,250.00			
Story		62	Sam McHose	8" Tile mtl.	4,500 ft.	15c	675.00			
Story		62	Dunkelbarger & Newton	10" Tile mtl.	4,500 ft.	20c	110.00	5,035.00	Appvd.	10-15-20
Story		62	Dunkelbarger & Newton	6" Tile mtl.	100,000 ft.	8.95c	8,950.00			
Story		62	Ladd & Sperry	6" Sewer pipe	650 ft.	25c	162.50	9,132.00	Appvd.	9-20-20
Story		62	Ladd & Sperry	6" Tile labor	59,250 ft.	1.35 Rod				
Story		62	Ladd & Sperry	8" Tile labor	1,400 ft.	1.35 Rod				
Story		62	Ladd & Sperry	6" Sewer pipe	200 ft.	1.35 Rod	4,977.53	4,977.53	Appvd.	8-28-20
Story		62	C. P. Nielson	6" Tile labor	20,900 ft.	1.25 Rod	1,583.17	1,583.17	Appvd.	8-26-20
Story		62	Ross Fry	6" Tile labor	8,900 ft.	1.35 Rod	674.24			
Story		62	Ross Fry	8" Tile labor	1,200 ft.	2.00 Rod	145.45	819.69	Appvd.	10-11-20
Story		62	John Walker	6" Tile labor	41,600 ft.	1.25 Rod	3,151.20			
Story		62	John Walker	8" Tile labor	1,500 ft.	2.00 Rod	151.80			
Story		62	John Walker	10" Tile labor	550 ft.	2.50 Rod	83.32	3,416.32	Appvd.	10-13-20
Van Buren		60	Bruggemeyer & Ryan	Excav.	106,121 cu. yds.	52c	55,182.92			
Van Buren		60	Bruggemeyer & Ryan	L. R. Excav.	1,500 cu. yds.	2.50	3,750.00			
Van Buren		60	Bruggemeyer & Ryan	6" Tile drain	14,230 ft.	40c	5,692.00			
Van Buren		60	Bruggemeyer & Ryan	8" Tile drain	7,950 ft.	50½c	4,014.75			
Van Buren		60	Bruggemeyer & Ryan	10" Tile drain	740 ft.	1.05	777.00			
Van Buren		60	Bruggemeyer & Ryan	12" Tile drain	110 ft.	1.05	115.50			
Van Buren		60	Bruggemeyer & Ryan	Intakes	30	55.00	1,650.00	71,182.17	Appvd.	8-28-20
Webster		13	Cox Bros.	Excav.	135,924 cu. yds.	65c	88,350.60			
Webster		13	G. D. Wood	6" Tile labor	36,000 ft.	14c	5,040.00	5,040.00	Appvd.	4-6-20
Webster		13	Hawkeye Clay Works	6" Tile mtl.	24,000 ft.	8.9c	2,136.00			
Webster		13	Hawkeye Clay Works	8" Tile mtl.	3,200 ft.	14.4c	460.80	2,596.80	Appvd.	11-24-20
Webster		13	A. J. Mallinger	Gravel 1 mi. H.	9,135 cu. yds.	90c	8,221.50			
Webster		13	A. J. Mallinger	Gravel ½ mi. H.	54,000	28c	15,120.00	23,341.50	Appvd.	5-13-20
Webster		25	Ryan Bros.	Excav.	40,320 cu. yds.	52½c	21,168.00	21,168.00	Appvd.	7-1-20
Webster		25	G. D. Wood	6" and 8" Tile	45,207 ft.	14c	6,328.98			
Webster		25	G. D. Wood	Intakes	11	30.00	330.00	6,658.98	Appvd.	7-1-20
Webster		25	Hawkeye Clay Works	6" Tile mtl.	28,000 ft.	80c	2,498.00			
Winnebago		2	Wisley Bros.	Excav.	15,257 cu. yds.	68c	10,374.76	10,374.76	Appvd.	11-24-20
Winnebago		2	Dunkel Const. Co.	Gravel 1 mi. H.	27,690 cu. yds.	88c	24,340.80			
Winnebago		2	Dunkel Const. Co.	Gravel ½ mi. H.	36,750	28c	10,290.00	34,360.80	Appvd.	8-11-20
Winnebago		2	Triels Knudson	6" Tile drain	74,355 ft.	25c	18,588.75	18,588.75	Appvd.	8-11-20
Winnebago*		30	O. N. Gjellefeld	Excav.	30,042 cu. yds.	74c	22,231.08			
Winnebago*		30	O. N. Gjellefeld	6" Tile drain	19,100 ft.	36c	6,876.00			
Winnebago*		30	O. N. Gjellefeld	Intakes	4	35.00	140.00	*29,247.08	Rejct.	3-1-20

DEPARTMENT OF ROAD ADMINISTRATION

SCHEDULE FOURTEEN—(CONTINUED)

County	Proj. No.		Contractor	Item	Estimated Quantity	Unit Price	Amount	Total Amount Contract	Action By Com.	Date
	Fed.	Pr.								
Winnebago	30		O. N. Gjellefald	Excav.	30,042 cu. yds.	74c	22,231.08			
				6" Tile drain	19,100 ft.	20c	4,936.00			
				Intakes	4	35.00	140.00	27,337.08	Appvd.	4-19-20
Winnebago	30		Snater Const. Co.	Graveling	11,175 cu. yds.	95c-30c	10,616.25	10,616.25	Appvd.	4-12-20
Woodbury	2		J. W. Ogle	Guardrail	21,064 ft.	60c	12,638.40	12,638.40	Appvd.	8-7-20
Woodbury		45	David McMurray	6" Tile drain	600 ft.	9½c	62.70	62.70	Appvd.	8-30-20
Wright	29		Wm. Jensen	10" Tile drain	4,300 ft.	35c	1,505.00			
				8" Tile drain	6,024 ft.	24c	1,445.76			
				6" Tile drain	75,696 ft.	17½c	13,246.80			
				Intakes	10	7.00	70.00	18,267.56	Appvd.	12-16-19
Wright	29		Edward Peterson Co.	Excav.	76,858 cu. yds.	58c	44,576.64	44,576.64	Appvd.	1-9-20
Wright	29		Gilbert Lokerse	Gravel—1 mi. H.	5,750 cu. yds.	95c	5,462.50			
				Gravel—½ mi. H.	23,750	30c	7,125.00	12,587.50	Appvd.	8-28-20
Wright	29		L. E. Brophrey	Gravel—1 mi. H.	10,270 cu. yds.	88c				
				Gravel—½ mi. H.		27½c	30,000.00	30,000.00	Appvd.	9-27-20

202 Contracts approved amounting to \$11,450,568.02.
5 Contracts amounting to \$761,453.33 not approved.

SCHEDULE FIFTEEN

ROAD CONTRACTS APPROVED ASIDE FROM CONTRACTS FOR PRIMARY ROAD OR FEDERAL AID PROJECTS

County	Contractor	Item	Quantity Estimated	Price Unit	Amount	Total Amount Contract	Action By Com.	Date
Boone	David J. Conn	Gravel, 1 mi. H.		30c				
Boone	Arthur Johnson	Gravel, ½ mi. H.		15c				
Calhoun	Snater Con. Co.	Graveling	5,740 cu. yds.	2.00	\$ 11,480.00	\$ 12,000.00	Appvd.	8-9-20
		Gravel, 1 mi.	12,315 cu. yds.	90c	11,083.50	11,480.00	Appvd.	3-6-20
Calhoun	A. R. Eno	Gravel, ¼ mi.	98,520	29c	28,570.80	30,654.30	Appvd.	4-12-20
		Gravel, 1 mi.	4,725 cu. yds.	90c	4,252.50			
Calhoun	Snater Con. Co.	Gravel, ¼ mi.	18,900	30c	5,670.00	9,922.50	Appvd.	4-12-20
		Gravel, ½ mi.	19,575 cu. yds.	90c	17,617.50			
Calhoun	Hammontree & Pilmer	Gravel, H. 1 mi.	58,725 cu. yds.	29c	17,030.25	34,047.75	Appvd.	4-12-20
Clay	S. Witmer	Gravel	11,805 cu. yds.	50c-30c	20,068.50	20,068.50	Appvd.	4-12-20
Clay	Mason Contr. Co.	Graveling	1,750 cu. yds.	2.05	3,587.50	3,587.50	Appvd.	4-12-20
		Gravel, 1 mi.	10,500 cu. yds.	70c	7,350.00			
Clay	Chester Bone	Gravel, ½ mi.	26,600	30c	7,980.00	15,330.00	Appvd.	10-2-20
		Gravel, 1 mi. H.	7,000 cu. yds.	60c	4,200.00			
Clay	A. L. Santage	Gravel, ½ mi. H.	45,500 cu. yds.	29c	13,195.00	17,395.00	Appvd.	10-2-20
		Gravel, 1 mi. H.	2,750 cu. yds.	75c	2,062.50			
Clay	Mankato Con. Co.	Gravel, ½ mi. H.	10,250 cu. yds.	30c	3,075.00	5,137.50	Appvd.	10-2-20
		Gravel	11,200 cu. yds.	87c	9,744.00			
		Gravel	9,500 cu. yds.	90c	8,550.00			
		Gravel	62,900 cu. yds.	30c	18,870.00			
Clay	Heldt & LeClair	Gravel	18,000 cu. yds.	28c	5,040.00	42,204.00	Appvd.	10-2-20
		Gravel	3,000 cu. yds.	60c	1,800.00			
Clay	E. A. Dennis	Gravel	7,500 cu. yds.	25c	1,875.00	3,675.00	Appvd.	11-2-20
		Gravel	3,000 cu. yds.	60c	1,800.00			
Crawford	W. R. Grinnell	Gravel	13,500 cu. yds.	25c	3,375.00	5,175.00	Appvd.	11-2-20
		Excav.	27,559 cu. yds.	57c	15,708.63			
		Excav.	12,552 cu. yds.	63c	7,907.76			
Crawford	Ed Sash	Excav.	35,292 cu. yds.	62½c	22,067.50	45,673.89	Appvd.	3-23-20
Delaware	Russell Condon	Excav.	20,554 cu. yds.	65c	13,360.10	13,360.10	Appvd.	3-23-20
Dickinson	C. E. Swarner	Excav.	53,000 cu. yds.	68.9c	35,457.00	35,457.00	Appvd.	7-19-20
Emmet	J. A. McBeth	Graveling	11,480 cu. yds.	1.55	17,749.00	17,749.00	Appvd.	4-5-20
Franklin*	Stackhouse & Bradfield	Excav.	4,000 cu. yds.	70c	2,800.00	2,800.00	Appvd.	9-21-20
Franklin	R. E. Carr	Graveling			3,567.20	3,567.20	Rejected	2-20-20
		Gravel, H. 1 mi.	7,730 cu. yds.	80c	6,184.00			
Franklin	W. W. Burman	Gravel, ½ mi. H.	42,670	24c	10,240.80	16,424.80	Appvd.	11-24-20
		Graveling	3,000 cu. yds.	85c	2,550.00	2,550.00	Appvd.	11-1-20

SCHEDULE FIFTEEN—(CONTINUED)

County	Contractor	Item	Estimated Quantity	Unit Price	Amount	Total Amount Contract	Action By Com.	Date
Franklin	G. E. Sargent Co.	Graveling	9,600 cu. yds.	90c	8,640.00			
		Graveling	3,000 cu. yds.	95c	2,850.00			
		Graveling	19,000 cu. yds.	24½c	3,910.00	15,400.00	Appvd.	11- 1-20
Greene	S. F. Little	Excav.	5,525 cu. yds.	65c	3,331.25	3,331.25	Appvd.	5- 8-20
Grundy	W. R. Grinnell	Excav.	30,000 cu. yds.	61c	18,300.00			
		Excav.	8,500 cu. yds.	64c	5,440.00	23,740.00	Appvd.	10-25-20
Hardin	Sam Hubbard	Excav.	4,000 cu. yds.	65c	2,600.00			
Hardin	L. O. Wood & Co.	Excav.	8,983 cu. yds.	75c	6,737.25	6,737.25	Appvd.	11- 5-20
Hardin	Snater Const. Co.	Graveling	880 cu. yds.	1.35	1,188.00			
		Graveling	400 cu. yds.	1.20	528.00	1,716.00	Appvd.	6-29-20
Jones	V. L. Hanssen	Excav.	2,580 cu. yds.	70c	1,806.00			
		Excav.	200 cu. yds.	85c	170.00			
		Fencing		50.00	50.00	2,026.00	Appvd.	7-31-20
Lyon	Ira Cox	Excav.	21,293 cu. yds.	70c	14,905.10	14,905.10	Appvd.	7- 3-20
Montgomery	Cadwell & Salyers	Excav.	3,500 cu. yds.	65c	2,275.00			
		Excav.	2,500 cu. yds.	60c	1,500.00	3,775.00	Appvd.	9-29-20
Muscatine	G. B. Fuller	Excav.	Not stated	57c	Unknown	Unknown	Appvd.	10- 2-20
O'Brien	C. F. Betz	Excav.	16,827 cu. yds.	75c	12,620.25			
		Excav.	4,061 cu. yds.	74c	3,005.14	15,625.39	Appvd.	5- 8-20
Palo Alto	O'Hanlon & Reilly	Excav.	18,000 cu. yds.	66c	11,880.00			
		Culverts	15	9.00	135.00	12,015.00	Appvd.	10-15-20
Palo Alto	Loweck & Woodworth	Excav.	2,728 cu. yds.	68c	1,855.04	1,855.04	Appvd.	7-21-20
Palo Alto	S. Witmer	Graveling	7,000 cu. yds.	90c	6,300.00			
		Graveling	38,500 cu. yds.	28c	10,780.00	17,080.00	Appvd.	4-16-20
Palo Alto	J. F. Griffin	Gravel, 1 mi. H.	3,500 cu. yds.	90c	3,150.00			
		Gravel, Ad. ½ mi.	7,000	30c	2,100.00	5,250.00	Appvd.	4-16-20
Palo Alto	H. R. Bell	Excav.	10,000 cu. yds.	55c	5,500.00	5,500.00	Appvd.	3-16-20
Palo Alto	Jess Crook	Excav.	2,300 cu. yds.	63c	1,440.00			
Palo Alto	O'Hanlon & Reilly	Excav.	18,600 cu. yds.	71c	13,206.00	13,206.00	Appvd.	4-16-20
Palo Alto	Natl. Const. Co.	Excav.	20,000 cu. yds.	70c	14,000.00			
Palo Alto	W. G. Middleton	Graveling	Unknown	Unknown	Unknown	Unknown	Appvd.	3-31-20
Plymouth	T. Ryan & Sons	Excav.	63,845 cu. yds.	55½c	35,234.18	35,234.18	Appvd.	5- 8-20
Pocahontas	J. W. Donnelly	Graveling	1,435 cu. yds.	2.50	3,587.50			
		Graveling	2,870 cu. yds.	2.25	6,457.50	10,045.00	Appvd.	3-29-20
Pocahontas	J. A. Dunkel	Graveling	12,240 cu. yds.	Various	19,678.53	19,678.53	Appvd.	3-29-20
Pocahontas	Edw. Peterson Co.	Excav.	105,937 cu. yds.	70c	74,155.90	74,155.90	Appvd.	3-30-20
Polk	Jas. K. Boucher	Graveling	6,000 cu. yds.	60c	3,600.00			
		Graveling	21,750 cu. yds.	20c	4,350.00			
Polk	Pestotnik, Selzer & Rose	Graveling	6,000 cu. yds.	45c	2,700.00	10,650.00	Appvd.	10-30-20
		Gravel, 1 mi. H.	4,950 cu. yds.	80c	3,960.00			
		Gravel, ½ mi. H.	21,000 cu. yds.	24c	5,040.00			
		Gravel, 1 mi. H.	2,400 cu. yds.	60c	1,440.00			
		Gravel, 1 mi. H.	3,500 cu. yds.	82c	2,870.00			
		Gravel, ½ mi. H.	7,500 cu. yds.	24c	1,800.00	15,110.00	Appvd.	10-30-20
Sac	Clark Const. Co.	Excav.	17,000 cu. yds.	50c	8,500.00	8,500.00	Appvd.	3-16-20
Sac	A. B. Teepell	Graveling	Various	Various	10,571.00	10,571.00	Appvd.	4- 5-20
Sac	Raymond Ellrick	Graveling	Various	Various	5,788.40	5,788.40	Appvd.	4- 5-20
Scott	Matthes Coal Co.	Excav.	16,212 cu. yds.	62c	10,051.44			
		Excav.	1,064 cu. yds.	75c	798.00			
		Culvert pipe	300 cu. yds.	35c	105.00			
		Culvert pipe	100 cu. yds.	30c	30.00			
		Crushed stone	5,340 cu. yds.	2.68	14,311.20	25,295.64	Appvd.	7- 6-20
Sioux	Brunskill & Baneroff	Excav.	8,000 cu. yds.	60c	4,800.00	4,800.00	Appvd.	8-11-20
Story	Selzer & Hannun	Graveling	8,500 cu. yds.	1.25	10,625.00	10,625.00	Appvd.	2-19-20
Story	R. E. Carr	Graveling	10,500 cu. yds.	Various	19,125.00	19,125.00	Appvd.	2-19-20
Winnabago	Dunkel Const. Co.	Gravel, 1 mi. H.	1,500 cu. yds.	88c	1,320.00			
		Gravel, ½ mi. H.	Unknown	28c	Unknown	1,320.00	Appvd.	9-20-20
Winnabago*	Wisely Bros.	Excav.	14,951 cu. yds.	68c	10,076.68	*10,076.68	Rejected	
Winnabago*	Wisely Bros.	Excav.	14,951 cu. yds.	59½c	8,933.22	*8,933.22	Rejected	
Winnabago	McGuire & Wisely	Excav.	14,978 cu. yds.	65c	9,735.70	9,735.70	Appvd.	8-11-20
Woodbury	M. Moran	Excav.	2,500 cu. yds.	60c	1,500.00			
Woodbury	R. C. Ward	Excav.	95,625 cu. yds.	53c-55c-58c	51,338.29	51,338.29	Appvd.	8-26-20
Woodbury	R. C. Ward	Excav.	8,045 cu. yds.	45c	3,620.25			
		Excav.	3,999 cu. yds.	53c	2,119.47	5,739.72	Appvd.	7- 3-20
Wright	Snater Const.	Gravel, H. 1 mi.	3,000 cu. yds.	1.00	3,000.00			
		Gravel, ½ mi. H.	2,625 cu. yds.	30c	787.50			
		Gravel, H. 1 mi.	5,250 cu. yds.	95c	4,987.50			
		Gravel, ½ mi. H.	38,750 cu. yds.	30c	11,625.00	19,800.00	Appvd.	6- 1-20
								7- 8-20

Total, 59 contracts approved, \$353,504.23.
 *3 contracts disapproved, \$2,577.10.

SCHEDULE SIXTEEN

SECONDARY ROAD DISTRICTS ESTABLISHED BY RESOLUTION OF
BOARDS OF SUPERVISORS

County	Dist. No.	Type of surfacing	Length in miles	Approx. acres in district	Date established	Date filed with commission
Boone	3	Gravel	6.00	3,840	10-16-19	13-18-19
Boone	7	Gravel	3.50	4,400	2-2-20	3-18-20
Boone	18	Gravel	4.00	2,590	2-23-20	2-25-20
Boone	21	Gravel	5.00	4,540	4-8-20	4-9-20
Boone	5	Gravel	3.50	1,520	8-8-20	8-14-20
Boone	6	Gravel	2.50	1,200	8-9-20	8-14-20
Boone	23	Gravel	6.00	4,100	8-20-20	9-4-20
Boone	12	Gravel	8.50	4,900	9-1-20	9-17-20
Buchanan	12	Gravel	2.50	1,760	9-8-20	9-16-20
Calhoun	1	Gravel	7.00	8,960	3-9-20	3-17-20
Calhoun	12	Gravel	4.25	5,760	3-9-20	3-17-20
Calhoun	12	Gravel	8.00	9,600	3-9-20	3-17-20
Calhoun	9	Gravel	6.00	7,720	3-9-20	3-17-20
Calhoun	10	Gravel	8.00	10,160	3-9-20	3-17-20
Calhoun	4	Gravel	1.00	2,560	3-30-20	4-9-20
Calhoun	5	Gravel	3.50	4,800	3-30-20	4-9-20
Calhoun	6	Gravel	4.00	2,560	3-30-20	4-9-20
Calhoun	7	Gravel	4.00	2,560	3-30-20	4-9-20
Calhoun	8	Gravel	6.25	8,000	3-30-20	4-9-20
Delaware	1	Gravel	11.00	21,120	8-2-20	8-17-20
Dallas	6	Gravel	3.50	3,000	11-9-20	11-18-20
Emmet	1	Gravel	6.00	3,840	2-2-20	6-23-20
Emmet	2	Gravel	6.50	3,840	2-2-20	6-23-20
Emmet	3	Gravel	2.00	1,280	2-2-20	6-23-20
Emmet	4	Gravel	2.50	800	2-2-20	6-23-20
Floyd	2	Gravel	4.22	6,080	4-2-20	4-8-20
Floyd	3	Gravel	4.00	5,120	4-2-20	4-8-20
Hardin	14	Gravel	4.00	8,960	12-22-19	1-8-20
Linn	1	Gravel	21.00	23,680	12-15-19	12-26-19
O'Brien	1	Gravel	10.00	20,160	11-10-19	2-27-20
O'Brien	2	Gravel	16.50	18,560	12-8-19	10-19-20
Polk	2	Gravel	11.00	14,080	16-1-20	10-19-20
Palo Alto	2	Gravel	5.00	3,200	3-11-20	3-13-20
Palo Alto	3	Gravel	7.00	4,192	3-11-20	3-13-20
Palo Alto	4	Gravel	3.75	2,448	3-10-20	3-13-20
Palo Alto	6	Gravel	2.50	1,394	3-10-20	3-13-20
Palo Alto	7	Gravel	7.75	4,960	3-10-20	3-13-20
Palo Alto	5	Gravel	3.00	1,920	3-10-20	4-16-20
Sac	3	Gravel	0.50	340	3-2-20	4-3-20
Sioux	1	Gravel	3.00	5,500	12-2-19	1-24-20
Sioux	2	Gravel	4.00	4,160	12-2-19	1-24-20
Story	6	Gravel	4.00	2,560	2-19-20	2-25-20
Story	9	Gravel	4.50	2,720	2-19-20	2-25-20
Story	10	Gravel	5.00	3,200	2-19-20	2-25-20
Story	11	Gravel	1.50	720	2-19-20	2-25-20
Story	12	Gravel	5.00	3,200	2-19-20	2-25-20
Story	13	Gravel	10.50	6,720	4-5-20	4-16-20
Story	14	Gravel	4.00	3,840	4-5-20	4-16-20
Webster	1	Gravel	2.25	2,790	8-9-20	8-25-20
Webster	3	Gravel	2.00	2,400	8-9-20	8-25-20
Webster	4	Gravel	2.25	2,240	8-9-20	8-25-20
Wright	1	Gravel	7.00	9,600	7-6-20	7-12-20
Wright	2	Gravel	6.25	6,920	7-6-20	7-12-20
Wright	3	Gravel	3.50	4,480	7-6-20	7-12-20
Wright	4	Gravel	5.25	8,000	7-6-20	7-12-20
Wright	5	Gravel	7.00	12,440	7-6-20	7-12-20
Total	55		302.92	323,164		

Chapter VII. Department of Road Design.

Summary.

The work of making all preliminary surveys and preparing all road plans for the primary road system is supervised by the Department of Road Design. Previous to 1920 the total mileage of primary roads on which surveys had been made was 1495 miles. During the 1920 season, surveys were made on 1089 miles additional, bringing the grand total mileage of surveys on the primary road system to 2584, or four tenths of the state system. During 1920 plans were completed for 1164.2 miles, which added to the total mileage of plans previously prepared, brings the grand total of plans prepared to 1768.0 miles. The 1920 survey mileage would reach $3\frac{1}{2}$ times across Iowa, east and west in an air line, and the 1920 plan mileage would reach four times across the state. In addition to these plans the department checked and approved 413.5 miles of county plans submitted by county engineers for county and township road work. The survey work of the season was carried on by twelve parties of seven men each.

Organization.

The department organization is as follows:

ENGINEER OF ROAD DESIGN, HEAD OF DEPARTMENT

Survey Force	Plan Force	Women's Drafting Division
12 parties of 7 men each, as follows: 1 Party Chief 2 Instrumentmen 4 Rodmen	11 Squad Chiefs with designers and helpers	1 Superintendent in charge of apprentices and draftswomen

The duties of the department are to make all road surveys and road plans for the improvement of the primary road system and to check and approve all county and township road plans submitted by the county engineers.

At least one survey party is assigned to each district and when such an assignment is made the men work under the direct supervision of the district engineer, although they are finally held responsible to this department. The plan work is handled

in a similar manner, there being assigned to each district office, one squad chief, or designer, who works directly under the district engineer but is finally responsible to this department. After the close of the field season the survey forces move to their respective district offices where they assist in the plan work until the field season opens in the spring. A force of designers is also maintained at the central office where all road plans are carefully checked and approved or modified before being sent out.

The women's drafting division assists in both the road and bridge work. This division is developed by bringing in as apprentices, young women who wish to learn office engineering work. Through the apprentice period they are paid a nominal salary which is increased as they develop in usefulness. At the close of the apprentice period, the length of which depends on the ability of the apprentices, they are classed as draftswomen and given regular assignments on road or bridge work, at the central office, or with one of the district offices where they work under the district road designer. The work of this division has proved to be very satisfactory. Quite a number of the women have shown surprising aptitude on engineering work and the great majority of drawings made by the Commission's force is the work of the women.

Surveys.

Prior to the opening of the field season it was decided to increase the size of the field parties from four to seven men. It was felt that one party chief could supervise the work of two three-man parties, and the parties of the previous season were accordingly consolidated into ten seven-man parties and one four-man party. Transportation was provided by supplying each seven-man party with a G. M. C. ambulance received from the War Department, and the small party with a Ford car. The G. M. C. ambulances were remodeled in the Commission shops to suit the needs of the survey men.

The standard equipment issued to the survey parties was as follows:

- 1 Berger Transit and Tripod.
- 1 Berger Wye Level and Tripod.
- 2 Level Rods.
- 1 Hand Level.
- 3 100' Steel Tapes.

- 3 50' Metallic Tapes in Cases.
- 2 Lining Poles.
- 1 Set Marking Pins.
- 1 25' Chalk Line (Intersections).
- 2 Hand Axes in Sheath.
- 1 Chopping Axe.
- 2 Plumb Bob (Chaining).
- 4 Tape Splices.
- 1 Striking Hammer, No. 8.
- 1 Pick.
- 1 Shovel.

During 1919 considerable use was made of various county engineering organizations in the making of primary road surveys. It was found that this practice was not wholly satisfactory owing to the remoteness of the county parties from the Commission, and, also, to the fact that the regular duties of the county engineers were such that they could not devote the necessary time to primary road surveys. Arrangements were, therefore, made to utilize county parties only in those counties where it seemed certain that the work would be satisfactorily done without detriment to the required work of the county engineer. Use was made of only six county engineering organizations in 1920 on the survey work. As in the previous year, the payrolls and expenses of such parties were paid by the Highway Commission.

Prior to December 1, 1919, surveys had been completed on 1495 miles of the primary road system. During the 1920 season surveys were completed on 83 projects, including a total of 1378.2 miles, (see Schedule Number Seventeen) and surveys were begun but not completed on 11 projects, totaling 146.5 miles, (see Schedule Number Eighteen), of which 83.7 miles were completed. The total mileage of primary road surveyed during 1920 was 1089 miles.

Primary Road Plans.

The plan force is handled on the squad system. In the central office each squad consists of from two to five men, one of whom, the squad chief, is responsible to the head of the department for all work assigned to the squad. In the district offices the district road designer, working under the district engineer, is responsible for the preparation of plans. Through the summer months the district force is small, there being in most cases only one or two helpers for the designer. During the winter months

the survey men and a part of the construction men are assigned to plan work under the road designer.

The bulk of the plan work is done in the district offices. After all computations are made, but before the grade lines and estimates of quantities are permanently placed on the plan sheets, an examination is made of the project by the district engineer, county engineer, an engineer from the central office, and in the case of a Federal Aid Project, an engineer from the office of the Federal District Engineer. The plans are carefully compared with existing conditions on the road and all errors, omissions and recommendations are noted. The plans are then completed in the central office in accordance with the field notations and are submitted to the various officials whose approval signatures are required.

Prior to December 1, 1919, plans had been completed for 603.67 miles. During 1920 plans were completed for 1164.2 miles, bringing the total of plans completed on the primary road system to 1768 miles. Schedule Number Nineteen lists those projects on which plans were begun but not completed during 1920.

Secondary Road Plans.

During the year the department checked and approved plans for 413.5 miles of county and township roads. These plans were submitted for approval by the county engineers. The following data in regard to such plans handled during 1920 is of interest:

Miles of plans checked and approved.....	413.5
Average original maximum grade	5.75%
Average final maximum grade	3.45%
Average original rise and fall	48.93 feet
Average final rise and fall	38.32 feet
Total earthwork	2,027,994 cu. yds.
Average earthwork per mile	4,904.5 cu. yds.

SCHEDULE SEVENTEEN

PROJECTS ON WHICH SURVEYS WERE COMPLETED IN 1920

County	Project Number	Mileage
Clayton	74	34.2 Including alternate lines
Louisa	53	24.8
Carroll	P14	10.5
Mills	15	3.0 Relocation
Kossuth	66	25.0
Woodbury	78	2.8
Lucas	63	22.8
Monona	P38 A	19.4
Allamakee	P29	3.5
Iowa	90	26.5
Page	P27	16.5
Shelby	42	20.0
Winneshiek	98	27.2
Decatur	122	10.0
Poweshiek	P41	31.25 Including alternate lines
Chickasaw	76	13.5
Buena Vista	37	9.0
Warren	11	10.0 Relocation
Boone	P58	13.0
Worth	134	8.5
Monona	P38 B	20.0
Audubon	52	20.25
Mahaska	70	28.25
Johnson	P35	18.2
Jackson	21	2.05 Relocation
Delaware	103	14.5
Webster	P25	16.0
Greene	24	44.5 Including alternate lines
Humboldt	117	40.25
Boone	P30 A	9.0
Taylor	81	19.25
Cedar	57	33.0 Including alternate lines
Grundy	P48	20.0
Madison	P36	14.5
Wright	P19	9.0
Marshall	P13	9.0
Adams	P60	13.5
Scott	55	3.0 Relocation
Jasper	P 77 A	14.5
Butler	P71	14.5
O'Brien	P69	28.5
Montgomery	P65	16.5
Jones	86	26.0
Buchanan	P66	11.5
Kossuth	P6	35.0
Warren	44	10.0
Monroe	P78	8.0
Buena Vista	P93	4.5
Jasper	P77 B	19.0
Cerro Gordo	P89	5.5
Plymouth	P39	21.0
Fremont	P84	15.0
Harrison	P34	17.0
Pocahontas	P90	15.0
Appanoose	P76	12.0
Calhoun	P99	12.0
Hamilton	P79	19.0
Lyon	P85	20.0
Mills	P37	8.0
Muscatine	87	30.0
Clayton	P70	23.0
Clay	P56	6.0 Including alternate lines
Ringgold	123	11.5
Story	72	20.25
Tama	47	5.0 Relocation
Dickinson	P23	8.5
Carroll	P9	24.0
Ida	P101	14.25

SCHEDULE SEVENTEEN—(CONTINUED)

County	Project Number	Mileage
Plymouth	P74 A	6.5
Pottawattamie	P22	22.0
Mitchell	45 A	12.75
Guthrie	P52	15.0
Lee	P68	9.0
Union	83	24.0
Scott	P50	18.5
Sioux	P67	3.0
Floyd	P68 A	8.5
Marion	75	26.0
Lyon	110	22.0
Mitchell	45 B	20.0
Dallas	P33	22.25
Washington	71	22.00
Total		1,378.20

SCHEDULE EIGHTEEN

PROJECTS ON WHICH SURVEYS WERE BEGUN BUT NOT COMPLETED DURING 1920

County	Project No.	Total Length	Mileage of Surveys Completed
Floyd	P63 "3"	2.0	1.6
Plymouth	88	5.0 Reloc.	1.0
Woodbury		7.5	7.1
Pottawattamie	P92	10.0	8.0
Pottawattamie	P21	20.0	18.0
Jefferson	120	7.0	6.3
Wapello	P54	18.0	8.1
Sioux	P83	22.0	2.2
Jones	P81	21.0	12.6
Bremer	88	17.0	6.8
Crawford	P88	17.0	12.0
Total			83.7

SCHEDULE NINETEEN

PROJECTS ON WHICH PLANS WERE BEGUN BUT NOT COMPLETED DURING 1920

County	Project No.	Total Length	Mileage of Plans Completed
Cass	44	19.0	17.1
Plymouth	28 A	6.0	5.4
Kossuth	62 A	11.5	11.2
Louisia	53	25.2	24.6
Marion	75	23.0	21.8
Worth	134	8.5	8.3
Clayton	74	32.0	30.4
Fayette	59	37.0	36.3
Wayne	91 AE	7.3	6.6
Floyd	P68 A	2.6	2.3
Monona	P38	24.1	22.3
Page	P27	34.0	21.6
Allamakee	P113	3.5	3.2
Mahaska	70	30.0	27.0
Jackson	21	18.2	17.8
Tama	47	30.0	29.4
Buena Vista	P93	4.0	3.6
Shelby	P42 B	13.0	12.4
Marshall	P13	7.6	2.3
Greene	P24	41.0	8.2
Boone	P30 A	6.3	2.5
Poweshiek	P41	24.7	14.8
Jasper	64	31.0	21.7
Jasper	P77	30.0	1.5
Howard	93	11.0	7.7
Chickasaw	76	13.5	6.1
Cerro Gordo	P89	5.5	2.7
Audubon	52	24.0	16.8
Taylor	81	19.0	10.2
Muscatine	87	30.0	7.5
Iowa	P68	9.0	1.9
Johnson	90	27.5	13.8
Cedar	P85	18.2	15.4
Winneshiek	57	24.2	12.1
Buchanan	98	27.4	13.7
Grundy	P65	11.5	1
Delaware	P48	19.4	2.5
Clayton	103	13.2	0.9
Webster	P70	22.0	.8
Humboldt	P64	16.0	3.2
Clay	117	40.0	30.
Pocahontas	P69	7.0	4.2
Sac	P90	15.0	2.3
Warren	P86	1.5	0.9
Madison	11	16.4	15.6
	P86	22.5	10.1
Total			531.7

Chapter VIII. Department of Road Construction.

Summary.

This department has charge of all construction work on Federal Aid and Primary Road projects, all construction and maintenance work on State Institutional roads, and the receipts, storage, and distribution of excess war equipment assigned to this state by the federal government.

On December 1, 1919 work was under construction on ninety-seven projects located in nineteen counties. Additional contracts were let and work placed under construction as the season progressed until on December 1, 1920 work was under way on ninety-seven Federal Aid and Primary Road Projects located in sixty-seven counties. These ninety-seven projects include the following work:

Paving	164.36 miles
Graveling	224.54 miles
Grading	972.82 miles
Tiling	2,380,000 lin. ft.

On a number of these ninety-seven projects the work is practically completed. On others work has scarcely started. On the Primary Road system the following work was constructed during the season of 1920:

Paving	46.58 miles
Graveling	102.52 miles
Grading	409.82 miles
Tiling	1,168,700 lin. ft.

On the State institutional roads 25,104 square yards or approximately 2.5 miles of pavement were laid, 2.0 miles were surfaced with gravel, 3.0 miles were surfaced with cinders, and 22.0 miles maintained under patrol system.

Government equipment to the value of \$1,588,000.00 was received during 1920. The total value of government equipment received to December 1, 1920, is \$2,309,902.00. The counties have been allotted equipment valued at \$1,142,714.00. The Executive Council, the Board of Control and the State Board of Agriculture

have been allotted trucks valued at \$35,250.00. The remainder of the equipment is being held in reserve by the Commission. The total cost of this equipment to the state is about 4.6 per cent of its value.

Organization.

The organization of the department is the same as outlined in the report for 1919 except that in 1920 two general inspectors were added to the force. One of these men was assigned to paving operations, the other man was assigned to grading and graveling operations. Both of these men are responsible directly to the road construction engineer. The addition of these two men was necessary because the large increase in the amount of work under construction made it impossible for the construction engineer to give all work the close supervision required.

Conditions affecting construction work.

Contract prices on all paving work have been considerably higher than in 1919. Contract prices on grading work average some higher but do not show the increase shown in paving prices. Shortage of material, difficulties of rail transportation and high prices of labor are the principal factors causing these increased prices. With but one exception every paving contractor in the state has had numerous delays due to his inability to secure the necessary cars for the shipment of materials. Cement mills opened for the season's work with but very little cement in storage. This resulted in the shipping of a great deal of green cement which, in many cases, had to be held from one to four weeks before it would pass the necessary test. This necessarily caused many delays which in ordinary times could have been avoided.

As a rule sufficient sand, stone and gravel could easily have been obtained had there been sufficient cars available to transport such material to the work.

Construction work continued from 1919.

The following projects were started in 1919 but not completed that year. Work on these projects was continued in 1920 and they are all practically completed now.

County	Project Number	Mileage	Kind of Work
Black Hawk	25	4.05	Grading and paving
Calhoun	10	18.30	Graveling
Cerro Gordo	61	6.05	Paving (only tiling let)
Chickasaw	35	13.17	Grading and graveling
Dallas	12	16.80	Grading and graveling
Decatur	8	9.83	Grading and graveling
Delaware	4	12.62	Grading and graveling
Howard	31	10.40	Grading and graveling
Jefferson	3	19.78	Grading
Johnson	9	10.00	Grading
Keokuk	34	12.25	Grading
Linn	22	6.50	Grading
Linn	22	.80	Paving
Monroe	20	8.25	Grading
Montgomery	16	16.50	Grading
Ringgold	6	12.00	Grading
Scott	54	8.46	Grading
Sioux	28	24.30	Grading
Webster	13	6.00	Grading
Harrison	14	15.60	Grading

A detailed description of the above may be found in Chapter VIII of the 1919 Annual Report.

Work Completed During 1920.

During 1920 the following construction work was completed on Federal Aid and Primary Road Projects:

Paving	46.58 miles
Graveling	102.52 miles
Building to finished grade	409.82 miles
Tile drains	1,168,700 lin. ft.

It is anticipated that at least twice as much work will be done in 1921 as everyone connected with the work is better organized, the railroads give promise of better service and apparently labor will be plentiful.

Construction Work Carried Over Into 1921.

During 1920 contracts were let on eighty-six Federal Aid and Primary Road Projects. (Refer to Schedule No. 21.) Some of these contracts applied to projects on which a part of the work was contracted in 1919. On December 1, 1920, work was under construction on ninety-seven projects located in sixty-seven counties. These projects include the following work:

Paving	164.36 miles
Graveling	224.54 miles
Grading	972.82 miles
Tiling	2,380,000 lin. ft.

A number of the projects are completed and await only the final inspection and acceptance by the government engineers be-

fore being classified as "completed projects." On others the work has barely started. Uncompleted work on projects now under construction is as follows:

Paving	112.9 miles
Grading	423.8 miles
Graveling	119.5 miles
Tile drains	1,212,000 lin. ft.

This work is being carried over into the 1921 working season and will be taken into consideration in the letting of contracts for the 1921 construction program.

Work Accomplished on Each Project.

A statement of the work accomplished on each project follows:

Adair County, Primary Road Project No. 28.

The work done consists of moving 53,400 cubic yards of earth and placing 4,400 lineal feet of tile drain. The earth excavation is thirty-three per cent complete and the tile work eighteen per cent complete.

Adams County, Federal Aid Project No. 26.

This project is one of the heaviest grading projects ever let in this state averaging about 23,000 cubic yards per mile. Work started early in July and has progressed very nicely. The contractor contemplated finishing by December 1st but the material encountered proved more difficult to handle than expected. On December 1st the work was sixty-seven per cent completed. The work done consists in moving 155,948 cubic yards of earth.

Appanoose County, Federal Aid Project No. 27.

This project has been completed and final estimate submitted, and now awaits the approval and acceptance by the federal government. This eleven mile project involved the moving of 101,393 cubic yards of earth.

Benton County, Federal Aid Project No. 58.

Contracts for the grading and paving on this project were let late in the fall and to date only a portion of the grading work has been done. The paving contractors expect to stock material during the winter and early spring thereby insuring an early start next season.

Black Hawk County, Federal Project No. 25.

The 1919 Annual Report describes this paving project as about completed except for laying the brick surface on about a mile of concrete base. This work has been entirely completed and is now ready for acceptance by the Federal Government.

Black Hawk County, Primary Road Project No. 51.

The work on this project contemplates laying 47,081 lineal feet of drain tile. Of this amount 84.3 per cent, or 39,600 lineal feet, of tile have been placed.

Black Hawk County, Federal Aid Project No. 62.

This project is also for tiling only, involving the placing of 71,692 lineal feet of tile. To date the work is 85 per cent complete, 64,927 feet of tile have been placed.

The work in the above two projects has been done in anticipation of grading and paving work to follow at some future time.

Boone County, Federal Aid Project No. 65.

This project, totalling 22.08 miles, is in two divisions, one division of 11.51 miles and the other 10.57 miles, involving both grading and graveling.

The grading on one division has been entirely completed and the graveling all but about eight per cent completed.

On the other division the work is just nicely started. A total of 48,820 cubic yards of earth has been moved, 16,915 cubic yards of gravel placed and 42,677 lineal feet of tile laid.

Boone County, Primary Road Project No. 58.

The contract for this work contemplates the moving of 71,533 cubic yards of earth and as yet has not commenced.

Buena Vista County, Primary Road Project No. 18.

This project, with the exception of 1.5 miles of grading, is entirely a graveling and tiling project on which the following work has been done: Earth excavation amounting to 12,000 cubic yards has been moved; 54,055 lineal feet of tiling layed and 6,750 cubic yards of gravel placed.

Buena Vista County, Federal Aid Project No. 37.

This project is entirely a graveling and tiling project on which 54 per cent of the gravel has been placed and 58 per cent of the tile laid, or a total of 16,165 cubic yards of gravel and 12,750 lineal feet of tile. The gravel used on the project has been obtained largely from local pits, the balance shipped from the Lake View Sand & Gravel Company.

Butler County, Federal Aid Project No. 85.

This project calls for the grading and graveling and tiling of 12.55 miles of road. Forty per cent of the grading amounting to 18,000 cubic yards has been completed but the graveling has only just started. Twenty-six per cent of the tiling amounting to 14,173 feet has been placed.

Colhoun County, Federal Aid Project No. 10.

This project calls for 6,000 lineal feet of tile on the 1919 graveling project. The work has all been completed.

Calhoun County, Primary Road Project No. 5.

This project involved the graveling and tiling of four miles of road and has been entirely completed. Six thousand cubic yards of gravel were placed and 8,800 feet of tile laid.

Calhoun County, Primary Road Project No. 16.

This project has also been entirely completed. The work involved the graveling and tile on 10.5 miles of road; 15,900 cubic yards of gravel were placed and 14,568 lineal feet of tile laid.

Carroll County, Federal Aid Project No. 99.

The contract for this work was let late in November and work has not yet started.

The project is 8.96 miles in length and contemplates moving 131,085 cubic yards of earth and placing 2,885 feet of tile.

Carroll County, Primary Road Project No. 14.

The contract for this work was let late in November and work has not yet started.

The project is 10.96 miles in length and contemplates moving 119,447 cubic yards of earth and placing 4,400 lineal feet of tile.

Cerro Gordo, Federal Aid Project No. 61.

This project calling for the grading and paving of 6.05 miles of road has, except for a little shoulder work, been completed. The following work has been done:

Excavation	14,815 cubic yards
Paving	64,110 square yards
Tiling	18,400 lin. ft.

Cerro Gordo, Federal Aid Project No. 115.

Contracts were let for this and the above project early in the season, and, except for delays caused by car and material situation, satisfactory progress was made. Materials for these projects were less difficult to obtain due to the fact that this particular county is the home of two cement mills and one large gravel plant. This project contemplates the paving and grading of 22.07 miles of the primary system. Plans for this year's construction contemplated the completion of 14.5 miles but of this amount 13.18 were actually paved.

On this work 38,872 cubic yards of earth were moved, 94,685 square yards of pavement laid and 68,731 lineal feet of tile drain placed.

Cherokee County, Federal Aid Project No. 116.

This project contemplates grading 14.03 miles of road. To date the work is 21.4 per cent completed and 19,350 cubic yards of earth have been moved.

Chickasaw County, Federal Aid Project No. 35.

The 1919 Annual Report contains a full description of the project which started in 1919 and finished in 1920. The grading and tiling was done by contract work, the graveling by day labor. The grading and tiling have been completely finished and the first course of gravel placed. Plans originally called for two course construction involving the placing of 2,500 cubic yards per mile. However, this second course will not be placed for some time to come.

During this season approximately 25,000 cubic yards of gravel were placed in addition to having finished the small amount of grading left from last year.

Clarke County, Federal Aid Project No. 33.

Work on this project is about 63 per cent completed. This project is 8.45 miles in length and contemplated the moving of 97,140 cubic

yards of earth and placing 3,060 lineal feet of tile drain. To date a total of 63,443 cubic yards of excavation has been moved.

Clinton County, Federal Aid Project No. 18.

The contract for this work was let late in the season for 1920 construction. The project contemplates the grading, paving and tiling of 17.58 miles of the Clinton county roads. Only the grading work has started, there having been about 11,000 cubic yards of earth moved out of a total of nearly 45,000 cubic yards; 3,926 lineal feet of tile have been laid. The project involves laying 183,434 square yards of concrete paving but to date none of this has been done.

Dallas County, Federal Aid Project No. 12.

Contracts for building this project were let in 1919 and practically completed the same year. (See 1919 Annual Report).

In 1920 a contract was let for furnishing an additional 12,000 feet of tile to complete the 1919 work.

Dallas County, Primary Road Project No. 33.

This project contemplates moving 67,083 cubic yards of earth and laying 19,660 lineal feet of tile drain. To date 46,978 cubic yards of earth have been moved and 28,135 lineal feet of tile drain laid.

Davis County, Federal Aid Project No. 50.

Contracts for this work have been let but the work has not yet started. This is a grading project 10.32 miles in length which contemplates moving 147,444 cubic yards of earth.

Decatur County, Federal Aid Project No. 8.

Work on this project commenced late in 1919 and was finished in 1920. Final estimates have been given and the work is now ready for final acceptance by the Federal Government. During 1920 the contractor moved approximately 130,000 cubic yards of earth.

Delaware County, Federal Aid Project No. 4.

Contracts for this work were let late in the fall of 1919 but very little work was done. During the past season the work has been finished except for a railroad crossing on the east end, which has been delayed entirely on account of the railroad company. The work done consists of grading 12.62 miles of road involving the moving of 65,110 cubic yards of earth and placing 15,025 lineal feet of drain tile.

Des Moines County, Federal Aid Project No. 32.

This is a tiling project involving the placing of 24,030 lineal feet of tile drain. To date 14,750 lineal feet have been placed.

Des Moines County, Primary Project No. 53.

Work on this project has only started. The work done consists of moving 4,130 cubic yards of earth.

Dickinson County, Primary Project No. 55.

This project holds the record for being the shortest project in the state. The total length is only 1.5 miles and has been entirely completed. Seven thousand five hundred cubic yards of earth were moved and 4,900 lineal feet of tile placed.

Dickinson County, Federal Aid Project No. 68.

The contracts for this project call for 1921 completion and to date very little work has been done. The plans call for grading, paving and tiling 4.08 miles of road. No work has been done except the placing of 3,690 lineal feet of drain tile. The paving contractor expects to build his own gravel plant in a pit adjacent to the work and has made some preparations along this line.

Dubuque County, Federal Aid Project No. 17.

Work on this project commenced late in the season. Contracts were let August 12th, and on August 21st two grading outfits were at work. Good progress has been made and on December 1st approximately 50 per cent of the entire 21.2 miles were finished. A total of 75,694 cubic yards of earth were moved.

Emmet County, Federal Aid Project No. 49.

This project involves the placing of 27,897 feet of tile and has been completed.

Emmet County, Primary Project No. 57.

With the exception of 1,200 cubic yards of earth excavation this project is also entirely a tiling project, which contemplates the placing of 251,760 lineal feet of tile. To date 152,721 lineal feet of tile have been placed. This is one of the largest road tiling contracts ever let in the state embracing 42.64 miles of the county's primary road system.

Floyd County, Federal Aid Project No. 41.

Plans for this project contemplates the grading, paving and tiling of 12.39 miles of the county's primary road system. Contracts for this work were let early in the season and except for one mile of paving were completed. 120,196 square yards of concrete pavement were laid, 48,784 square yards of earth moved and 52,452 lineal feet of tile laid.

Floyd County, Primary Road Project No. 73.

This project is a tiling project only, involving the placing of 13,300 lineal feet of tile. To date 7,730 lineal feet have been placed.

Franklin County, Federal Aid Project No. 105.

Contracts for work on this project were let late in the season, but are nicely under way. Plans call for grading and tiling 9.84 miles of the county's primary road system.

To date the grading is 55 per cent complete but the tiling is only commenced. 31,950 cubic yards of earth have been moved and 1,000 lineal feet of drain tile placed.

Fremont County, Federal Aid Project No. 77.

In four months' time the contractor on the work moved 96,543 cubic yards of earth with a one machine grading outfit thereby establishing a record output on road work. The total project is 18.07 miles long and contemplates the moving of 257,000 cubic yards of earth.

Fremont County, Federal Aid Project No. 84.

The work on this project at present contemplates grading only the first mile of what eventually will be a fifteen-mile project.

Plans for the first mile only were made ready in order to co-operate with the contractor on Project No. 77, where, owing to the number of unbuilt bridges on this project, his grading operations would have been handicapped.

Greene County, Federal Aid Project No. 39.

This project involves the grading, paving and tiling on 6.49 miles of Greene county roads. The contract for this work was the first paving contract let in 1920, but on account of the difficult material and car situation the contractor was unable to lay any pavement until October.

On this project is located one of the heaviest miles of grading ever let on road work in this state. This is the famous Danger Hill, located about three miles west of Jefferson. On this one mile 36,605 cubic yards of earth were moved.

The work done on this project includes moving 49,805 cubic yards of earth, laying 11,352 square yards of concrete pavement, placing 3,015 lineal feet of tile drain.

Guthrie County, Federal Aid Project No. 51.

Contracts for this work have been let but the work has not yet started.

Grundy County, Federal Aid Project No. 19.

The work done consists of moving 10,839 cubic yards of earth and laying 19,773 lineal feet of tile drain.

Hamilton County, Federal Aid Project No. 67.

This is a grading, tiling project on which nothing has been done except the laying of 450 lineal feet of tile.

Hamilton County, Primary Road Project No. 17.

The work done consists of placing 760 cubic yards of gravel surfacing and laying 5,872 lineal feet of tile.

Hardin County, Primary Road Project No. 88.

Work on this project has not yet started.

Harrison County, Federal Aid Project No. 14.

Work on this project was started in 1919 and continued during 1920, but was not completed. The contractor could easily have finished in two weeks of good weather, but bad weather conditions prevented, and the work will not be completed until next season.

This project was fully described in the Annual Report for 1919.

Henry County, Federal Aid Project No. 56.

Work done on this project consists of moving 28,953 cubic yards of earth and placing 38,504 lineal feet of tile. The grading is 29 per cent completed and tiling is 47 per cent completed.

Howard County, Federal Aid Project No. 31.

The contracts for this work were let in 1919 but the work was not finished and has been continued in 1920.

The plans contemplated grading and graveling 10.4 miles of road. To date the grading is all completed and the graveling 60 per cent

completed. During 1920 the work done consisted of moving 33,360 cubic yards of earth and placing 10,970 cubic yards of gravel surfacing.

Humboldt County, Federal Aid Project No. 48.

The work done consists of moving 14,200 cubic yards of earth and laying 12,109 square yards of concrete paving. The entire length of this project is only 1.85 miles of which 1.31 miles are to be paved. The grading is now 61 per cent completed and the paving 76 per cent completed.

Ida County Federal Aid Project No. 80.

Very satisfactory progress has been made on the project. Contracts were let for this work in September and on December 1st the work was almost 50 per cent completed. 76,436 cubic yards of earth have been moved.

Jefferson County, Federal Aid Project No. 3.

Work on this project started in 1919 and was completed in 1920. The work done during 1920 consisted in moving 34,943 cubic yards of earth and placing 11,529 lineal feet of drain tile.

Johnson County, Federal Aid Project Nos. 9 and 129.

Plans for these projects contemplate grading and paving 3.64 miles and grading 10 miles of primary road. No pavement has been laid but grading for the same is in progress. This grading amounts to 4,445 cubic yards. The 10 mile grading project is 94 per cent completed. 70,585 cubic yards of earth have been moved.

Keokuk County, Federal Aid Project No. 34.

The first contract awarded in 1919, covering this work, was annulled when the work was partly finished and the balance relet to another contractor.

The work done on this project in 1920 consists of moving 38,000 cubic yards of earth. The finishing of this project has been delayed on account of a railroad crossing at the west end where the railroad company has been unable to do their part of the improvement. The project is completed all but moving about 10,000 cubic yards of earth.

Kossuth County, Federal Aid Project No. 111.

Plans for this work contemplated placing all the necessary tile on 21.3 miles of primary road, which will probably be paved within a year. To date a total of 75,387 feet have been laid.

Linn County Federal Aid Project No. 22.

This is a 6.5 mile grading and paving project the grading of which was let in 1919 and the paving in 1920. The grading operation continued into 1920 and was finished. The work done this season consists of moving 43,890 cubic yards of earth and placing 51,409 feet of tile and laying 17,974 square yards of concrete pavement.

Linn County, Federal Aid Project No. 96.

This project calls for grading and tiling 12.4 miles of the Lincoln Highway west of Cedar Rapids. Work done consists of moving 28,361 cubic yards of earth and placing 5,005 lineal feet of tile.

Lucas County, Federal Aid Project No. 63.

Work done consists of moving 18,700 cubic yards of earth and is 18 per cent completed.

Lyon County, Federal Aid Project No. 110.

The contract for this work was let late in the season and the work only started. 1,550 cubic yards of earth were moved. This represents 1½ per cent of the total amount.

Marion County, Federal Aid Project No. 7.

Work on this project consisted of building approximately 14,000 lineal feet of standard guard rail. Grading and tiling on the project were completed in 1919.

Mills County, Federal Aid Project No. 15.

Work on this project started very late in the season and was only 18 per cent completed. The work done consists of moving 39,280 cubic yards of earth.

Monroe County, Federal Aid Project No. 7.

This project was started in 1919 and finished in 1920. Twenty miles of Monroe County roads have been built to permanent grade awaiting acceptance by the Federal Government. The work done this season consists of moving 66,148 cubic yards of earth.

Montgomery County, Federal Aid Project No. 16.

Work on this project started in July, 1919, and was finished in July, 1920. This work was done by day labor with five rented outfits. The work done in 1920 consists of moving 119,000 cubic yards of earth.

Muscatine County, Federal Aid Project No. 40.

This project which contemplates the grading and tiling on 19.36 miles of road has only started. The work done consists of moving 36,700 cubic yards of earth and placing 3,054 lineal feet of tile drain.

O'Brien County, Federal Aid Project No. 43.

Plans for this work contemplates the grading and paving of 22.48 miles of road. Contracts for the entire amount were let early in the season but due to uncertain conditions very little work was accomplished.

The work done consists of moving 7,439 cubic yards of earth, laying 10,417 square yards of concrete pavement and placing 32,280 lineal feet of tile drain.

Osceola County, Primary Road Project No. 15.

The work done consists of moving 39,700 cubic yards of earth and is 40 per cent completed.

Palo Alto County, Federal Aid Project No. 109.

Plans for this project contemplate grading, paving and tiling 11.05 miles of Palo Alto County's Primary road. Contracts were let early in the season but due to uncertain conditions the work was not started until late in the season. The work consists of moving 31,200 cubic yards of earth, placing 21,346 square yards of concrete paving and laying 30,619 lineal feet of tile drain.

Plymouth County, Federal Aid Project No. 38.

Work on this project has not yet started.

Pocahontas County, Primary Road Project No. 7.

The work consists in moving 33,090 cubic yards of earth and is 100 per cent completed, except for tiling which is not yet started.

Pocahontas County, Primary Project No. 20.

This project contemplates grading and graveling on twelve miles of Primary road. The work done consists of moving 3,750 cubic yards of earth, placing 1,850 cubic yards of gravel and laying 14,545 lineal feet of tile.

Polk County, Primary Road Project No. 3.

Work on this project has been completed. 15,000 cubic yards of earth were moved.

Polk County, Primary Road Project No. 72.

This project has also been completed. The work done consists of moving 88,000 cubic yards of earth.

Polk County Federal Aid Project No. 89.

Plans for this project contemplate paving 7.35 miles. Of this amount about 1.45 miles were actually paved. The work done consists of laying 15,400 square yards of concrete paving.

Polk County, Federal Aid Project No. 104.

This is also a paving project which contemplates grading and paving six and one-half miles of road. Of this amount 5.15 miles were completed. The work done consists of moving 19,600 cubic yards of earth and laying 60,270 square yards of pavement.

Pottawattamie County, Federal Aid Project No. 46.

The work done consists of moving 60,600 cubic yards of earth. The work is 95 per cent completed.

Ringgold County, Federal Aid Project No. 6.

This grading work was carried over from last year. The material encountered was very difficult to handle causing the work to move very slowly. At the present time the work is only 82 per cent completed. The work done in 1920 consists of moving 105,600 cubic yards of earth.

Sac County, Primary Road Project No. 10.

Plans for this project contemplate graveling and tiling 7.15 miles of road. The tiling has been completed and 1.05 miles of road graveled. Work done consists of placing 1,530 cubic yards of gravel and laying 15,600 lineal feet of tile drain.

Sac County, Primary Project No. 11.

This is also a graveling and tiling project covering 11.24 miles of road. About 3.2 miles have been graveled but as yet no tile has been placed. A total of 4,700 cubic yards of gravel have been placed.

Sac County, Primary Road Project No. 12.

Plans for this project also contemplate graveling and tiling on 13.17 miles of road and, except for the tiling, has been completed. 22,569 cubic yards of gravel have been placed and 23,800 lineal feet of tile laid.

Scott County, Federal Aid Project No. 54.

Work on this project started in 1919 and was finished in 1920. The work done during this season consists of moving 20,200 cubic yards of earth and placing 17,000 lineal feet of tile.

Scott County, Federal Aid Project No. 55.

There are 16.62 miles in this project on which work has been nicely started. 4.60 miles have been completed and 23,078 cubic yards of earth have been moved.

Scott County Federal Aid Project No. 114.

Early in the season contracts were awarded for grading and paving 17.24 miles of road. Owing to the car and material situation only a small part of this was actually finished. The work done consists of moving 46,200 cubic yards of earth and laying 41,740 lineal feet of tile. 7.91 miles of concrete base were laid and of this 1.95 miles were covered with bituminous filled brick.

Shelby County, Primary Project No. 42.

Work on this grading project is 50 per cent completed. A total of 109,149 cubic yards of earth has been moved.

Sioux County, Primary Road Project No. 26.

Work on this project has not yet started.

Sioux County, Federal Aid Project No. 28.

A contract for the twenty-four miles of grading was let in 1919 and work has been continued in 1920. The work done during 1920 consists of moving 126,397 cubic yards of earth. This project is now 76.3 per cent completed.

Sioux County, Federal Aid Project No. 84.

Plans for this work contemplate grading and paving 2.94 miles of road. The work done consists of grading 3.67 miles and paving 1.91 miles. 6,300 cubic yards of earth were moved and 20,150 square yards of concrete pavement laid.

Story County, Federal Aid Project No. 62.

Plans for this project contemplate placing tile on 43.8 miles of the county's primary road system. The work done consists of placing 95,021 lineal feet which is approximately 55 per cent of the total amount of tile.

Van Buren County, Federal Aid Project No. 60.

This project, involving 12.75 miles of grading work is 71 per cent completed. A total of 76,500 cubic yards of earth has been moved.

Wapello County, Federal Aid Project No. 42.

The work done on this 10½ mile grading project consists of moving 105,050 cubic yards of earth. The work is now 77 per cent completed.

Webster County, Federal Aid Project No. 13.

In this county a six mile grading, graveling and tiling project has been completed. The work done consists of moving 57,785 cubic yards of earth, placing 12,284 cubic yards of gravel, and laying 23,150 lineal feet of tile drain.

Webster County, Primary Road Project No. 25.

This is a grading and tiling project covering seven miles of primary road, on which 96 per cent of the grading has been done. A total of 38,732 cubic yards of earth have been moved.

Winnebago County, Primary Road Project No. 2.

Plans for this project contemplate grading, graveling and tiling 18.44 miles of primary road. The work done consists of moving 3,600 cubic yards of earth, laying 7,223 lineal feet of tile and placing 748 cubic yards of gravel.

Winnebago County, Federal Aid Project No. 30.

This project contemplates grading, graveling and tiling 7.45 miles of primary road. The grading and tiling have been completed but graveling has only started. 30,800 cubic yards of earth have been moved, 22,533 lineal feet of tile laid and 1,295 cubic yards of gravel placed.

Wright County Federal Aid Project No. 29.

This project contemplates grading and tiling 14.67 miles and graveling 10.68 miles of primary roads. The grading and tiling are well under way but graveling has only started. Part of the graveling is being done by day labor using a fleet of the Commission's trucks, the balance is under contract. The work done consists of moving 66,805 cubic yards of earth, laying 56,387 lineal feet of tile and placing 750 cubic yards of gravel.

Woodbury County, Federal Aid Project No. 2.

The grading on this fifty-five mile project was started in 1918 and finished early in the spring of 1920.

The work of 1920 was mostly finishing work and, but a small yardage was moved. Approximately 6,000 lineal feet of guard rail has been built on this project.

Woodbury County, Primary Road Project No. 45.

The work done consists of placing 2,060 lineal feet of tile drain.

Government Equipment Received. (Refer to Schedule No. 22).

In the 1919 Annual Report attention was called to a law passed by Congress in February, 1919, authorizing the War Department to distribute to the State Highway Departments such equipment as was not needed for use of the army.

The 1919 Annual Report listed (in Schedule 17) the total amount of equipment and material received. During 1920 Iowa has continued to receive equipment under this law, the approximate value of which is estimated to be \$2,309,902.00. A complete list of equipment received to December 1, 1920, will be found in Schedule No. 22.

Cost of Government Equipment to the State.

The cost of transporting such equipment to the state is paid by the Executive Council from the General State Fund. The cost of erecting the necessary buildings, unloading, storing and handling was paid by the Highway Commission from its Maintenance Fund. These expenditures to December 1, 1920, are:

Executive Council for freight and packing.....	\$ 60,512.57
Highway Commission for storage buildings.....	43,695.90
Highway Commission for unloading and storing, etc., approximately	2,791.00

Total cost to State, approximately.....\$107,000.00

It will be noted that the cost of this equipment to the state has been about 4.6% of the estimated value of the equipment.

Assignment of Government Equipment. (Refer to Schedule 23).

Under the law the Commission is authorized to make such apportionment of the Government equipment as will secure to the State the greatest benefit therefrom. A total of 595 trucks, valued at \$1,972,939.00 have been received by the State. 367 trucks valued at \$1,142,814.00 and six tractors valued at \$12,000.00 have been distributed to the counties of the State, nine trucks valued at \$19,850.00 have been assigned to the road work at state institutions, two trucks valued at \$7,700.00 have been assigned to the Executive Council and two assigned to the State Board of Agriculture, and the remainder of the equipment, valued at \$1,131,938.00 has been retained by the Commission. The trucks allotted to the counties, as nearly as possible, have been allotted on the basis of the relation which the area of the county bears to the area of the whole State.

Many of the counties have equipped their trucks with hydraulic hoists and dump bodies and are using them to good advantage in hauling gravel for road and bridge work. Many other counties use the trucks for pulling a drag, or light blade grader in maintaining their primary and county road systems.

Title to Government Equipment.

The title and right of possession of all this equipment remains vested in the Highway Commission. It is assigned to the counties for their use in highway work with that understanding, and the further understanding that the county will maintain the equipment in the best condition practicable, the cost of repairs and maintenance to be paid by the county. The counties have no authority to sell or otherwise dispose of this equipment.

When any piece of such equipment becomes unserviceable the county shall notify the Commission of the fact. It is expected that through the collection and dismantling of unserviceable equipment, by the State, serviceable parts will be reclaimed for use in repairing similar equipment and placing it in serviceable condition.

Schedule No. 23 shows the general assignment of equipment as up to December 1, 1920, and Schedules No. 24 and 25 shows the details of such assignment.

Storage for Government Equipment.

Attention is called to the paragraph in the 1919 Annual Report dealing with the matter of receipt and storage of government equipment. In this paragraph mention is made of the fact that the four buildings provided have only about half the storage space required when all of the State's allotment of material expected has been received. This statement has been borne out in the past year where, owing to the large amount of equipment received, at least another group of four buildings similar to the present ones will be necessary to provide adequate storage.

SCHEDULE TWENTY-ONE

FEDERAL AID AND PRIMARY ROAD WORK PLACED UNDER CONSTRUCTION IN 1920

County	Project Number	Length in Miles	
1 Adair	P. 28	11.83	Grading and tiling
2 Adams	26	9.99	Grading
3 Appanoose	27	11.00	Grading
4 Benton	58	17.89	Grading and paving
5 Black Hawk	P. 51	6.18	Tiling
6 Black Hawk	62	17.17	Tiling
7 Boone	65	22.08	Grading, graveling and tiling
8 Boone	P. 58	13.68	Grading
9 Buena Vista	P. 18	24.32	Grading, graveling and tiling
10 Buena Vista	27	12.84	Graveling and tiling
11 Butler	85	12.85	Grading, graveling and tiling
12 Calhoun	P. 5	4.00	Graveling and tiling
13 Calhoun	P. 16	10.60	Graveling and tiling
14 Calhoun	10		Tiling on 1919 project
15 Carroll	99	8.90	Grading and tiling

SCHEDULE TWENTY-ONE—(CONTINUED)

	County	Project Number	Length in Miles	
16	Carroll	P. 14	10.96	Grading and tiling
17	Cerro Gordo	61	6.05	Grading and paving
18	Cerro Gordo	115	22.07	Grading, paving and tiling
19	Cherokee	116	14.03	Grading
20	Chickasaw	35		Tile placed on 1919 grading
21	Clarke	33	8.45	Grading and tiling
22	Clinton	18	17.58	Grading, paving and tiling
23	Dallas	12		Tiling on 1919 grading
24	Dallas	P. 33	7.14	Grading and tiling
25	Davis	59	10.32	Grading
26	Delaware	4		Tiling on 1919 grading
27	Des Moines	32	4.89	Grading and tiling
28	Des Moines	P. 53	2.35	Grading and tiling
29	Dickinson	P. 55	1.50	Grading and tiling
30	Dickinson	68	4.80	Grading, paving and tiling
31	Dubuque	17	21.19	Grading and tiling
32	Emmet	49	3.94	Tiling
33	Emmet	P. 57	38.70	Tiling
34	Floyd	P. 73	5.40	Tiling
35	Floyd	41	12.39	Grading, paving and tiling
36	Franklin	105	9.84	Grading and tiling
37	Fremont	77	18.07	Grading
38	Fremont	P. 84	1.00	Grading
39	Greene	39	7.41	Grading, paving and tiling
40	Guthrie	51	12.39	Grading and tiling
41	Grundy	19	14.11	Grading and tiling
42	Hamilton	67	11.09	Grading and tiling
43	Hamilton	P. 17	5.04	Graveling and tiling
44	Hardin	P. 88	4.11	Graveling
45	Henry	56	20.62	Grading and tiling
46	Humboldt	46	1.85	Grading, paving and tiling
47	Ida	80	10.02	Grading
48	Johnson	9	1.00	Grading, paving and tiling
49	Johnson	128	2.55	Grading, paving and tiling
50	Keokuk	35	2.20	Grading and tiling
51	Kossuth	111	21.31	Tiling
52	Linn	22	6.50	Grading and paving
53	Linn	96	12.40	Grading and tiling
54	Lucas	63	5.32	Grading
55	Lyon	110	22.81	Grading
56	Marion	7		Guardrail on 1918 project
57	Mills	15	13.10	Grading and tiling
58	Muscatine	40	19.40	Grading and tiling
59	O'Brien	43	22.48	Grading, graveling and tiling
60	Osceola	P. 15	22.54	Grading
61	Palo Alto	109	11.05	Grading, paving and tiling
62	Pocahontas	P. 20	12.00	Grading, graveling and tiling
63	Pocahontas	P. 7	5.87	Grading and tiling
64	Polk	P. 3	4.25	Grading
65	Polk	P. 72	14.85	Grading
66	Polk	80	7.35	Paving
67	Polk	104	6.57	Grading, paving and tiling
68	Pottawattamie	46	2.65	Grading
69	Plymouth	38	20.84	Grading
70	Sac	P. 10	7.15	Graveling and tile
71	Sac	P. 11	11.24	Gravel
72	Sac	P. 12	13.17	Gravel
73	Scott	55	16.62	Grading and tiling
74	Scott	114	17.24	Grading, paving and tiling
75	Shelby	P. 42	11.09	Grading
76	Sioux	P. 26	2.19	Grading, paving and tiling
77	Sioux	84	2.94	Grading and paving
78	Story	P. 62	43.80	Tiling
79	Van Buren	60	12.75	Grading and tiling
80	Wapello	42	10.50	Grading
81	Webster	13	6.00	Grading, graveling and tiling
82	Webster	P. 25	7.00	Grading and tiling
83	Winnebago	P. 2	18.44	Grading, graveling and tiling
84	Winnebago	30	7.45	Grading, graveling and tiling
85	Wright	29	14.67	Grading, graveling and tiling
86	Woodbury	2		Guardrail on 1918 project
Total		86	937.05	

SCHEDULE TWENTY-TWO

GOVERNMENT EQUIPMENT RECEIVED TO DECEMBER 1, 1920

Miscellaneous	Number	Value
Used Commerce three-quarter ton trucks	31	\$ 52,700.00
Used Denby one-ton trucks	1	1,200.00
Used Denby two-ton trucks	8	12,800.00
New Federal 3½-ton trucks	20	77,000.00
Used Federal five-ton trucks	5	19,500.00
New Ford touring cars	29	10,500.00
Used Ford touring cars	45	13,500.00
New four wheel drive three-ton trucks	109	501,400.00
Used Garford ambulance one-ton trucks	1	1,700.00
Used G. M. C. ambulance ¾-ton Trucks	11	22,000.00
New heavy Aviation three-ton trucks	34	129,200.00
Used heavy Aviation three-ton trucks	8	25,840.00
Used Hudson sedan, super-six car	1	2,475.00
Used International two-ton trucks	2	3,200.00
Used Kelly-Springfield 3½-ton trucks	25	82,875.00
Used light Aviation one-ton trucks	26	52,000.00
Used Master three-ton trucks	1	2,692.00
New Nash Quad two-ton trucks	124	408,000.00
Used Nash Quad two-ton trucks	53	129,161.00
Used Overland touring cars	3	2,283.00
Used Packard three-ton trucks	48	153,624.00
Used Peerless three-ton trucks	5	13,500.00
New Pierce-Arrow two-ton trucks	67	268,000.00
Used Pierce-Arrow two-ton trucks	3	9,000.00
Used Republic 3¼-ton trucks	1	2,250.00
Used Sterling 2½-ton trucks	6	15,300.00
Used White five-ton trucks	6	25,500.00
Used Wilson two-ton trucks	1	1,687.00
Tractors		
New Cleveland tractors	1	1,400.00
New Gray wide-Drum 18-36 tractors	10	20,000.00
New Holt Caterpillar 20-120 tractors	4	24,000.00
New International 15-30 tractors	2	4,000.00
Miscellaneous		
New Ford spare parts, tons	20	10,000.00
New Commerce spare parts, tons	1	500.00
New Federal spare parts, tons	1	500.00
New Gray tractor spare parts, tons	1	500.00
New heavy Aviation spare parts, tons	4	2,000.00
New Holt tractor spare parts, tons	1	500.00
New light Aviation spare parts, tons	2	1,000.00
New Nash Quad spare parts, tons	160	80,000.00
New Packard spare parts, tons	15	7,500.00
New Peerless spare parts, tons	1	500.00
New Pierce-Arrow spare parts, tons	25	12,500.00
Used blade graders, Western	3	2,700.00
Used back fillers, Parsons	1	2,500.00
Used concrete mixers	5	11,000.00
Used concrete buggies	25	500.00
Used chain hoists	3	140.00
New car, 36 gauge R. R.	1	1,000.00
New compasses, Cruising	38	76.00
New carts, tank 165 gal.	13	650.00
Used crane, Byers	1	2,500.00
New delivery bodies, Ford	12	720.00
Used excavator, Keystone Elevating	1	3,000.00
Used flare lights	5	50.00
New forges, portable	25	500.00
Used forks, stone	4	8.00
New fence posts, angle	2,500	1,250.00
New gunpowder, blasting, pounds	55,000	27,500.00
New hoist, 3-drum steam engine and boiler	1	1,000.00
New hoist, 1-drum steam engine	1	100.00
New hoist 1-drum geared hand	11	550.00
New harness, double sets	50	1,250.00
Used harrows, disc	1	100.00
New handles, axe and hatchet	48	12.00
Used hoes, grub and mortar	16	32.00
New hatchets	290	290.00
New hopper, 2-way, gated	1	25.00
New lanterns	280	280.00
Used locomotive	1	10,000.00
Used levels, dumpy	4	400.00

SCHEDULE TWENTY-TWO—(CONTINUED)

Miscellaneous	Number	Value
Used mauls	25	50.00
Used mattocks	30	60.00
New pumps, power, portable	25	12,500.00
New pumps, centrifugal	4	1,000.00
New pumps, hand piston	63	1,260.00
New plainimeters	4	190.00
Used plow, road	1	10.00
Used picks	49	49.00
New roofing corrugated metal sheets	2,278	1,139.00
New roofing, corrugated trench shelters	9	900.00
New rope, manila, feet	10,000	600.00
New saws, power, portable	3	300.00
Used slip scrapers	3	30.00
New steel tool, tons	2	1,000.00
New shovels	350	700.00
New tanks, 165 gallon	25	500.00
New tanks, 480 gallon, knocked down	5	100.00
New tables, folding, field	7	34.00
Used transits	2	200.00
New wagons, sprinkling, 650 gallons	6	1,800.00
Used wagons, dump	10	1,900.00
Used wagons, escort	24	2,400.00
New wagons, escort	48	9,600.00
Used wagons, heavy general	15	3,000.00
New wheelbarrows	70	700.00
		\$ 2,309,902.00

SCHEDULE TWENTY-THREE
GENERAL ASSIGNMENT OF GOVERNMENT EQUIPMENT

Description	Assigned to				Reserved by Highway Commission	
	Counties		State Institutional Roads		No.	Value
	No.	Value	No.	Value		
Used Commerce trucks	30	\$ 51,000			1	\$ 1,700
Used Denby trucks	1	1,200				
Used Denby trucks	8	12,800				
New Federal trucks	4	15,400	5	19,250	11	42,850
Used Federal trucks	5	19,500				
New Ford touring cars					20	10,500
Used Ford touring cars					45	13,500
New four wheel drive trucks	15	69,000			94	432,400
Used Garford car					1	1,700
Used G. M. O. trucks					11	22,000
New heavy Aviation trucks	8	30,400			26	98,800
Used heavy Aviation trucks	8	25,840				
Used Hudson sedan					1	2,475
Used International trucks	2	3,200				
Used Kelly-Springfield trucks	25	82,875				
New light Aviation trucks	12	24,000	8	16,000	6	12,000
Used Master trucks	1	2,692				
New Nash Quad trucks	74	240,500			50	162,500
Used Nash Quad trucks	53	129,161				
Used Overland touring cars					3	2,283
Used Packard trucks	48	156,624				
Used Peerless trucks	5	13,500				
Used Pierce-Arrow trucks	67	268,000				
Used Pierce-Arrow trucks	3	9,000				
Used Republic trucks	1	2,500				
Used Sterling trucks	6	15,200				
Used White trucks					6	25,500
Used Wilson trucks	1	1,687				
New Cleveland tractors					1	1,400
New Gray tractors	6	12,000			4	8,000
New Holt tractors					4	24,000
New International tractors					2	4,000
Equipment, miscellaneous						223,555
Total		\$ 1,185,929		\$ 35,250		\$ 1,088,723

SCHEDULE TWENTY-FOUR

DETAIL OF ASSIGNMENTS OF GOVERNMENT EQUIPMENT TO COUNTIES, DECEMBER 1, 1920

Location	Description	Value	
		Detail	Total
Adair	1 new Light Aviation one-ton truck	\$ 2,000	
Adair	1 used Kelly-Springfield 3½-ton truck	3,315	
Adair	1 used Packard three-ton truck	3,263	
Adair	1 used Nash Quad two-ton truck	2,437	\$ 11,015
Adams	1 new Pierce-Arrow two-ton truck	4,000	
Adams	1 used Nash Quad two-ton truck	2,437	6,437
Allamakee	1 new Pierce-Arrow two-ton truck	4,000	
Allamakee	1 used Packard three-ton truck	3,263	
Allamakee	1 new Nash Quad two-ton truck	3,250	10,513
Appanoose	1 used Packard three-ton truck	3,263	
Appanoose	1 new Pierce-Arrow two-ton truck	4,000	
Appanoose	1 used Nash Quad two-ton truck	2,437	9,700
Audubon	1 new Light Aviation one-ton truck	2,000	
Audubon	1 new Pierce-Arrow two-ton truck	4,000	
Audubon	1 used Nash Quad two-ton truck	2,437	8,437
Benton	1 used Packard three-ton truck	3,263	
Benton	1 new Pierce-Arrow two-ton truck	4,000	
Benton	1 new Nash Quad two-ton truck	3,250	10,513
Black Hawk	1 new Pierce-Arrow two-ton truck	4,000	
Black Hawk	1 new Quad two-ton truck	3,250	
Black Hawk	2 used Nash Quad two-ton trucks	4,874	
Black Hawk	1 used Sterling 2½-ton truck	2,550	14,674
Boone	1 new Federal 3½-ton truck	3,850	
Boone	1 new F. W. D. three-ton truck	4,600	
Boone	1 new Gray tractor	2,000	
Boone	1 used Kelly-Springfield 3½-ton truck	3,315	
Boone	1 used Nash Quad two-ton truck	2,437	16,292
Bremer	1 new Pierce-Arrow two-ton truck	4,000	
Bremer	1 new Nash Quad two-ton truck	3,250	
Bremer	2 used Nash Quad two-ton trucks	4,874	12,124
Buchanan	1 used Kelly-Springfield 3½-ton truck	3,315	
Buchanan	1 new Nash Quad two-ton truck	3,250	
Buchanan	1 used Sterling 2½-ton truck	2,550	9,115
Buena Vista	1 used Commerce ¾-ton truck	1,700	
Buena Vista	1 new Gray tractor	2,000	
Buena Vista	2 used Packard three-ton trucks	6,526	
Buena Vista	1 new Pierce-Arrow two-ton truck	4,000	
Buena Vista	1 new Nash Quad two-ton truck	3,250	17,476
Butler	1 new F. W. D. three-ton truck	4,500	
Butler	1 used Heavy Aviation three-ton truck	3,220	
Butler	1 used Packard three-ton truck	3,263	
Butler	1 used Nash Quad two-ton truck	2,437	13,530
Calhoun	1 new Gray tractor	2,000	
Calhoun	2 used Packard three-ton trucks	6,526	
Calhoun	1 new Pierce-Arrow two-ton truck	4,000	
Calhoun	1 new Nash Quad two-ton truck	3,250	15,776
Carrroll	1 used Packard three-ton truck	3,263	
Carrroll	2 new Pierce-Arrow two-ton trucks	8,000	11,263
Cass	1 new Light Aviation one-ton truck	2,000	
Cass	1 new Pierce-Arrow two-ton truck	4,000	
Cass	1 used Nash Quad two-ton truck	2,437	8,437
Cerro Gordo	2 used Commerce ¾-ton trucks	3,400	
Cerro Gordo	1 new Heavy Aviation three-ton truck	3,800	
Cerro Gordo	1 used International two-ton truck	1,600	
Cerro Gordo	2 used Nash Quad two-ton trucks	4,874	13,674
Cherokee	1 new F. W. D. three-ton truck	4,600	
Cherokee	1 used Packard three-ton truck	3,263	
Cherokee	1 new Nash Quad two-ton truck	3,250	11,113
Cedar	1 used Kelly-Springfield 3½-ton truck	3,315	
Cedar	1 new Nash Quad two-ton truck	3,250	6,565
Chickasaw	1 new Gray tractor	2,000	
Chickasaw	1 used Kelly-Springfield 3½-ton truck	3,315	
Chickasaw	1 new Nash Quad two-ton truck	3,250	
Chickasaw	1 used Nash Quad two-ton truck	2,437	11,002
Clarke	1 new Heavy Aviation three-ton truck	3,800	
Clarke	1 used Heavy Aviation three-ton truck	3,220	
Clarke	1 new Pierce-Arrow two-ton truck	4,000	11,030

SCHEDULE TWENTY-FOUR—(CONTINUED)

Location	Description	Value	
		Detail	Total
Clayton	2 used Commercere ¾-ton trucks	3,400	
Clayton	1 new Pierce-Arrow two-ton truck	4,000	
Clayton	1 new Nash Quad two-ton truck	3,250	10,650
Clay	1 new F. W. D. three-ton truck	4,600	
Clay	1 new Pierce-Arrow two-ton truck	4,000	
Clay	1 new Nash Quad two-ton truck	3,250	
Clay	1 used Nash Quad two-ton truck	2,437	14,527
Clinton	1 new Federal ¾-ton truck	3,850	
Clinton	1 used Kelly-Springfield ¾-ton truck	3,315	
Clinton	1 new Pierce-Arrow two-ton truck	4,000	11,165
Crawford	1 used Denby two-ton truck	1,600	
Crawford	2 new Pierce-Arrow two-ton trucks	8,000	9,600
Dallas	1 new Heavy Aviation three-ton truck	3,800	
Dallas	1 used Kelly-Springfield ¾-ton truck	3,315	
Dallas	1 used Pierce-Arrow two-ton truck	3,000	10,115
Davis	1 used Commercere ¾-ton truck	1,700	
Davis	1 used Denby two-ton truck	1,600	
Davis	1 used Packard three-ton truck	3,263	
Davis	1 new Pierce-Arrow two-ton truck	4,000	
Davis	1 used Nash Quad two-ton truck	2,437	13,000
Decatur	1 used Denby two-ton truck	1,600	1,600
Delaware	1 used Heavy Aviation three-ton truck	3,230	
Delaware	1 used Kelly-Springfield ¾-ton truck	3,315	
Delaware	1 new Nash Quad two-ton truck	3,250	
Delaware	1 used Sterling ¾-ton truck	2,550	12,345
Des Moines	2 used Commercere ¾-ton trucks	3,400	
Des Moines	1 used Kelly-Springfield ¾-ton truck	3,315	
Des Moines	1 new Pierce-Arrow two-ton truck	4,000	
Des Moines	1 new Nash Quad two-ton truck	3,250	13,965
Dickinson	1 new F. W. D. three-ton truck	4,600	
Dickinson	1 used Kelly-Springfield ¾-ton truck	3,315	
Dickinson	1 new Nash Quad two-ton truck	3,250	11,165
Dubuque	1 used Kelly-Springfield ¾-ton truck	3,315	
Dubuque	1 used Packard three-ton truck	3,263	
Dubuque	1 new Pierce-Arrow two-ton truck	4,000	
Dubuque	1 new Nash Quad two-ton truck	3,250	12,828
Emmet	2 used Packard three-ton trucks	6,526	
Emmet	1 used Nash Quad two-ton truck	2,437	
Emmet	1 new Nash Quad two-ton truck	3,250	12,213
Fayette	1 new Heavy Aviation three-ton truck	3,800	
Fayette	1 used Kelly-Springfield ¾-ton truck	3,315	
Fayette	1 new Pierce-Arrow two-ton truck	4,000	
Fayette	1 used Nash Quad two-ton truck	2,437	13,552
Floyd	1 new Heavy Aviation three-ton truck	3,800	
Floyd	1 used Kelly-Springfield ¾-ton truck	3,315	
Floyd	1 used Packard three-ton truck	3,263	
Floyd	2 used Peerless three-ton trucks	5,400	15,778
Franklin	2 new F. W. D. three-ton trucks	9,200	
Franklin	1 used Nash Quad two-ton truck	2,437	11,637
Fremont	1 used Packard three-ton truck	3,263	
Fremont	1 new Pierce-Arrow two-ton truck	4,000	
Fremont	2 new Nash Quad two-ton trucks	6,500	13,763
Greene	1 new Light Aviation one-ton truck	2,000	
Greene	1 new Pierce-Arrow two-ton truck	4,000	
Greene	1 used Nash Quad two-ton truck	2,437	8,437
Grundy	1 new Pierce-Arrow two-ton truck	4,000	
Grundy	2 new Nash Quad two-ton trucks	6,500	
Grundy	1 used Nash Quad two-ton truck	2,437	12,937
Guthrie	1 used Denby two-ton truck	1,600	
Guthrie	1 new Pierce-Arrow two-ton truck	4,000	
Guthrie	2 new Nash Quad two-ton trucks	6,500	12,100
Hamilton	1 used Commercere ¾-ton truck	1,700	
Hamilton	1 new Pierce-Arrow two-ton truck	4,000	
Hamilton	1 new Nash Quad two-ton truck	3,250	8,950
Hancock	1 used Commercere ¾-ton truck	1,700	
Hancock	2 new F. W. D. three-ton trucks	9,200	
Hancock	1 used Packard three-ton truck	3,263	
Hancock	1 used Nash Quad two-ton truck	2,437	16,600
Hardin	1 new Pierce-Arrow two-ton truck	4,000	
Hardin	1 new Nash Quad two-ton truck	3,250	
Hardin	1 used Nash Quad two-ton truck	2,437	

SCHEDULE TWENTY-FOUR—(CONTINUED)

Location	Description	Value	
		Detail	Total
Hardin	1 used Sterling ¾-ton truck	2,550	12,237
Harrison	1 new Light Aviation one-ton truck	2,000	
Harrison	1 new Pierce-Arrow two-ton truck	4,000	
Harrison	1 new Nash Quad two-ton truck	3,250	
Harrison	2 used Nash Quad two-ton trucks	4,874	14,124
Henry	2 used Commercere ¾-ton trucks	3,400	
Henry	1 new F. W. D. three-ton truck	4,600	
Henry	1 used Kelly-Springfield ¾-ton truck	3,315	
Henry	1 new Nash Quad two-ton truck	3,250	14,565
Howard	1 new Gray tractor	2,000	
Howard	2 used Heavy Aviation three-ton trucks	6,460	
Howard	1 new Nash Quad two-ton truck	3,250	11,710
Humboldt	1 used Commercere ¾-ton truck	1,700	
Humboldt	1 new Nash Quad two-ton truck	3,250	
Humboldt	1 used Nash Quad two-ton truck	2,437	7,357
Ida	1 new Light Aviation one-ton truck	2,000	
Ida	1 used Packard three-ton truck	3,263	
Ida	1 used Nash Quad two-ton truck	2,437	7,752
Iowa	1 new Pierce-Arrow two-ton truck	4,000	
Iowa	1 new Nash Quad two-ton truck	3,250	7,250
Jackson	1 used Master three-ton truck	2,682	
Jackson	1 new Pierce-Arrow two-ton truck	4,000	
Jackson	1 new Nash Quad two-ton truck	3,250	9,942
Jasper	1 used Commercere ¾-ton truck	1,700	
Jasper	1 new Pierce-Arrow two-ton truck	4,000	
Jasper	1 used Nash Quad two-ton truck	2,437	8,137
Jefferson	2 used Commercere ¾-ton trucks	3,400	
Jefferson	1 new Pierce-Arrow two-ton truck	4,000	
Jefferson	1 new Nash Quad two-ton truck	3,250	10,650
Johnson	1 used Commercere ¾-ton truck	1,700	
Johnson	1 used Kelly-Springfield ¾-ton truck	3,315	
Johnson	1 new Nash Quad two-ton truck	3,250	
Johnson	1 used Republic ¾-ton truck	2,250	10,515
Jones	1 used Packard three-ton truck	3,263	
Jones	1 new Pierce-Arrow two-ton truck	4,000	
Jones	1 new Nash Quad two-ton truck	3,250	10,515
Keokuk	2 new Pierce-Arrow two-ton trucks	8,000	
Keokuk	1 new Nash Quad two-ton truck	3,250	
Keokuk	1 used Nash Quad two-ton truck	2,437	13,687
Kossuth	2 new Light Aviation one-ton trucks	4,000	
Kossuth	1 used Kelly-Springfield ¾-ton truck	3,315	
Kossuth	1 used Packard three-ton truck	3,263	
Kossuth	1 new Pierce-Arrow two-ton truck	4,000	14,578
Lee	1 used Commercere ¾-ton truck	1,700	
Lee	1 used Kelly-Springfield ¾-ton truck	3,315	
Lee	1 new Nash Quad two-ton truck	3,250	8,265
Linn	1 used Federal five-ton truck	3,900	
Linn	1 new Pierce-Arrow two-ton truck	4,000	
Linn	1 used Pierce-Arrow two-ton truck	3,000	
Linn	1 new Nash Quad two-ton truck	3,250	16,700
Louisia	1 used Sterling ¾-ton truck	2,550	
Louisia	2 used Commercere ¾-ton trucks	3,400	
Lucas	1 new Nash Quad two-ton truck	3,250	6,650
Lucas	1 new Nash Quad two-ton truck	3,250	
Lucas	1 used Nash Quad two-ton truck	2,437	5,687
Lyon	1 new F. W. D. three-ton truck	4,600	
Lyon	1 used Packard three-ton truck	3,263	
Lyon	1 new Nash Quad two-ton truck	3,250	11,113
Madison	1 used Peerless three-ton truck	2,700	
Madison	1 new Pierce-Arrow two-ton truck	4,000	
Madison	1 used Nash Quad two-ton truck	2,437	9,137
Mahaska	1 used Packard three-ton truck	3,263	
Mahaska	1 new Pierce-Arrow two-ton truck	4,000	
Mahaska	1 new Nash Quad two-ton truck	3,250	
Mahaska	1 used Nash Quad two-ton truck	2,437	12,962
Marion	2 used Commercere ¾-ton trucks	3,400	
Marion	1 new Nash Quad two-ton truck	3,250	
Marion	1 used Wilson two-ton truck	1,687	8,334
Marshall	2 used Packard three-ton trucks	6,526	
Marshall	1 new Heavy Aviation three-ton truck	3,800	
Marshall	1 used Kelly-Springfield ¾-ton truck	3,315	

SCHEDULE TWENTY-FOUR—(CONTINUED)

SCHEDULE TWENTY-FOUR—(CONTINUED)

Location	Description	Value	
		Detail	Total
Marshall	1 new Pierce-Arrow two-ton truck	4,000	
Marshall	1 used Nash Quad two-ton truck	2,437	20,078
Mills	2 used Packard three-ton trucks	6,535	
Mills	1 new Pierce-Arrow two-ton truck	4,000	
Mills	1 new Nash Quad two-ton truck	3,250	13,776
Mitchell	3 used Kelly-Springfield 3½-ton trucks	9,945	
Mitchell	1 new Nash Quad two-ton truck	3,250	
Mitchell	1 used Nash Quad two-ton truck	2,437	15,628
Monona	1 used Commerce ¾-ton truck	1,700	
Monona	1 used Packard three-ton truck	3,263	
Monona	1 new Nash Quad two-ton truck	3,250	8,213
Monroe	1 used Commerce ¾-ton truck	1,700	
Monroe	1 new Pierce-Arrow two-ton truck	4,000	
Monroe	2 used Nash Quad two-ton trucks	4,874	10,574
Montgomery	1 used Commerce ¾-ton truck	1,700	
Montgomery	1 used Federal five-ton truck	3,900	
Montgomery	1 used Kelly-Springfield 3½-ton truck	3,315	
Montgomery	1 new Heavy Aviation three-ton truck	3,800	
Montgomery	1 new Pierce-Arrow two-ton truck	4,000	16,715
Muscatine	1 new Heavy Aviation three-ton truck	3,800	
Muscatine	1 used Heavy Aviation 3-ton truck	3,230	
Muscatine	1 used International two-ton truck	1,600	
Muscatine	1 new Nash Quad two-ton truck	3,250	11,880
O'Brien	1 used Denby two-ton truck	1,600	
O'Brien	4 used Packard three-ton trucks	13,052	
O'Brien	1 new Pierce-Arrow two-ton truck	4,000	18,652
O'Brien	1 used Packard three-ton truck	3,263	
O'Brien	1 new Pierce-Arrow two-ton truck	4,000	
O'Brien	1 new Nash Quad two-ton truck	3,250	10,513
O'Brien	2 used Packard three-ton trucks	6,526	
O'Brien	1 new Pierce-Arrow two-ton truck	4,000	
O'Brien	1 used Pierce-Arrow two-ton truck	3,000	
O'Brien	1 used Nash Quad two-ton truck	2,437	15,953
O'Brien	1 used Packard three-ton truck	3,263	
O'Brien	1 new Pierce-Arrow two-ton truck	4,000	
O'Brien	1 new Nash Quad two-ton truck	3,250	10,513
O'Brien	1 new Pierce-Arrow two-ton truck	4,000	
O'Brien	2 new Nash Quad two-ton trucks	6,500	10,500
O'Brien	1 used Packard three-ton truck	3,263	
O'Brien	1 new Pierce-Arrow two-ton truck	4,000	
O'Brien	2 new Nash Quad two-ton trucks	6,500	13,763
O'Brien	1 used Federal five-ton truck	3,900	
O'Brien	4 new Nash Quad two-ton trucks	13,000	16,900
O'Brien	2 new Light Aviation one-ton trucks	4,000	
O'Brien	1 used Packard three-ton truck	3,263	
O'Brien	1 new Pierce-Arrow two-ton truck	4,000	
O'Brien	1 new Nash Quad two-ton truck	3,250	17,063
O'Brien	1 used Sterling 2½-ton truck	3,550	
O'Brien	1 used Commerce ¾-ton truck	1,700	
O'Brien	1 new Pierce-Arrow two-ton truck	4,000	
O'Brien	1 used Nash Quad two-ton truck	2,437	8,137
O'Brien	1 new Pierce-Arrow two-ton truck	4,000	
O'Brien	1 new Nash Quad two-ton truck	3,250	
O'Brien	1 used Nash Quad two-ton truck	2,437	9,687
O'Brien	1 used Denby two-ton truck	1,600	
O'Brien	1 new Gray tractor	2,000	
O'Brien	1 new Light Aviation one-ton truck	2,000	
O'Brien	1 new Pierce-Arrow two-ton truck	4,000	9,600
O'Brien	1 new Pierce-Arrow two-ton truck	4,000	
O'Brien	2 new Nash Quad two-ton trucks	6,500	10,500
O'Brien	1 new Light Aviation one-ton truck	2,000	
O'Brien	1 new Pierce-Arrow two-ton truck	4,000	
O'Brien	1 new Nash Quad two-ton truck	3,250	
O'Brien	1 used Nash Quad two-ton truck	2,437	11,687
O'Brien	1 used Packard three-ton truck	3,263	
O'Brien	1 new Pierce-Arrow two-ton truck	4,000	
O'Brien	2 new Nash Quad two-ton trucks	6,500	13,763
O'Brien	1 new F. W. D. three-ton truck	4,600	
O'Brien	1 used Packard three-ton truck	3,263	
O'Brien	2 used Nash Quad two-ton trucks	4,874	12,737
O'Brien	1 new F. W. D. three-ton truck	4,900	

Location	Description	Value	
		Detail	Total
Tama	1 used Packard three-ton truck	3,263	
Tama	1 used Nash Quad two-ton truck	2,437	10,300
Taylor	1 new Pierce-Arrow two-ton truck	4,000	
Taylor	1 used Nash Quad two-ton truck	2,437	6,437
Union	1 new F. W. D. three-ton truck	4,900	
Union	1 new Pierce-Arrow two-ton truck	4,000	
Union	1 used Nash Quad two-ton truck	2,437	11,037
Van Buren	1 used Kelly-Springfield 3½-ton truck	3,315	
Van Buren	1 new Heavy Aviation three-ton truck	3,800	
Van Buren	1 used Packard three-ton truck	3,263	
Van Buren	1 used Nash Quad two-ton truck	2,437	12,815
Wapello	2 used Commerce ¾-ton trucks	3,400	
Wapello	1 used Denby two-ton truck	1,600	
Wapello	1 new Pierce-Arrow two-ton truck	4,000	9,000
Warren	1 used Denby one-ton truck	1,200	
Warren	1 new Pierce-Arrow two-ton truck	4,000	
Warren	2 new Nash Quad two-ton trucks	6,500	11,700
Washington	2 used Commerce ¾-ton trucks	3,400	
Washington	1 used Kelly-Springfield 3½-ton truck	3,315	
Washington	1 new Nash Quad two-ton truck	3,250	9,965
Wayne	1 used Heavy Aviation 3-ton truck	3,230	
Wayne	1 used Packard three-ton truck	3,263	
Wayne	1 new Pierce-Arrow two-ton truck	4,000	10,493
Webster	1 new F. W. D. three-ton truck	4,900	
Webster	1 used Packard three-ton truck	3,263	
Webster	1 new Pierce-Arrow two-ton truck	4,000	
Webster	1 new Nash Quad two-ton truck	3,250	15,113
Winnebago	1 new Federal 3½-ton truck	3,850	
Winnebago	1 new Nash Quad two-ton truck	3,250	
Winnebago	2 used Nash Quad two-ton trucks	4,874	11,974
Winneshiek	1 used Peerless three-ton truck	2,700	
Winneshiek	1 new Nash Quad two-ton truck	3,250	
Winneshiek	2 used Nash Quad two-ton trucks	4,874	10,824
Woodbury	1 used Denby two-ton truck	1,600	
Woodbury	2 used Packard three-ton trucks	6,526	
Woodbury	1 new Pierce-Arrow two-ton truck	4,000	
Woodbury	1 new Nash Quad two-ton truck	3,250	15,376
Worth	1 used Kelly-Springfield 3½-ton truck	3,315	
Worth	1 new Pierce-Arrow two-ton truck	4,000	
Worth	2 new Nash Quad two-ton trucks	6,500	13,815
Wright	1 new Federal 3½-ton truck	3,850	
Wright	1 new Pierce-Arrow two-ton truck	4,000	
Wright	1 used Pierce-Arrow two-ton truck	3,000	10,850

Total Equipment Assigned to Counties to Dec. 1, 1920		
Trucks	367	Value \$1,142,714.00
Tractors	6	Value 12,000.00
Trucks Undelivered	10	Value 31,215.00

SCHEDULE TWENTY-FIVE

DETAIL ASSIGNMENT OF GOVERNMENT EQUIPMENT TO STATE INSTITUTIONAL ROADS.

Location	Description	Value	
		Detail	Total
Anamosa	1 new Light Aviation one-ton truck	\$ 2,000	
Clarinda	1 new Light Aviation one-ton truck	2,000	
Eldora	1 new Light Aviation one-ton truck	2,000	
Cherokee	1 new Light Aviation one-ton truck	2,000	
Ft. Madison	1 new Light Aviation one-ton truck	2,000	
Glenwood	1 new Light Aviation one-ton truck	2,000	
Independence	1 new Light Aviation one-ton truck	2,000	
Woodward	1 new Light Aviation one-ton truck	2,000	
State Roads	1 new Federal 3½-ton truck	3,850	
Board of Agriculture	2 new Federal 3½-ton trucks	7,700	
Executive Council	2 new Federal 3½-ton trucks	7,700	
Total			\$35,250.00

Chapter IX. Department of Road Maintenance

Summary.

The policy of the Commission regarding primary road maintenance is to maintain the primary road system in the best condition possible. This policy applies to roads which have not been built as well as to finished roads. The Commission wishes the construction of the primary road system to go forward as rapidly as possible, but realizes that it will be a number of years before all of these roads are built. In the meantime the public is entitled to a good, smooth, safe road over which to travel. With this view in mind the Commission has co-operated with the boards of supervisors in an endeavor to keep all the primary roads in the best possible condition at all times.

The chief activities of the Commission in road maintenance have been, the adjustment of one hundred and twenty-two road complaints; the collection of data for, and the preparation of a map showing the condition of the primary road system December 1, 1920; the preparation of a primary road number map and guide and the numbering of the primary roads in the field; the adoption of several new maintenance forms; the completion of forty-six corrected county maps; the compiling of a maintenance budget of \$1,368,000; the publication of a detour manual; the writing of a number of maintenance form letters on vital maintenance points, and the approval of contracts for \$12,620.00 of maintenance work.

Organization.

The law places the responsibility for the maintenance of the primary road system, first, upon the county boards of supervisors, and second, upon the State Highway Commission. The organization of the Maintenance Department of the Commission has therefore been closely allied with the county organizations. The maintenance work has been done by the counties working under the supervision of, and with the assistance of the State Highway Commission. Full time of the maintenance engineer and a part of the district engineers' time have been spent in this work.

Complaints.

During the fiscal year, one hundred and twenty-eight complaints were filed with the Commission. The complaints were divided among the different road systems as follows:

Primary system	14	complaints
County system	19	"
Township system	95	"

All of the primary and county road complaints have been adjusted, and only six of the township complaints are now pending. This makes a total of one hundred and twenty-two complaints investigated and adjusted.

Schedule twenty-six shows the number of complaints filed and adjusted in the different counties. A comparison of the number of complaints filed during the last three years is as follows:

1918	62	complaints
1919	114	"
1920	128	"

The total number of complaints filed with the Commission since 1913 is nine hundred and forty-six.

Primary Road Condition Map.

Annually the Commission collects the data for and prepares a map showing the condition of the primary road system on December 1st. The roads are classified as follows: First, paving; second, gravel; third, built to permanent grade; and fourth, not built. The mileage of the primary road system in each of the above named classes was on December 1, 1920, "paving"—sixty-six and eight-tenths miles, "gravel"—seven hundred ninety-two and three-tenths miles, "built to permanent grade"—one thousand twenty-one and four-tenths miles, and "not built"—four thousand seven hundred thirty-eight and six-tenths miles. A copy of the condition map is appended hereto. A comparison of this map with the condition map filed with the 1919 report shows graphically the location and the extent of the construction work accomplished during the year.

Primary Road Numbering.

In order to get the greatest value from the Primary Road System, it must be marked in the field with some distinctive marking showing the different routes. Before the system could be marked, it was necessary that each road be given some designa-

tion. It was finally decided to number all the roads in the system, publish a map showing such numbers, and mark the roads temporarily by painting the numbers on poles or other objects along the way.

About July 1st the proposition of painting the primary road numbers in the field was taken up with the different counties. The plan met with almost universal approval. Every county in the State except Carroll signified its desire to co-operate in the matter. Bids were received and the paint and stencils were bought in quantities sufficient for the whole State. The painting proper was done by crews appointed by the different counties. The Commission issued instructions for this painting so that the work would be uniform the State over. On the whole the marking was very satisfactory, but in a few counties the work will have to be gone over.

Note: For the cost of marking the primary road numbers refer to Schedule number sixty-seven, Chapter XIV.

Primary Road Guide.

To make the marking of the roads more useful it was necessary to prepare a road guide showing the numbers of the roads and the towns through which they pass. A very complete guide was compiled and published. Copies have been distributed to all county supervisors, auditors and engineers. The guide may be obtained by the general public at cost price by addressing the Commission.

New Maintenance Forms.

Forms number 359 and 360 were adopted during the year and form number 357 was revised. Form number 359 is a rental agreement to be used when county owned machinery is used on primary roads. Form number 360 is an inspection form, which is filed by the district engineer after each road maintenance inspection. In August a conference was held with the State Auditor and form number 357 was greatly simplified to relieve the county engineers of considerable needless detail work.

County Maps.

At the beginning of the year the supply of county maps was getting low. For some counties it was entirely exhausted. It was necessary to purchase a new supply or to make up tracings of

the various county maps from which a supply of prints could be produced. As the latter was much cheaper and more satisfactory it was decided to proceed to make up such tracings. Printed maps were sent to the county engineers and were corrected up-to-date by them. These corrected maps were then returned to the Commission, and are being traced. Vandykes are being made from these tracings and blue line prints thus secured. These prints make very satisfactory working maps, and changes can be made in the tracings in a short time with very little expense. To date forty-six county maps have been finished and twenty-six more are partially completed.

The average cost of the tracings for the forty-six completed maps is \$11.56 per county. Any number of prints desired may be made at a cost of about fifteen cents each.

Maintenance Budget.

The road law provides that primary road maintenance should after July 1, 1920, be paid from primary road funds. In order to administer the funds without confusion a primary road maintenance budget for the period from July 1, 1920, to January 1, 1921, was prepared. Each county engineer was asked to submit a detailed estimate of the funds required for such maintenance. These estimates were checked and the final budget was adopted by the Commission on July 1st. The amounts set aside for maintenance in the different counties have proven sufficient in eighty per cent of the counties. A few additional appropriations have been found necessary, and have been made by the Commission from time to time.

Schedule twenty-seven shows the budget including all additions to December 1st. It should be understood that the maintenance budget in any county does not affect in any way the total allotment of primary funds for that county. The allotment of primary funds to each county is determined by law. The maintenance budget for any county is set aside from the allotment of primary funds for that county.

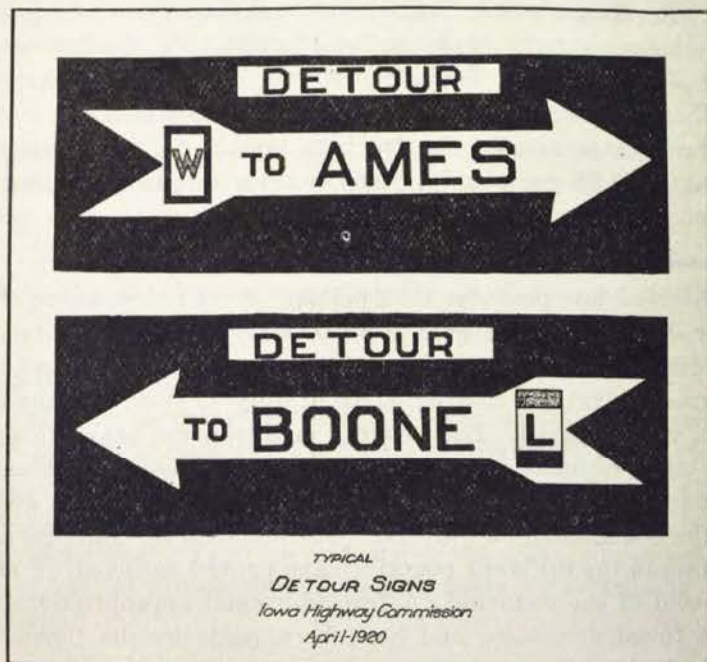
Note: For a statement of maintenance expenditures from the above budget see Schedule number sixty-seven, Chapter XIV.

Detour Manual.

Realizing the importance of providing suitable detours around roads closed for construction or maintenance, the Commission published and distributed to its employees and local road offi-

cials, a Detour Manual. This Manual shows the proper way to lay out, mark, and maintain detours, and fixes the responsibility for such work. A standard detour sign was adopted. The standard sign is twenty-eight inches long and ten inches wide, and is printed on heavy yellow card board. Fifty-one counties have purchased a supply of these signs.

Typical signs are shown below:



Maintenance Letters.

Maintenance inspection trips in different parts of the State impressed upon the maintenance engineer certain common defects in county maintenance. The attention of the county engineers was called to these practices by special maintenance letters with accompanying blue prints. Suggestions for the correction of these defective practices were included in the letters. Two such letters were sent out during the year.

Contract Approval.

Most of the maintenance work on the primary system is being done by day labor, but some work has been let by contract by the counties. Contracts have been approved by the Commission for \$12,620 of maintenance work.

SCHEDULE TWENTY-SIX

ROAD COMPLAINTS

County	Filed	Adjusted	County	Filed	Adjusted
Adair	3	3	Johnson	2	2
Adams	---	---	Jones	1	---
Allamakee	2	2	Keokuk	---	---
Appanoose	4	4	Kossuth	---	---
Audubon	2	2	Lee	---	---
Benton	1	1	Linn	2	2
Black Hawk	---	---	Louisa	1	1
Boone	2	2	Lucas	1	1
Bremer	1	1	Lyon	---	---
Buchanan	---	---	Madison	7	7
Buena Vista	1	1	Mahaska	3	2
Butler	4	4	Marion	---	---
Calhoun	---	---	Marshall	---	---
Carroll	1	1	Mills	---	---
Cass	1	1	Mitchell	2	2
Cerro Gordo	---	---	Monona	---	---
Cherokee	1	1	Monroe	2	2
Cedar	2	2	Montgomery	---	---
Chickasaw	---	---	Muscatine	1	1
Clarke	4	4	O'Brien	---	---
Clay	---	---	Osceola	1	1
Clayton	3	3	Page	---	---
Clinton	---	---	Palo Alto	---	---
Crawford	---	---	Plymouth	---	---
Dallas	2	2	Pocahontas	1	1
Davis	7	5	Polk	2	1
Decatur	1	1	Pottawattamie	2	2
Delaware	1	1	Poweshiek	3	2
Des Moines	6	6	Ringgold	---	---
Dickinson	---	---	Sac	---	---
Dubuque	1	1	Scott	---	---
Emmet	---	---	Shelby	1	1
Fayette	1	1	Sioux	---	---
Floyd	---	---	Story	2	2
Franklin	---	---	Tama	1	1
Fremont	---	---	Taylor	2	2
Greene	---	---	Union	---	---
Grundy	---	---	Van Buren	3	3
Guthrie	3	3	Wapello	4	4
Hamilton	---	---	Warren	5	5
Hancock	4	4	Washington	2	2
Hardin	1	1	Wayne	2	2
Harrison	3	3	Webster	---	---
Henry	1	1	Winnebago	3	3
Howard	1	1	Winneshiek	---	---
Humboldt	---	---	Woodbury	---	---
Ida	---	---	Worth	1	1
Iowa	1	---	Wright	2	2
Jackson	1	1			
Jasper	3	3			
Jefferson	---	---	Total	128	122

IOWA STATE HIGHWAY COMMISSION

SCHEDULE TWENTY-SEVEN

PRIMARY ROAD MAINTENANCE BUDGET

JULY 1, 1920 TO JANUARY 1, 1921

County	Mileage	Budget	County	Mileage	Budget
Adair	56.6	\$ 11,000	Johnson	71.5	13,000
Adams	35.2	8,000	Jones	58.9	9,500
Allamakee	84.3	25,500	Keokuk	79.5	11,000
Appanoose	58.1	11,500	Kossuth	88.0	26,000
Audubon	46.1	7,000	Lee	89.1	15,000
Benton	89.4	18,500	Linn	101.0	19,500
Black Hawk	78.0	15,000	Louisa	50.8	8,500
Boone	78.8	25,000	Lucas	59.0	9,500
Bremer	71.2	17,000	Lyon	68.0	9,000
Buchanan	46.0	9,000	Madison	56.3	13,500
Buena Vista	66.7	28,000	Mahaska	86.0	16,000
Butler	70.7	13,000	Marion	92.5	26,500
Calhoun	72.6	22,000	Marshall	50.7	8,000
Carroll	68.5	16,000	Mills	48.1	15,500
Cass	81.0	16,000	Mitchell	61.0	13,000
Cedar	76.1	19,000	Monona	77.1	11,000
Cerro Gordo	54.4	5,000	Monroe	56.3	11,000
Cherokee	77.9	11,000	Montgomery	51.8	15,500
Chickasaw	44.8	9,000	Muscatine	81.3	11,000
Clarke	51.5	14,500	O'Brien	74.3	9,500
Clay	54.0	20,000	Oseola	41.5	6,000
Clayton	103.2	15,000	Page	59.6	13,000
Clinton	86.0	20,000	Palo Alto	49.9	6,500
Crawford	82.1	21,000	Plymouth	120.2	21,000
Dallas	87.2	14,000	Pocahontas	63.1	18,500
Davis	46.6	10,000	Polk	85.8	16,000
Decatur	52.1	13,000	Pottawattamie	146.9	30,000
Delaware	45.5	7,000	Poweshiek	67.0	11,000
Des Moines	38.8	6,500	Ringgold	51.4	12,000
Dickinson	42.1	10,000	Sac	92.1	24,000
Dubuque	79.6	21,000	Scott	72.1	17,000
Emmet	41.6	12,000	Shelby	59.6	10,500
Fayette	95.0	15,000	Sioux	69.4	11,000
Floyd	69.0	8,000	Story	64.4	20,000
Franklin	41.2	18,000	Tama	70.0	12,500
Fremont	50.0	8,500	Taylor	49.6	8,000
Greene	68.0	15,000	Union	52.9	12,500
Grundy	60.2	8,000	Van Buren	43.9	7,500
Guthrie	73.0	12,000	Wapello	44.1	6,000
Hamilton	66.4	14,000	Warren	85.3	20,000
Hancock	47.3	8,000	Washington	90.0	20,000
Hardin	62.3	12,000	Wayne	63.0	13,000
Harrison	80.5	12,000	Webster	84.5	25,000
Henry	46.2	8,000	Winnebago	48.8	7,500
Howard	50.8	10,000	Winneshiek	83.4	17,500
Humboldt	40.9	9,000	Woodbury	125.1	18,000
Ida	51.5	13,000	Worth	60.3	7,000
Iowa	99.2	21,000	Wright	59.3	12,500
Jackson	47.2	10,000			
Jasper	89.6	14,000			
Jefferson	47.7	7,000			
			Total	6619.1	\$ 1,368,000

Chapter X. Work of District Engineers and Assistant District Engineers

Summary.

During the year, the district engineers and assistant district engineers spent 2,934 days in the various counties assisting in highway work. They spent 143 days attending bridge lettings for the construction of 2,639 bridges, costing \$4,983,000. Forty-two days were spent attending road lettings for 473 miles of road work (other than Federal Aid) costing \$1,843,000. Profiles for 245 miles of road were examined and approved. They attended ninety-five lettings on Federal Aid or primary road projects, for 943 miles, amounting to \$13,410,000. The total number of days spent on preliminary Federal Aid engineering was 1,085. They also spent 616 days on Federal Aid construction work. The total number of days spent in the counties during 1920 was practically double the time spent in 1919. This is due to the fact that assistant district engineers were appointed during the year, and their time has been included in the total in each district. The number of days spent in the field are classified as follows:

	1918	1919	1920
Procuring and preparing information for bridge designs			
Attending bridge lettings	58	95	299
Inspection and supervision of bridge work	118	128	143
Attending material lettings	180	163	77
Examination of emergency work	69	82	95
Railroad crossing work	2	2	
Approval of profiles	24	31	49
Attending county road lettings	60	61	62
Inspection and supervision of road work	30	43	42
Inspection of proposed county road changes or additions	67	103	23
County and township road maintenance	46	18	26
Investigation of complaints			22
Explanation of report blanks	45	56	
Preliminary engineering (primary or federal aid projects)	63	70	
Construction engineering (primary or federal aid projects)	243	500	1,085
Inspection of proposed changes or additions in primary road system		105	616
Primary road maintenance		35	81
Special administrative assignments			206
Unclassified		18	98
	214		
Total	1,222	1,510	2,934

Organization—Assistant District Engineers.

Early in 1920 the work in the districts became so heavy that it was necessary to either cut down on the size of the districts or increase the help in each district. The latter course was considered most feasible, so in April, assistant district engineers were appointed in Districts 2, 3, 4, 5, 6, and 7. On July 1st, an assistant engineer was appointed in District No. 8. No assistants have been appointed in Districts Numbers 1 and 9. The headquarters of District Number 1 are located in the central office at Ames, and considerable assistance has thus been available from the regular forces. One of the chiefs of party in District Office Number 9 has acted as assistant district engineer in that district.

The counties in each district were the same in 1920 as reported in the 1919 report. The personnel of the district engineers is also unchanged. The assistant district engineers are as follows:

- District No. 2, T. R. Perry, Mason City.
- District No. 3, E. Capel, Sioux City.
- District No. 4, A. J. Van Sise, Atlantic.
- District No. 5, W. J. Smith, Ottumwa.
- District No. 6, L. S. Gates, Cedar Rapids.
- District No. 7, I. E. Goodrich, Waterloo.
- District No. 8, A. A. Baustian, Storm Lake.

Summary of Field Work for District Engineers and Assistant District Engineers.

Schedule Number Twenty-eight shows the disposition of time spent in the field in each district. This schedule also shows the number of road and bridge lettings attended and the amount of money involved. The days spent in each county by the district engineer and assistant district engineer, is shown in Schedule Number Twenty-nine.

SCHEDULE TWENTY-EIGHT

SUMMARY OF DISTRICT ENGINEERS' AND ASSISTANT DISTRICT ENGINEERS' FIELD WORK

District Number	1	2	3	4	5
District Engineer	W. F. Beard	R. R. Zack	E. W. Dunn	L. M. Martin	J. S. Morrison
Assistant District Engineer		T. R. Perry	E. Capel	A. J. Van Sise	W. J. Smith
Procuring and preparing information for bridge designs	12	15	64	17	17
Attending bridge lettings	16	7	11	30	22
Number of bridges	308	166	187	561	360
Cost in thousands of dollars	702	399	417	1,135	445
Inspection and supervision of bridge work	5	2	3	25	15
Attending material lettings	3	8	14	15	12
Railroad crossing work	3	4	6	3	14
Approval of profiles	10	7	18		4
Attending county road lettings	2	9	7		3
Number of miles of road	27	132	68	1	3
Cost in thousands of dollars	282	446	228	4	31
Inspection and supervision of road work	1	5	3		
Inspection of proposed county road changes or additions	4	4	8	7	2
County and township road maintenance				11	4
Preliminary engineering (primary or federal aid projects)	64	78	139	90	191
Construction engineering (primary or federal aid projects)	30	96	45	97	83
Inspection of proposed changes or additions in primary road system	9	7	27	2	4
Primary road maintenance	7	30	15	47	12
Special administrative assignments	10	8	14	18	10
Total	181	290	374	371	394

SUMMARY OF DISTRICT ENGINEERS' AND ASSISTANT DISTRICT ENGINEERS' FIELD WORK.

District Number	6	7	8	9	Total
District Engineer	W. M. Lee	J. W. Mercer	J. F. Reynolds	W. O. Price	
Assistant District Engineer	L. S. Gates	I. E. Goodrich	A. A. Baustian		
Procuring and preparing information for bridge designs	53	42	11	68	299
Attending bridge lettings	15	28	7	7	143
Number of bridges	374	390	105	188	(2,639)
Cost in thousands of dollars	524	683	297	381	(4,983)
Inspection and supervision of bridge work	6	5	15		77
Attending material lettings	5	8	7	18	95
Railroad crossing work	4	7	5	3	49
Approval of profiles	6	4	12	1	62
Attending county road lettings	2	3	16		42
Number of miles of road	2	20	220		(473)
Cost in thousands of dollars	25	148	679		(1,843)
Inspection and supervision of road work		3	10	1	23
Inspection of proposed county road changes or additions	1	4	4	2	36
County and township road maintenance		2	4	1	22
Preliminary engineering (primary or federal aid projects)	65	65	102	281	1,085
Construction engineering (primary or federal aid projects)	60	39	101	56	616
Inspection of proposed changes or additions in primary road system	11	3	8	10	81
Primary road maintenance	37	24	12	22	206
Special administrative assignments	14	11	9	4	98
Total	289	248	323	474	2,934

SCHEDULE TWENTY-NINE

DAYS SPENT IN EACH COUNTY BY DISTRICT ENGINEERS AND ASSISTANT DISTRICT ENGINEERS

County	Days	County	Days
Adair	26.0	Johnson	24.0
Adams	41.0	Jones	19.0
Allamakee	13.0	Keokuk	38.0
Appanoose	24.0	Kossuth	24.0
Audubon	34.0	Lee	14.5
Benton	28.0	Linn	47.0
Black Hawk	48.0	Louisa	31.0
Boone	25.0	Lucas	19.0
Bremer	14.0	Lyon	38.0
Buchanan	17.0	Madison	42.0
Buena Vista	36.0	Mahaska	58.0
Butler	13.0	Marion	26.0
Calhoun	40.0	Marshall	9.0
Carroll	9.0	Mills	32.0
Cass	21.0	Mitchell	17.0
Cerro Gordo	41.0	Monona	56.0
Cherokee	28.0	Monroe	45.0
Cedar	27.0	Montgomery	41.0
Chickasaw	19.0	Muscatine	48.0
Clarke	19.0	O'Brien	25.0
Clay	27.0	Oseola	22.0
Clayton	29.0	Page	15.0
Clinton	26.0	Palo Alto	37.0
Crawford	17.0	Plymouth	33.0
Dallas	21.0	Pocahontas	27.0
Davis	19.0	Polk	54.0
Decatur	36.0	Pottawattamie	40.0
Delaware	24.0	Poweshiek	13.0
Des Moines	28.0	Ringgold	17.0
Dickinson	19.0	Sae	28.0
Dubuque	36.0	Scott	55.0
Emmet	18.0	Shelby	37.0
Fayette	20.0	Sioux	30.0
Floyd	56.0	Story	8.0
Franklin	18.0	Tama	33.0
Fremont	26.0	Taylor	14.0
Greene	15.0	Union	27.0
Grundy	31.0	Van Buren	39.0
Guthrie	24.0	Wapello	53.0
Hamilton	12.0	Warren	69.0
Hancock	17.0	Washington	11.0
Hardin	27.0	Wayne	50.0
Harrison	38.0	Webster	35.0
Henry	15.0	Winnebago	18.0
Howard	26.0	Winneshieki	14.0
Humboldt	31.0	Woodbury	61.0
Ida	28.0	Worth	12.0
Iowa	15.0	Wright	24.0
Jackson	16.0		
Jasper	15.0		
Jefferson	40.0		
		Total	2,934.0

Chapter XI. Roads at State Institutions

Organization.

The Iowa law prescribes that " * * * all roads within and adjacent to state lands shall constitute a separate road district under the control and supervision of the Supervisor of State Roads, appointed by the Board of Control of State Institutions * * * ." There are about sixty miles of public roads upon or adjacent to state lands at the twenty-one State institutions. The responsibility for the construction, and maintenance of this road mileage rests with the Board of Control.

The Chief Engineer of the Highway Commission was designated as Supervisor of State Roads under the Board of Control. He receives no additional compensation for the services rendered.

Summary of Work During 1920.

During 1920 the work on institutional roads consisted of blade grader work, patrol maintenance, surfacing with gravel or cinders and paving. The work done being as follows:

*Paving (Under Contract).....	25,104 sq. yards
Maintained under patrolmen.....	22 miles
Surfaced with gravel.....	2 miles
Surfaced with cinders (estimated).....	3 miles
*Not completed.	

The expenditure for paving completed was.....\$28,945.19
Other expenditures for all institutional roads..... 17,443.71

\$46,388.90

Patrol Maintenance.

There are four road patrolmen employed at State Institutions as follows:

State Hospital at Cherokee.....	3.5 miles
State Hospital at Independence.....	7.0 miles
State College at Ames.....	5.5 miles
State Colony for Epileptics at Woodward.....	6.0 miles

The system of road patrolling has proved successful in maintaining the roads in serviceable condition throughout the year, at all

of the above mentioned institutions, except the portion of the Lincoln Way from Ames to the Campus at Iowa State College. Notwithstanding almost daily work consisting of filling ruts, application of cinders, and dragging, the exceptionally heavy traffic causes this stretch of road to be in bad shape for travel during a considerable part of the year. Hard surfacing should be provided for this road as the ordinary patrol maintenance is inadequate for present traffic requirements.

Tractor Grading.

Blade grading work has been carried on at Anamosa, and at Iowa State College using equipment purchased in 1919. Inspection of the road conditions at other institutions indicated that the large amount of blade grading work completed during the preceding year put them in shape so that another blading would not be required probably until the season of 1921.

Additional Roads.

The purchase of additional land has added to the institutional road system as follows:

State Reformatory at Anamosa.....	3.00 miles
State Penitentiary at Ft. Madison.....	1.75 miles
Iowa State College at Ames.....	0.50 miles
Boys' Training School at Eldora.....	0.25 miles
Total additional mileage	5.50 miles

Iowa State College—Ames.

The roads here have been graded and surfaced with gravel or cinders, and are being maintained by road patrolmen. Excepting Lincoln Way between Ames and the College Campus, the roads are kept in good condition.

A new bridge is being erected by the county across Squaw Creek replacing the old structure washed out by flood in 1917. This new bridge being placed at a higher level necessitated raising the grade along Lincoln Way at both ends of the bridge. This grading work is now in progress, the estimated cost of same being \$5,100.00.

To further improve the drainage conditions of land owned by the college, a six by six foot concrete overflow culvert was constructed at a point approximated 700 feet west of Squaw Creek.

The contract for this culvert was let at \$35.00 per cubic yard, cost being \$1,771.00.

Expenditures:

Road repairs	\$2,367.07
Patrolman	1,402.07
Equipment, repairs and supplies.....	297.30
Dragging	159.14
Engineering	133.75
Supervision	133.74

Total \$4,493.07

State Reformatory—Anamosa.

The State having purchased additional land at this institution, the road mileage has been increased by three miles, now being a total of four and one-fourth miles. Most of this was blade graded this summer. Plans and material were furnished for the construction of an improved road drag for use in maintaining the roads.

Expenditures:

Blade grading	\$ 831.04
Culverts	156.40
Equipment, supplies and repairs.....	44.40
Supervision	243.72

Total \$1,275.56

State Hospital at Cherokee.

An appropriation for paving the south boundary road, about one mile in length, was made by the 38th General Assembly. The contract was let to the Bryant Asphalt Paving Company of Waterloo for Type A concrete paving at a cost of \$3.51 per square yard; for where no integral curb was provided and \$3.85 per square yard where integral curb is required; earthwork, \$1.00 per cubic yard; 6-inch tile drain, 20 cents per foot; store water catch basins, each \$50.00.

The tile drains are completed. The paving has been delayed because of inability to obtain adequate shipments of materials. It is expected that work will be completed early next season.

Expenditures:

Tiling	\$ 399.24
Patrolman	1,999.93
Engineering	219.77
Supervision	290.84
Supplies and repairs	15.40

Total \$2,925.18

State Hospital—Clarinda.

The work done consisted of general maintenance of the road system and hauling cinders by the hospital attachees.

Expenditures:	
Grading	\$ 187.70
Surfacing	30.00
Supervision	84.57
Total	\$ 302.27

School for Deaf—Council Bluffs.

The 38th General Assembly authorized the construction of three-fourths mile of concrete paving on the Blue Grass Road extending through the state land. The contract was awarded to the E. A. Wickham Construction Company of Council Bluffs, and was completed this season. This pavement carries the traffic contributed by three primary roads entering Council Bluffs from the southeast.

Expenditures:	
Paving	\$ 23,166.88
Road repairs	900.07
Engineering	869.20
Supervision	302.88
Total	\$ 25,239.03

Custodial Farm—Clive.

The one and one-fourth miles of road put to permanent grade last year is being well maintained by the farm help.

Expenditures:	
Culvert	\$ 75.55
Grading	169.57
Supervision	84.79
Total	\$ 329.91

Boys Training School—Eldora.

The roads here have been well cared for by the inmates of the institution.

A truck has been furnished for use in graveling a portion of the roads at this institution and for use in the construction of a 3'x2'x36' concrete culvert, all material to be purchased by the State, the labor to be performed by the boys of the institution.

Expenditures:

Surfacing, gravel and cinders	\$ 473.34
Road repairs	21.15
Supervision	82.17
Total	\$ 576.66

Soldiers Orphans Home—Davenport.

At this place cinders were placed on the roads graded last season. An Adams road maintainer was purchased for the institution road work.

Considerable work consisting of grading and surfacing is required to put these roads in first class shape.

Expenditures:

Surfacing	\$ 582.00
Equipment	180.00
Supervision	139.74
Total	\$ 901.74

State Penitentiary—Ft. Madison.

Through the purchase of additional land the road system has been increased by 1.75 miles. Nearly all of the roads excepting those along the new land, have been surfaced with cinders and are well kept.

Expenditures:

Surfacing	\$ 63.26
Culverts	34.00
Supervision	86.89
Total	\$ 184.15

School for Feeble Minded—Glenwood.

The roads at this institution have been considerably improved by the application of cinders. It is planned to continue this surfacing over all the roads.

Expenditures:

Surfacing	\$ 61.20
Grading	346.75
Supervision	36.84
Total	\$ 444.79

State Hospital—Independence.

The road system comprising of seven miles has been surfaced with cinders and under the care of a very capable patrolman are kept in excellent condition throughout the year.

Expenditures:

Culverts	\$ 111.50
Patrolman	2,061.55
Equipment, supplies and repairs	26.85
Supervision	42.92
Total	\$2,242.82

State University—Iowa City.

A contract for paving the River to River road from Iowa Avenue bridge to the city limits was entered into in co-operation with the City Council of Iowa City with Wm. Horrabin and Company. This paving consists of three-inch vitrified brick, asphalt filler, a one-inch sand cement cushion and a five-inch concrete base. The contract for this pavement was let at \$4.24½ per square yard.

A stringent cement shortage delayed the starting of this work late in the season so that the work will be less than 50 per cent completed this year.

The cost of this project is shared between State and various parcels of private property abutting and adjacent.

Expenditures:

Paving	\$4,424.28
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State Hospital—Mt. Pleasant.

The road system, two and one-half miles in extent, has been graded and an effort will be made to utilize the cinders produced by the institution in surfacing.

Expenditures:

Dragging	\$ 38.54
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Women's Reformatory—Rockwell City.

Gravel surfacing was renewed on the roads, using two trucks from the Highway Commission. Material was taken from a county gravel pit, located one and one-half miles north of the institution.

Expenditures:

Graveling	\$ 457.13
Supervision	92.95

Total	\$ 550.08
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Hospital and Epileptic Colony—Woodward.

The roads are maintained by a patrolman with a team devoting full time to the work. Considerable gravel being hauled from the pit on the farm at odd times thus renewing the surfacing at weak spots as they develop.

Expenditures:

Patrolman	\$2,084.08
Equipment and repairs	64.35
Culverts	19.80
Supervision	54.83
Total	\$2,223.06

Teachers College—Cedar Falls.**State Hospital—Knoxville.****Soldiers Home—Marshalltown.****Training School for Girls—Mitchellville.****School for Blind—Vinton.****State Sanitorium—Oakdale.**

No work of special importance has been undertaken at these institutions. However, occasional inspection trips are made with the view toward keeping the roads in good repair.

Institutions General.

The following expenditures were made for institutions general:

Equipment, repairs and supplies	\$ 168.92
Supervision	68.84
Total	\$ 237.76

Chapter XII. Drainage Investigations

The work of this division consist principally of studying the flow of Iowa's streams to determine reasonable rates of flood run-off to be used in the design of highway bridges and culverts. Other lines of work have been undertaken at times, such as assisting the Executive Council in the drainage of lake beds.

Stream Gaging Work.

The main lines of investigation have been undertaken as follows:

First: A co-operative agreement has been continued by which the stream gaging work formerly carried on by the State Geological Survey, the State Highway Commission, and the United States Geological Survey, has been consolidated under the direction of Mr. E. D. Burchard, Hydraulic Engineer, U. S. Geological Survey, who devotes his entire time to this work in Iowa.

Twenty-seven regular gaging stations as shown by the following list, are maintained on the most important streams, where water stages are measured once or twice a day.

Mississippi Drainage.

River	Town	County
Upper Iowa	Decorah	Winneshiek
Turkey	Garber	Clayton
Maquoketa	Maquoketa	Jackson
Shell Rock	Clarksville	Butler
Cedar	Janesville	Bremer
Cedar	Cedar Rapids	Linn
Iowa	Marshalltown	Marshall
Iowa	Iowa City	Johnson
Iowa	Wapello	Louisa
Squaw Creek	Ames	Story
Skunk	Ames	Story
Skunk	Coppock	Henry
Skunk	Augusta	Lee
Raccoon	Van Meter	Dallas
Des Moines	Kalo	Webster
Des Moines	Boone	Boone
Des Moines	Des Moines	Polk
Des Moines	Ottumwa	Wapello
Des Moines	Keosauqua	Van Buren

Des Moines	Tracy	Marion
Little Sioux	Correctionville	Woodbury
Boyer	Logan	Harrison
West Br. Nishnabotna	White Cloud	Mills
East Br. Nishnabotna	Red Oak	Montgomery
West Br. Nodaway	Villisca	Montgomery
Nodaway	Clarinda	Page
Grand	Davis City	Decatur

At these stations, one hundred thirty-five measurements of the amount of water flowing have been made during the year. The daily flow at these stations has been computed and is now available to anyone who is interested in these matters.

The year's record, as shown by these stations, is rather an unusual one. No large floods have occurred on any of these rivers. The stream flow has been well sustained throughout the whole season, and the total amount of run-off has been high.

Two Gurley self-recording gages have been installed, one at Decorah and one at Cedar Rapids. These gages furnish a continuous graph of the water stage, and where the stage changes rapidly, assist in the preparation of more accurate estimates of daily discharge than can be made from readings twice a day. Two more automatic gages have been purchased, one of which will be placed at Kalo when the river stage permits.

Second: Only one severe flood occurred during the year on a stream not covered by the gaging stations. This was the result of a cloudburst which occurred over the valley of a small tributary to the Cedar River above Cedar Rapids. An estimate of the maximum run-off during this storm was prepared by the slope-area method as indicated by high water marks along the valley.

Drainage and Sale of Lake Beds.

The Drainage Division has assisted the Executive Council in the drainage and sale of lake beds as follows:

Swan Lake (Emmet County):

A conflict as to the ownership of land bordering on East Swan Lake made necessary a re-survey of this property before it could be sold as required by law. This survey has been completed by Mr. F. A. MacDonald. Authorization will be found in Chapter 216, Acts of the 37th General Assembly.

Birge Lake (Emmet County):

A survey of the bed of Birge Lake was arranged for and completed by Mr. F. A. MacDonald. This was one of the lakes, drainage of which was authorized by Chapter 347, Acts of the 37th General Assembly.

Ryan Lake (Emmet County):

This lake was drained under Chapter 2-B, Title 14, Supplement to the Code, 1913, and Chapter 216, Acts of the 37th General Assembly. The state, however, had not paid assessments on the lake bed. A new map showing the relation of the state lands to the old meander line and a table showing how assessments and interest charges which could fairly be spread over the state lands were prepared to aid the Executive Council in closing up these matters.

Goose Lake (Greene County); and Tow Head Lake (Calhoun County):

The Commission has conferred with and given engineering assistance to the Executive Council in connection with the drainage of these lakes, which work is now in progress.

Chapter XIII. Department of Materials and Tests

Duties.

The functions of this department are (a) to inspect, test, and approve the materials used in all work done under the direction of the Highway Commission, (b) to make surveys of the natural deposits of construction materials in the state, (c) to assist in the development of such natural resources, (d) to acquire information concerning available resources of raw material, and (e) to conduct experimental work and technical investigations.

During 1920 the department inspected and tested the materials entering into 46.58 miles of pavement construction, and 200 miles of tile drains on the primary road system. This has included detailed examination of approximately 1,384 cars of cement, 1,400 cars of sand, 2,410 cars of screened gravel and crushed stone, 1,000 cars of pit run gravel, 368 cars of paving brick, 20 cars of reinforcing steel, and 550 cars of drain tile.

In connection with the program of hard surfaced road construction now under way, a principal problem which must be solved is the determination of proper methods of using the materials available within the state to best advantage. The department of Materials and Tests is co-operating by investigating and assisting in the development of all possible sources of supply, and by carrying on research work to define proper methods of using the various materials found.

Organization.

The department is organized as follows under the Engineer of Materials and Tests: (a) Laboratory Division under an Assistant Engineer of Materials and Tests, (b) Field Division, under an Assistant Engineer of Materials, and (c) Research Division under the Engineer of Materials and Tests.

During 1920, the Laboratory Division has operated permanent testing laboratories at Ames, Des Moines, Mason City, and Davenport; has inspected material at producing plants at Springfield, Streator, and Albion, Illinois, and Iowa City, Iowa, and has operated portable tile testing cars in Districts 1, 5, and 8.

The Field Division has operated temporary testing stations in connection with the Federal Aid and primary road projects in Floyd, Linn, Sioux, Palo Alto, O'Brien, and Polk Counties, has inspected forty-two plants manufacturing drain tile, and has made material resource surveys in fifty-six counties. (Refer to Schedule Number Thirty-two.)

The research work has been carried on in co-operation with the other divisions and with the construction department. Much valuable data has been accumulated and will be studied during the winter. It is expected that the force of the department of Materials and Tests will be principally employed upon resource surveys and experimental work during the winter months.

Tests of Materials.

Tests have been made of 7,471 different samples of material. These tests are classified as follows, according to the work on which the material was to be used:

Primary Roads	7,149
Secondary Roads	36
Bridges	47
General	242
Total	7,471

Schedule Number Thirty shows the distribution of these tests according to counties in which the materials were to be used. Schedule Number Thirty-one shows the laboratories and testing stations at which the various tests were made.

This testing of materials and insistence upon compliance with accepted standard specifications will inevitably result in raising the general quality and securing greater uniformity in materials produced within the state. Not only the highway work, but all other work in which such materials are used, such as farm drainage work, etc., will be benefited thereby.

Material Resource Survey.

The survey of the material resources of the State has been actively carried on during 1920. Undeveloped deposits have been examined in twenty-four counties. Eighteen commercially operating gravel pits, fifteen stone quarries, and forty-two drain tile plants have been examined.

This work is resulting in the production of better materials and the utilization of local material deposits at a very great saving to the State. Specific instances of this saving are as follows:

In Palo Alto County a conservative estimate of the saving made by using local material instead of material shipped in from a distance by rail, is forty cents per square yard, or approximately \$45,000 on the total project of 11.05 miles. Two miles of pavement were completed, but if this material had not been found and developed, nothing could have been accomplished on this project this season.

In O'Brien County, a hitherto unknown deposit was prospected by the department and developed by the contractor for use on the east 4.98 miles of the project, with a resultant saving in the contract price, of forty-eight cents per square yard over the contract price of the balance of the project. This is an approximate total saving on this portion of the O'Brien County project, of \$25,000. The development of this local material deposit permitted the construction of one mile of pavement. If dependance had been placed on shipped in material, nothing would have been done this year.

In Woodbury County, joint prospecting work by this department and the county has resulted in the securing of a gravel deposit by the county and a start on the construction of a gravel screening and washing plant large enough to care for the needs of the primary road system in that county. This plant is expected to be in operation early next season.

In Dickinson County, on account of the prospect of the use of local gravel on their paving project, the contract was let at thirty-seven cents per square yard less than the contracts let in O'Brien County on the basis of the shipped in material. This means a saving to the county of approximately \$15,000.

In Benton and Clinton Counties, the contractors on paving projects are expecting to use gravel from hitherto undeveloped sources.

Experimental Work.

In view of the fact that neighboring states have large construction projects, and in view of the high freight rates, it is imperative that the materials for Iowa use be found largely within the borders of the State and as near to the point of use as possible. This situation makes it necessary that our specifications provide proper methods for the use of our local materials. It is in this connection that the immediate need for experimental work is greatest. The work carried on the past year and contemplated for the coming winter, is as follows:

(a) Investigation of strength and wearing quality of the concrete as actually made on the various paving operations. Eighteen hundred specimens for strength and six hundred fifty for wearing value tests were made during the past season. It is expected that a study of the resulting data will help to establish the comparative quality and uniformity in the use of screened and unscreened gravels, and of mixtures containing various ratios of sand to coarse aggregates, and will further

verify the theory upon which the mixtures used in the standard specifications are based.

(b) In connection with each of the specimens mentioned above, samples of the green concrete were freed of cement for the purpose of securing information as to the comparative uniformity of screened and pit run gravels, and as to the efficiency of the various screening plants.

(c) On a number of the paving jobs, tests of the actual density of the concrete in the pavement were made. The principal use thus far made of these tests, was the establishing of more authentic data upon which to base estimates of the quantities of material required for given quantities of concrete.

(d) Problems under investigation at the various laboratories are as follows:

Effect of shale upon concrete.

Wearing values of Iowa limestone.

Effect of use of unsound cement where unsoundness is due to early age of cement.

Methods of testing crushed stone.

Methods of testing cement.

SCHEDULE THIRTY.
TESTS OF MATERIALS ACCORDING TO COUNTIES.

County In Which Used	For Use On					Kind of Material										Total, all materials
	Primary Roads	Number of samples	County or twp. roads	Bridges	General	Cement	Sand	Coarse aggregate	Bit run gravel	Brick	Drain tile	Reinforcing steel	Corrugated metal	Oils, tars, asphalts	Paint	
Adair	P28	3									3					3
Adams																
Allamakee			4		2			4	2							6
Appanoose																
Audubon																
Benton	FA58	17									5					17
Black Hawk	P51-FA25-FA62	59	2	2	13	7	2	10	11	4	52					76
Boone	FA65	19	2		3				3		21					24
Bremer					1			1								1
Buchanan	FA5	3							3							3
Buena Vista	P18-FA37	35									35					35
Butler	FA85	9									9					9
Calhoun	P5-P16-FA10	1	1								2					2
Carroll																
Cass																
Cerro Gordo	FA61-FA115	1,770	2		13	435	457	848		1	22	22				1,785
Cherokee			1		7	2		4			2					8
Chickasaw	FA35															
Clark	FA33	1									1					1
Clay					8				8							8
Clayton					19			15	3							19
Clinton	FA18	28						5	13		4					28
Crawford																
Dallas	FA12-P33	8			4				4		8					12
Davis	FA50															
Decatur	FA8	5				5										5
Delaware	FA4	22			1			1			22					23
Des Moines	P33-FA32	12									12					12

Dickinson	FA68-P55	12			13			1	20		4					25
Dubuque	FA17				1			1								1
Emmet	FA49-P57	75			7				7		76					85
Fayette																
Floyd	P40-P75-FA41	1,371			12	368	397	584	4		30					1,383
Franklin	FA105	14									14					14
Fremont																
Greene	FA39	229				42	67	91	28		1					229
Grundy	FA19	3									3					3
Guthrie			1			1										1
Hamilton	P17-FA67	8									8					8
Hancock					1											
Hardin			1		4			4	1							5
Harrison																
Henry	FA56	19			2			1			20					21
Howard	FA31	3			2						5					5
Humboldt	FA48	112	1		4	61	30	23	2		1					117
Ida																
Iowa																
Jackson			1		8			1	8							9
Jasper																
Jefferson	FA3	1									1					1
Johnson	FA9-FA128	35			22		4	52	1							57
Jones																
Keokuk	FA34		1		1						2					2
Kossuth	FA66-FA111	32							2		30					32
Lee					3			2	1							3
Linn	FA22-FA96	351			1	74	68	123	42	1	28	16				352
Louisa																
Lucas																
Lyon					5					5						5
Madison																
Mahaska																
Marion																
Marshall					11		5	6								11
Mills																
Mitchell																
Monona			1							1						1
Monroe																
Montgomery	FA16	3									3					3
Muscatine	FA40				3											3
O'Brien	FA43	214			10	33	44	44	49		35	19				224
Osceola	P15	5	2		1				3		5					8
Page																
Palo Alto	FA109	297				35		2	236		23	1				297
Plymouth					5		1		4							5
Pocahontas	P7-P30	8		1							8					9
Polk	FA104-FA89	1,035	1		8	170	294	459	108		2	6			5	1,044

SCHEDULE THIRTY—Continued.

County In Which Used	For Use On					Kind of Material										
	Primary Roads	Number of samples	County or twp. roads	Bridges	General	Cement	Sand	Coarse aggregate	Pit run gravel	Brick	Drain tile	Reinforcing steel	Corrugated metal	Oils, tars, asphalts	Paint	Total, all materials
	Project number															
Pottawattamie, state roads					9	9										9
Poweshiek																
Ringgold																
Sac	P10-P11-P12	10	9	4							19	4				23
Scott	FA114-FA54-55	1,078			16	125	94	157	303	363	8			44		1,094
Shelby																
Sioux	P26-FA84	182	4	2	3	49			132		4	4			2	191
Story	P62	22									2					2
Tama																
Taylor																
Union																
Van Buren	P60	7			1			1			7					8
Wapello																
Warren																
Washington																
Wayne																
Webster	FA13	19			3				1		21					22
Winnebago	FA30-P2	12		4							12	4				16
Winneshiek																
Woodbury	FA78-FA2	7			2				6		3					9
Worth																
Wright	FA29-P19	9									9					9
Miscellaneous			2	34	14	1	2	3	1		4			5	34	50
Total		7,146	36	47	242	1,418	1,468	2,446	1,018	369	584	78		54	36	7,471

SCHEDULE THIRTY-ONE.

TESTS MADE IN THE VARIOUS LABORATORIES AND TESTING STATIONS.

	For Use On					Kind of Material										
	Primary Roads	Number of samples	County or twp. roads	Bridges	General	Cement	Sand	Coarse aggregate	Pit run gravel	Brick	Drain tile	Reinforcing steel	Corrugated metal	Oils, tars, asphalts	Paint	Total all materials
A-Permanent Laboratories--																
Ames		800	31	47	213	229	30	165	224	21	291	78		17	36	1,091
Davenport		903				90	121	226	297	132				37		903
Des Moines		1,035	1		12	163	356	515	2		12					1,048
Mason City		3,131	1		10	856	824	1,383			79					3,142
Totals		5,869	33	47	235	1,338	1,331	2,289	523	153	382	78		54	36	6,184
B-Field Testing Stations--																
Floyd County		66			6	17	33	22								72
Humboldt County		79				33	28	17	1							79
Linn County		110				9	32	33	36							110
O'Brien County		115					44	44	27							115
Palo Alto County		299				8			291							299
Polk County		50						31	19							50
Sioux County		134				13			121							134
Totals		853			6	80	137	147	495							860
C-Plant Testing Stations--																
Johnson Co. River Prod. Co.		10						10								10
Albion, Illinois		43								44						44
Springfield, Illinois		43								43						43
Streator, Illinois		129								129						129
Totals		226						10		216						226

SCHEDULE THIRTY-ONE—Continued.

D-Title Testing Cars District No. 1 District No. 3 District No. 7 District No. 8	For Use On		Kind of Material										Total all materials			
	Primary Roads	Number of samples	Country or twp. roads	Bridges	General	Cement	Sand	Coarse aggregate	Pit run gravel	Brick	Drain tile	Reinforcing steel		Corrugated metal	Oils, tars, asphalts	Paint
	19										19					19
	66		1								67					67
	44		1								45					45
	69		1		1						71					71
Totals	198		3		1						202					202
Totals of all tests	7,146		36	47	242	1,418	1,468	2,446	1,018	360	584	78		54	36	7,471

SCHEDULE THIRTY-TWO.

SHOWING SCOPE OF WORK DONE IN INVESTIGATING MATERIAL RESOURCES OF THE STATE.

County	No. of days spent on reconnaissance and special investigations of material resources	No. of sources of supply examined	Number of samples tested
Allamakee	3	4	4
Benton	4	1	13
Black Hawk	7	3	3
Boone	4	3	25
Buchanan	2	1	4
Buena Vista	1	2	2
Cerro Gordo	7	3	19
Cherokee	1	2	3
Clay	4	5	5
Clayton	1	1	5
Clinton	4	3	1
Dallas	6	12	34
Des Moines	2	1	1
Dickinson	8	10	42
Emmet	4	5	5
Fayette	1	1	2
Floyd	6	3	17
Franklin	2	1	3
Greene	0	10	41
Hamilton	1	1	3
Hancock	3	2	15
Hardin	2	2	6
Henry	4	2	3
Humboldt	3	2	3
Iowa	1	1	2
Jackson	2	2	12
Jasper	2	2	9
Jefferson	3	3	6
Johnson	4	2	10
Keokuk	4	4	5
Kossuth	4	3	10
Lee	2	4	4
Linn	3	6	6
Louisa	1	1	0
Lyon	6	6	6
Mahaska	3	2	6
Marion	2	2	7
Marshall	7	2	22
Muscatine	2	2	2
O'Brien	7	13	60
Osecola	3	2	2
Palo Alto	4	8	26
Plymouth	1	0	0
Polk	12	10	23
Poweshiek	2	2	2
Sac	1	2	3
Scott	5	10	15
Sioux	4	5	17
Story	2	2	6
Wapello	1	1	0
Warren	1	1	3
Washington	3	3	6
Webster	1	1	1
Woodbury	9	6	52
Wright	2	2	0
56	195	192	805

Chapter XIV. Financial Statement

Fiscal Year July 1, 1919, to June 30, 1920.

The expenditures of the Commission are divided into five classes as follows:

- a. Maintenance of the Commission.
- b. Receipt, Storage and Repair of Government Equipment.
- c. Federal Aid Engineering Work.
- d. Construction Work on Primary Road System.
- e. Maintenance Work on Primary Road System.

Maintenance of the Commission.

The total expenditure from the maintenance fund of the Commission for the fiscal year ending June 30, 1920, was \$187,392.87. Of this sum, \$76,769.83 was expended on account of the receipt, storage, and repair of equipment received from the Federal Government. This is a new item of expenditure occasioned by the distribution, to the states, of surplus war equipment. The cost of maintaining the Commission exclusive of expenditures on war equipment was \$110,623.04.

A comparison of the cost of maintaining the Commission for the past five years follows: (Refer to Schedule No. 59.)

Fiscal year ending June 30, 1916.....	\$ 90,821.34
Fiscal year ending June 30, 1917.....	89,786.84
Fiscal year ending June 30, 1918.....	90,414.58
Fiscal year ending June 30, 1919.....	121,962.05
Fiscal year ending June 30, 1920.....	110,623.04

Receipts, Storage and Repair of Government Equipment.

The 38th General Assembly provided that in the event of the free distribution of excess war equipment by the government the freight on such equipment to the state should be paid by the Executive Council from any funds in the state treasury not otherwise appropriated. No provision was made for defraying the expense of receiving, storing, repairing, or re-shipping this equipment. This expense has been paid from the Commission's maintenance fund. During the fiscal year 1919-1920 the cost of taking care of this equipment was \$76,769.83. Of this amount \$43,695.90

was expended for sheds to provide storage for as much of the equipment as possible after having allotted to the counties all the equipment they could properly use.

This expenditure of \$76,769.83 for government equipment is not properly a part of the cost of maintaining the Highway Commission and for that reason should not be included in a comparison of the maintenance cost of the Commission last year with previous years.

Federal Aid Engineering Work.

The total expenditure from the Federal Aid Engineering Fund from July 1, 1919, to June 30, 1920, for engineering in connection with Federal Aid and Primary Road work was \$312,479.45. This sum was distributed as follows:

Reconnaissance and Traffic Census.....	\$ 14,921.61
Survey	126,510.38
Profiles	87,118.80
Specifications, Conferences and Records....	38,861.17
Bridge and Culvert Plans.....	19,890.48
Supervising Const. and Testing Materials...	25,177.01
Total	\$312,479.45

This work was started during the fiscal year ending June 30, 1918, or one year behind the federal appropriations. The expenditure for Federal Aid Engineering that year was \$23,073.91. The next year, that is the fiscal year ending June 30, 1919, the federal aid appropriation was doubled and the expenditure for Federal Aid Engineering work increased to \$47,935.47 or practically twice that of the previous year. During the fiscal year ending June 30, 1920, the federal aid appropriation was six and five-tenths times that of the previous year and the expenditure for Federal Aid Engineering was six and five-tenths times that of the previous year. In other words the increase in the expenditure for Federal Aid Engineering during the past two years is directly proportional to the increase in the Federal Aid appropriations by the Federal government.

Construction Work on Primary Road System.

The total expenditure for construction on the primary road system from January 1, 1920, to November 30, 1920, was \$4,906,404.96. The distribution of the amount by funds was as follows:

Primary Road Fund.....	\$3,591,851.92
Primary Road Bond Fund.....	1,109,379.21
Special Assessments	180,278.19
County Funds	25,095.64
Total	\$4,906,404.96

The classification of this expenditure is as follows:

Grading	\$1,936,409.69
Graveling	428,329.67
Paving	1,976,009.70
Draining	318,150.52
Machinery and Equipment.....	75,646.00
Engineering	171,859.38
Total	\$4,906,404.96

The total expenditure for construction on the primary road system under the supervision of the Highway Commission, since federal aid first become available to November 30, 1920, was \$5,647,718.69, which sum was distributed by funds as follows:

Primary Road Fund.....	\$4,109,381.79
Primary Road Bond Fund.....	1,109,379.21
Special Assessments	180,278.19
County Funds	248,679.50
Total	\$5,647,718.69

The classification of this expenditure is as follows:

Grading	\$2,407,653.66
Graveling	398,748.30
Paving	2,222,055.67
Draining	345,420.34
Machinery and Equipment.....	83,937.45
Engineering	189,903.27
Total	\$5,647,718.69

Maintenance Work on Primary Road System.

The maintenance of the primary road system was taken over under the primary road law on July 1, 1920.

The total expenditure from the primary road fund for maintenance of the primary road system from that date to November 30, 1920, was \$614,296.71. This expenditure was classified as follows:

Earth Roads	\$494,308.27
Gravel Roads	97,119.28
Paved Roads	2,945.64
Primary Road Marking.....	19,923.52
Total	\$614,296.71

Summary Statement Primary Road Fund.

Total appropriation to November 30, 1920:

Federal Funds	\$ 7,939,343.14
State Funds	7,257,488.56
Total	\$15,196,831.70
Total Expended to November 30, 1920..	\$ 4,729,985.96
Balance November 30, 1920.....	10,466,845.74
Total	\$15,196,831.70

Of the balance of \$10,466,845.74 on hand November 30, 1920, approximately \$5,000,000 was obligated by work under contract, leaving a net balance of about \$5,466,845.00. This net balance is all obligated by projects outlined and on which surveys and plans are now in the process of preparation.

Cost of Surveys and Plans.

On September 1, 1920, surveys, plans and specifications had been completed for projects or divisions of projects which included 1,002.01 miles of road. The total cost of these surveys, plans and specifications was \$208,594.54 or an average of \$208.18 per mile. This average is based on the net length of the projects and does not include the mileage of roads on which alternate surveys and plans are made in determining the most feasible location.

The total estimated cost of projects embraced in the above mileage was \$19,283,653.94, and the total cost of the plans was 1.03 per cent of the estimated cost of the work.

The above projects include 268.19 miles of paving. On the remainder of the mileage this improvement consisted of grading, draining or graveling. The estimated cost of projects involving paving was \$12,910,944.80. The cost of preparing plans for said projects was \$46,467.68 or 36/100 per cent of the estimated cost of the improvement.

The plans for projects which at this time contemplate only grading, draining or graveling can with very little additional expense be adapted for paving.

Cost of Construction Engineering.

The total expenditure for all federal aid and primary road construction work to November 30, 1920, was \$5,647,718.69. The total cost of the construction engineering on this work was \$254,455.43 or 4.50 per cent of the construction cost. This percentage would have been lower had it not been for the fact that paving work was frequently delayed through the failure of the railroads to supply the necessary transportation of materials.

Audit and Payment of Bills.

The law provides that all claims for salaries and expenses of the Commission and its employees shall be audited by the State Board of Audit. All claims are examined and approved by the Commission and then forwarded to the State Board of Audit at Des Moines. All funds credited to the Commission are disbursed by the Treasurer of State on warrants drawn by the Auditor of State. A detailed record of all expenditures is kept in the office of the Commission.

Purchase of Supplies.

Practically all supplies are purchased through the purchasing department of the Iowa State College or through the Executive Council, and in such quantities as to secure the best prices obtainable. Office rooms, heat, light and janitor service are furnished by the Iowa State College.

SCHEDULE THIRTY-THREE.
SUMMARY OF EXPENDITURES—JULY 1, 1919, TO JUNE 30, 1920.

Name	Paid from Maintenance Fund		Charged to Federal Aid Engineering Fund		Net Cost to Maintenance Fund
	Salary	Expense	Salary	Expense	
Commissioners.....	\$ 2,580.00	\$ 1,502.40	\$ 702.50	\$ 721.08	\$ 2,298.82
Administrative Department.....	19,419.30	1,284.28	5,856.15	340.86	14,506.57
Accounting Department.....	11,075.70	95.03	7,348.56		4,922.17
Department of Road Administration.....	9,015.84	791.40	5,962.50	562.39	3,342.38
Department of Road Design—Plans.....	13,838.47	563.20	13,296.37	387.21	778.09
Department of Road Design—Surveys.....	102,075.58	28,636.99	101,170.89	28,258.31	1,283.37
Department of Road Construction.....	11,636.29	1,581.65	10,096.82	1,139.70	1,144.42
Department of Machinery and Equipment.....	16,845.95	72,863.17	29.80	3,623.49	86,053.83
Department of Road Maintenance.....	4,880.89	526.09	357.62	147.81	4,401.65
Traffic Census.....	6,460.03	449.30	6,465.24	449.20	24.79
Bridge Department.....	34,525.03	1,387.00	18,117.37	575.95	17,621.80
Drainage Department.....	4,006.06	675.41			4,684.47
Women's Drafting Department.....	12,031.30	6.06	8,330.19	6.06	4,301.11
Department of Materials and Tests.....	12,002.64	1,801.63	12,504.26	1,112.39	897.52
Equipment and Supplies.....	55,091.03	51,880.56	36,303.02	7,877.32	8,514.08
District Offices.....		19,300.95		4,901.16	33,157.80
Totals.....	\$37,018.21	\$182,854.11	\$27,471.39	\$ 85,068.06	\$187,392.87

SCHEDULE FIFTY-EIGHT.

APPROPRIATION—STATE HIGHWAY COMMISSION.
JULY 1, 1919, TO JUNE 30, 1920.

SCHEDULE THIRTY-FOUR.
COMMISSIONERS—JULY 1, 1919, TO JUNE 30, 1920.

Name	Paid from Maintenance Fund		Charged to Federal Aid Engineering Fund		Net Cost to Maintenance Fund
	Salary	Expense	Salary	Expense	
J. W. Holden	\$ 1,210.00	680.17	\$ 447.50	364.83	\$ 1,077.84
Wm. Collinson	1,070.00	649.48	315.00	298.00	1,106.39
Anson Marston		172.75		58.15	114.59
Totals	\$ 2,280.00	1,502.40	\$ 762.50	721.08	\$ 2,998.82

DEBITS

Unexpended appropriation on July 1, 1919	\$ 69,806.27
Tax collected July, 1919	6,648.44
Tax collected August, 1919	5,439.14
Tax collected September, 1919	11,009.51
Tax collected October, 1919	4,218.65
Tax collected November, 1919	769.95
Tax collected December, 1919	
Tax collected January, 1920	54,299.59
Tax collected February, 1920	58,385.68
Tax collected March, 1920	14,627.08
Tax collected April, 1920	13,639.14
Tax collected May, 1920	7,826.72
Tax collected June, 1920	13,311.68
Refunds—Miscellaneous	6,112.10
Refund—Federal aid engineering expense	312,479.45
	\$ 578,573.41

CREDITS

Warrants issued in July, 1918	\$ 21,749.85
Warrants issued in August, 1919	27,067.45
Warrants issued in September, 1919	41,363.49
Warrants issued in October, 1919	46,468.93
Warrants issued in November, 1919	59,508.13
Warrants issued in December, 1919	21,042.23
Warrants issued in January, 1920	63,595.35
Warrants issued in February, 1920	46,072.80
Warrants issued in March, 1920	44,020.60
Warrants issued in April, 1920	39,599.98
Warrants issued in May, 1920	48,919.32
Warrants issued in June, 1920	40,461.19
Balance June 30, 1920	78,701.09
	\$ 578,573.41

SCHEDULE FIFTY-NINE.

COMPARISON OF EXPENDITURES FOR FIVE YEARS.

	1915-1916	1916-1917	1917-1918	1918-1919	1919-1920
Commissioners	\$ 2,593.22	\$ 2,839.63	\$ 2,127.27	\$ 2,235.08	\$ 2,298.82
Administrative department	12,137.98	12,479.78	13,417.65	15,431.07	14,506.57
Accounting department	Note 1	Note 1	Note 1	Note 1	4,222.17
Road department	11,186.35	11,139.89	16,444.05	Note 2	Note 2
Dept. of road administration	Note 3	Note 3	Note 3	4,235.33	3,342.38
Dept. of road design—Plans	Note 3	Note 3	Note 3	4,710.24	778.69
Dept. of road design—Surveys	Note 3	Note 3	Note 3	10,525.65	1,283.37
Dept. of road construction	Note 3	Note 3	Note 3	Note 4	1,144.42
Dept. of mach. and equipment				9,338.16	86,053.88
Dept. of road maintenance					4,401.65
Traffic census				46.82	24.79
Bridge department	7,944.33	9,139.02	19,631.08	25,943.02	17,621.80
Drafting department	10,309.20	12,633.25	Note 5	Note 5	Note 5
Drainage department		882.31	2,785.11	4,913.90	4,684.47
Women's drafting department				7,302.79	4,301.11
Dept. of materials and tests	5,300.07	3,886.58	2,192.90		967.52
Equipment and supplies	14,990.36	13,476.73	20,229.03	19,998.05	48,544.08
District offices	13,711.09	14,383.51	13,587.49	17,281.43	33,187.80
Bridge patent litigation	1,855.90				
State institution roads	3,226.54	2,032.37	Note 6	Note 7	Note 8
R. R. crossings—Surveys, plans	2,031.30	2,076.58	Note 9	Note 9	Note 9
Lake bed survey	5,535.00	4,814.19			
Totals	\$ 90,821.34	\$ 89,786.84	\$ 90,414.58	\$ 121,962.05	\$ 187,392.87*

Note 1—Included under administrative department.
 Note 2—Divided under following headings.
 Note 3—Included under road department.
 Note 4—Included under department of road design. Surveys.
 Note 5—Included under department of road design and bridge department.
 Note 6—Included under road department.
 Note 7—Included under department of road design.
 Note 8—Included under department of road construction.
 Note 9—Included under bridge department.

*Deducting \$76,769.83 expended on account of receipt and operation of equipment from the Federal Government the total cost of maintaining the Highway Commission for the year ended June 30, 1920 was \$110,623.04.

SCHEDULE SIXTY.

APPROPRIATION—FEDERAL AID ENGINEERING.
 JULY 1, 1919, TO JUNE 30, 1920.

DEBITS

Unexpended appropriation July 1, 1919	\$ 29,000.62
Appropriation August 1, 1919	283,000.00
Appropriation April 1, 1920	315,000.00
	\$ 630,990.62

CREDITS

Expended in July, 1919	\$ 13,390.00
Expended in August, 1919	19,737.92
Expended in September, 1919	23,430.50
Expended in October, 1919	24,822.01
Expended in November, 1919	26,968.20
Expended in December, 1919	33,695.58
Expended in January, 1920	22,415.14
Expended in February, 1920	26,919.15
Expended in March, 1920	21,752.43
Expended in April, 1920	21,025.77
Expended in May, 1920	33,628.11
Expended in June, 1920	44,864.64
Balance June 30, 1920	318,511.17
	\$ 630,990.62

SCHEDULE SIXTY-ONE.
 STATEMENT OF EXPENDITURES FEDERAL AID
 ENGINEERING FUND
 JULY 1, 1919, TO JUNE 30, 1920.

County	Project No.	Miles	Reconnaissance and traffic census	Survey	Profile	Specifications, records and conferences	Bridge and Culvert plans	Construction and testing materials	Total
Adair	P-28	15.50	\$ 289.85	\$ 1,442.13	\$ 1,152.57	\$ 346.39	\$ 640.35	\$ 125.17	\$ 3,851.29
Adams	P-26	9.93	102.57	193.82	1,508.02	493.09	1,509.49		3,831.66
Adams	P-60	14.00		17.23		4.11			21.34
Allamakee	P-29	34.10	64.81	638.19	862.60	192.95	218.72		1,976.58
Appanoose	P-27	10.58	60.46	11.76	281.25	277.00	519.23	94.91	1,225.60
Audubon	P-52	26.25	107.39	4,058.49	421.94	935.54	57.04		5,550.40
Benton	P-58	17.89	84.27	2,302.74	1,586.87	472.03	62.48		4,908.04
Black Hawk	P-25	14.08	61.23	331.88	80.46	259.06		638.11	1,368.74
Black Hawk	P-62	17.17	136.84	504.62	1,376.70	336.63	141.14	551.35	3,047.95
Black Hawk	P-51	6.18	5.45	13.23		27.00			45.68
Boone	P-65	22.50	131.06	554.15	1,031.51	278.78	105.01	40.97	2,173.48
Boone	P-30	18.00	53.17	11.76		18.44			83.37
Boone	P-58	13.00	16.14	574.51		56.18			646.83
Bremer	P-88	16.40	104.05	833.37	325.58	126.48			1,389.48
Bremer	P-5	15.56	37.55	10.99	221.83	288.90		27.88	586.51
Buchanan	P-66	12.84	116.61	1,057.52	371.23	246.51			1,791.87
Buena Vista	P-18	24.52	15.82	819.76	50.63	35.06	584.41		1,015.51
Butler	P-85	15.62	112.67	7.23	941.43	219.33			2,077.60
Calhoun	P-10	18.36	26.45	7.23	114.34	183.91	749.19		1,081.12
Calhoun	P-5	4.00	8.57			22.53			39.99
Calhoun	P-16	10.60				11.27			11.27
Carroll	P-69	8.88	74.08	567.18	291.73	221.38			1,544.97
Carroll	P-9	23.50	12.41			1.00			13.41
Carroll	P-14	11.00			198.21	24.07			222.28

County	Project No.	Miles	Reconnaissance and traffic census	Survey	Profile	Specifications, conferences and records	Bridge and Culvert plans	Construction and testing materials	Total
Cass	44	19.60	52.74	1,877.86	967.10	414.02	133.46		3,415.30
Cedar	57	24.20	159.07	2,163.41	805.34	330.40			3,458.22
Cerro Gordo	61	6.05	182.68	1,337.87	579.59	274.10	61.90	522.31	2,958.45
Cerro Gordo	115	22.07		5.46	1,181.12	234.90	583.35	702.61	2,707.44
Cerro Gordo	P-89	5.00			4.59	33.63			38.22
Cherokee	116	14.00	75.91	918.99	731.52	300.84	7.56		2,034.82
Chickasaw	35	13.17	93.87	36.91	150.45	209.79	16.07	264.38	771.47
Chickasaw	76	13.50	27.42	2,040.81	25.07	215.98	132.21	91.68	2,533.17
Clarke	33	8.45	67.32	432.83	1,002.84	369.36	1,318.73	31.98	3,223.06
Clarke	P-31	14.25			2.84	1.05	5.46	20.86	30.21
Clay	P-32	7.67	99.58	227.58	677.64	192.40	47.72	52.15	1,297.07
Clayton	74	32.20	114.25	4,166.28	1,978.22	698.10	256.38		7,123.23
Clinton	18	17.58	122.07	61.56	1,250.93	346.39			1,780.95
Crawford	P-8	17.00	65.48	8.82	24.33	45.74			144.37
Dallas	12	16.80	79.18	5.20	169.22	279.92		59.82	593.34
Dallas	P-33	22.25	37.75	839.62	474.92	159.83	61.24		1,573.36
Davis	50	10.20	89.60	806.61	1,482.88	358.46	918.36		3,655.91
Decatur	8	9.83	53.37	15.78	222.78	318.85		332.09	942.87
Decatur	122	10.00	18.16	1,223.18	624.00	179.94	11.76		2,055.64
Delaware	4	12.62	57.91	7.71	202.39	251.91	18.07	179.95	717.94
Delaware	103	13.30	15.11	749.88	20.58	102.19			887.76
Des Moines	32	4.89	99.91	216.66	313.54	209.86	282.54		1,122.51
Des Moines	P-53	2.35	29.69	77.98	112.33	65.32	38.47		323.79
Dickinson	68	4.80	159.74	455.45	443.34	219.17	5.80	827.32	2,110.82
Dickinson	P-23	7.50				9.37			9.37
Dickinson	P-55	1.50				7.73			7.73
Dubuque	17	21.69	92.48	2,596.11	1,910.96	525.51	69.96		5,185.02
Emmet	49	3.94	107.73	341.51	313.79	95.85			858.88
Emmet	P-57	38.90	29.97			4.15			25.12
Fayette	59	36.85	212.00	1,892.48	579.92	290.48	42.98		2,967.86
Fayette	P-					16.79			16.79
Floyd	41	12.40	140.51	812.97	814.24	404.66	94.49	1,094.70	2,851.80

Floyd	P-63	8.50		91.51		8.74			100.25
Franklin	105	9.75	84.17	1,087.64	517.87	246.56	229.66	14.45	2,171.35
Franklin	P-46	10.50			12.96	1.83	14.45		29.24
Fremont	77	18.50	159.73	2,231.34	1,466.51	421.23	399.07		4,677.88
Greene	39	7.41	242.14	28.89	644.97	455.36	442.85	2,439.77	4,233.98
Greene	P-24	35.50	40.20	2,718.87	422.24	338.38		809.31	4,329.00
Grundy	19	14.11	93.77	761.67	967.90	287.29	85.44		2,196.17
Grundy	P-48	19.50		167.06		15.96			183.02
Guthrie	51	20.00	238.38	2,531.83	1,698.94	501.89	197.25		5,168.29
Guthrie	P-52	15.50	3.57			58.13			61.70
Hamilton	67	20.90	134.95	1,106.19	1,029.69	272.09	80.74		2,623.06
Hamilton	P-17	6.50		12.60		1.20			13.80
Hancock	94	24.90	103.44	1,082.56	1,209.35	361.80	118.39	37.93	2,913.44
Hardin	P-4	8.80	12.40	10.76	2.51	73.98			99.65
Harrison	14	15.60	123.55	32.56	617.88	488.13	758.46	478.28	2,498.86
Harrison	P-34	19.50			14.51	6.17			20.68
Henry	56	20.90	418.13	1,423.85	1,111.38	451.72	994.80		4,399.88
Henry	P-					36.12			36.12
Howard	31	10.40	67.50	7.17	109.39	170.55		379.67	725.28
Howard	93	11.00		522.29	254.74	87.76	70.91		935.70
Humboldt	48	1.85	56.64		417.24	186.53	3.06	98.81	762.28
Humboldt	117	40.83	29.63	845.68	434.80	127.52		33.91	1,471.54
Ida	80	19.50	142.26	1,423.98	950.30	283.15	33.66		2,836.35
Iowa	90	26.20	183.40	3,762.43	693.33	469.69	179.75		5,288.60
Jackson	21	16.00	68.96	978.31	1,184.93	354.66	328.82	118.99	3,034.67
Jasper	64	31.50	209.70	3,963.35	1,895.20	615.32	357.14		7,040.71
Jasper	P-77	15.00				19.99			19.99
Jefferson	3	19.78	142.02	20.80	246.27	401.97	110.56	886.27	1,807.89
Jefferson	120	6.90	6.74	11.69	5.39	10.36			34.18
Johnson	9	10.89	28.58	.22	101.37	171.90		55.42	357.49
Johnson	P-35	18.20	5.51	833.03	858.09	320.08	4.08	21.28	2,042.07
Johnson	128	2.54		320.40	785.48	118.39	33.08		1,257.35
Jones	86	25.20	109.59		13.39	19.50			142.48
Keokuk	34	12.21	81.97	524.58	888.20	405.27	260.76	416.87	2,577.65
Keokuk	P-				3.44	16.71			20.15
Kossuth	63	34.23	175.21	2,730.61	1,823.32	561.00	73.15	99.01	5,462.30
Kossuth	111	21.31	160.78	1,139.61	1,507.01	395.89	399.07	79.77	3,681.53
Kossuth	P-6	17.42			3.44	.29			3.73
Lee	P-68	8.90	147.81	54.32	9.93	110.94			322.79
Linn	22	18.00	170.65	16.82	411.52	619.93		398.41	1,617.13
Linn	96	12.75	8.47	1,844.67	1,487.23	383.00	91.20		3,814.57
Louisa	53	23.40	213.45	2,146.91	1,068.72	359.54	99.48		3,888.10
Lucas	63	23.15	527.96	1,690.94	2,026.03	442.92	121.47		4,779.32
Lyon	110	23.00	63.79	1,363.78	825.04	398.14	11.80		2,572.55
Madison	P-36	13.00	49.73	651.93	104.03	112.15			917.81
Mahaska	70	26.76	310.32	4,238.92	775.73	568.51	164.88		6,058.34
Marion	7	18.00	111.22	11.83	208.38	282.53		318.21	932.20
Marion	75	23.20	40.88	2,119.45	2,093.32	483.75	76.67		4,734.07

SCHEDULE SIXTY-ONE—Continued.

County	Project No.	Miles	Reconnaissance and traffic census	Survey	Profile	Specifications, and records	Bridge and Cut-vert plans	Construction and testing materials	Total
Marshall	23	5.83	37.83	350.00	180.41	133.94		11.42	713.80
Marshall	P-13	3.25			11.98	11.02			23.00
Mills	15	13.00	201.90	1,151.76	975.95	496.46	605.21		3,431.28
Mills	P-37	8.00	8.38		38.99	3.08			51.35
Mitchell	45	15.88	115.28	806.58	705.02	170.40	5.03		1,962.31
Monona	P-38	39.40	404.18	5,938.50	1,080.19	725.87	137.51		7,716.25
Monroe	20	8.85	87.42	23.82	126.36	296.08		386.35	857.03
Montgomery	16	18.30	112.91	8.02	275.50	389.30		1,425.55	2,221.28
Montgomery	40	19.33	222.36	687.31	1,626.17	379.82	330.51		3,253.17
Muscataine	37	29.10			102.32	19.64			434.90
Muscataine	P-69	22.50	138.88	1,309.79	1,077.73	308.32	257.58	1,480.17	4,572.47
O'Brien	43	28.30	13.32	154.22	15.54	15.80			181.34
O'Brien	107	11.00	162.17	16.65	9.21	96.62	1.37		292.85
O'Brien	P-15	11.00	9.00		9.21	94.52			106.72
PAGE	P-27	23.25	194.93	2,533.00	887.71	321.51	33.50		3,405.65
Palo Alto	109	11.05	241.18	486.37	1,143.64	487.62	24.51	1,000.75	3,474.07
Plymouth	38	27.85	133.28	1,712.53	1,457.42	497.89	31.57		3,832.69
Pocahontas	P-39	27.50			25.16	9.38			34.54
Pocahontas	P-7	5.37	36.28		32.49	62.62			131.39
Polk	P-20	10.75			5.73	11.44			17.17
Polk	80	7.22	227.09	1,038.64	397.88	295.61	57.54	123.54	2,140.33
Polk	104	6.57	176.74	454.71	454.06	256.02	70.60	219.26	1,632.29
Polk	P-1	1.50			7.45	.63			8.08
Polk	P-3	4.25			57.97	11.17			91.63
Polk	P-40	29.20		14.19	744.42	106.48	23.38	22.49	801.47
Polk	P-59	3.50			49	.49			6.92
Pottawattamie	46	2.65	94.59	346.40	184.02	332.54	316.69	171.15	1,400.29
Pottawattamie	P-22	11.50	331.67	2,130.62	174.81	364.58	43.71		3,045.39
Pottawattamie	P-41	23.25				53.26			53.26
Poweshiek	6	24.00	130.97	1,045.34	122.94	268.50	85.03	6.64	2,568.72
Ringold	6	12.00	39.73	5.07	177.16	209.62	6.48	183.48	681.54
Ringold	123	12.00	16.88		3.97	9.78	8.70		39.00

Sac	P-10	7.15	75.42		9.17	92.56		25.03	902.18
Sac	P-11	11.24			10.32	17.92			28.24
Sac	P-12	13.19				17.15		4.13	21.28
Scott	54	8.46	203.83	333.25	297.36	201.38		229.64	1,295.46
Scott	55	19.33	315.79	3,279.92	1,060.53	588.29	394.89	21.73	6,290.86
Scott	114	17.24	43.29	70.60	1,798.57	483.21	432.38	1,283.93	4,114.98
Shelby	P-42	23.75	121.98	2,776.82	1,845.09	519.74	316.46		5,520.09
Sioux	28	24.40	135.44	51.76	537.61	464.56	786.50	190.07	2,165.94
Sioux	84	12.94	72.98	275.07	322.05	200.24	326.08	1,057.10	2,262.52
Sioux	P-26	2.19	6.76	83.44	87.78	85.99			263.97
Story	72	20.50	150.19	586.48	247.51	123.55		1,107.73	1,919.23
Story	P-62	43.80			11.61	6.00			19.23
Tama	47	30.00	278.82	2,563.58	1,877.30	570.95	63.46		4,854.12
Taylor	81	19.25	162.63	534.11	42.31	127.52	16.79		883.36
Union	83	24.00	192.20	2,111.82	951.24	382.14	57.95		3,716.21
Van Buren	60	11.10	210.41	2,469.09	554.76	346.44	46.42	20.86	3,627.12
Van Buren	P-43	15.50	93.95	26.46	4.42	2.90			33.78
Wapello	42	10.50	27.43	200.00	1,452.90	432.55	1,359.12	102.42	3,721.54
Wapello	P-54	17.00			103.15	15.55			158.17
Wapello	P-				24.45	2.34			26.79
Warren	11	15.50	48.22	916.81	563.91	565.06		44.95	2,138.95
Washington	P-44	15.50	6.63			53			7.19
Wayne	71	22.00	410.91	347.88	7.12	79.35			845.26
Wayne	91	17.80	114.43	1,575.64	1,075.85	303.04	222.67		3,291.63
Webster	13	12.15	37.28	32.53	195.08	324.32			768.92
Webster	P-25	16.90	11.25	1,189.24	360.83	172.54	179.11		1,679.89
Winebago	30	7.45	101.25	8.63	534.87	190.26	27.08	49.27	920.33
Winebago	P-2	18.87				12.56			12.56
Winnebuck	98	27.20	30.57	3,094.97	283.73	330.19			3,659.46
Woodbury	2	54.75	60.66	320.37	1,072.76	854.15	54.82	584.17	3,146.93
Woodbury	78	2.80	139.98	387.13	562.50	146.72	134.08	2,613.06	3,964.07
Woodbury	P-45	14.00	34.56	68.72	382.17	74.38		27.88	587.71
Worth	134	8.50	93.34	561.58	1.95	88.70		32.85	778.42
Wright	P-82	14.00				7.60			7.60
Wright	29	14.67	51.82	53.31	593.00	271.72	33.37	179.00	1,185.22
Wright	P-19	8.50	10.48			3.31			13.79
Totals		2,722.10	\$ 14,921.61	\$126,510.38	\$ 87,118.80	\$ 38,861.17	\$ 19,800.48	\$ 25,177.01	\$ 312,479.45

SCHEDULE SIXTY-TWO

SHOWING COST OF PLANS COMPLETED PRIOR TO SEPTEMBER 1, 1920, FOR FEDERAL AID PROJECTS COMPARED WITH ESTIMATED COST OF PROJECTS COMPILED NOVEMBER 1, 1920.

County	Project No.	Length in miles	Total cost of plans	Cost of plans per mile	Estimated cost of project as per project agreement	Cost of plans % of estimated cost of project
Adair	P-28	11.83	\$ 3,240.35	\$ 273.90	\$ 124,901.75	.0259
Adams	26	9.96	4,623.53	464.21	167,593.80	.0275
Allamakee	P-29	3.41	2,048.25	600.66	182,919.11	.0111
Appanoose	27	11.00	2,611.42	239.22	50,649.01	.052
Benton	58	17.80	5,126.42	286.55	505,256.01	.001
Black Hawk	25	4.08	2,039.02	499.76	168,412.04	.0121
Black Hawk	02	17.17	2,376.72	139.60	817,455.81	.0029
Boone	65	33.07	2,558.32	77.36	182,489.78	.014
Buchanan	5	15.56	1,847.04	118.71	83,785.41	.022
Buena Vista	37	12.84	2,263.07	175.47	50,843.95	.0445
Butler	85	12.85	2,194.89	170.57	100,746.96	.0217
Calhoun	10	18.30	1,582.46	86.47	130,754.30	.012
Carroll	99	8.96	1,680.94	187.61	83,175.34	.0222
Cerro Gordo	1	4.07	292.47	71.86	77,418.00	.0377
Cerro Gordo	61	6.05	2,641.36	436.58	241,706.08	.019
Cerro Gordo	115	22.07	1,450.54	65.72	1,040,894.72	.0014
Cherokee	116	14.03	2,451.27	174.72	60,861.24	.0043
Chickasaw	35	13.17	2,295.64	174.31	85,292.54	.0289
Clarke	33	8.41	2,656.35	314.36	65,269.00	.0407
Clay	P-32	7.36	1,388.64	188.67	382,801.91	.0036
Clinton	18	17.58	3,189.98	181.46	911,044.03	.0035
Dallas	12	16.80	2,194.61	130.63	37,288.07	.0588
Dallas	P-33	7.14	2,729.50	382.20	54,940.60	.0496
Davis	50	10.32	3,346.29	324.25	106,333.26	.0315
Decatur	8	9.83	3,167.29	322.20	60,320.00	.0525
Delaware	4	12.62	2,129.76	168.94	39,100.05	.0512
Des Moines	35	4.89	1,811.83	370.52	260,678.39	.0069
Dickinson	65	4.80	1,361.82	283.72	236,571.39	.0057
Dubuque	1	21.19	5,607.63	264.65	131,782.14	.0425
Emmet	41	3.94	892.45	226.51	200,461.80	.0045
Floyd	41	12.39	2,451.87	199.82	504,290.16	.0048
Franklin	105	9.84	2,235.36	227.17	75,445.37	.0296
Fremont	77	18.07	4,527.63	250.55	147,084.66	.0308
Greene	39	7.41	2,265.44	305.59	302,539.82	.0074
Grundy	16	14.11	3,169.38	223.98	60,004.67	.0526
Guthrie	51	12.39	5,443.36	439.33	240,927.50	.0225
Hancock	94	24.35	3,056.67	125.53	1,257,107.06	.0024
Harrison	14	15.60	4,859.41	322.67	94,487.14	.0514
Henry	56	20.62	3,602.12	174.69	91,796.04	.0392
Howard	31	10.40	1,783.54	171.49	55,514.14	.0321
Humboldt	48	1.85	738.51	399.25	88,588.35	.0083
Jefferson	3	19.78	4,109.00	207.72	82,322.85	.0499
Johnson	9	10.86	1,307.77	180.09	79,889.54	.0164
Johnson	128	2.54	1,230.72	484.53	128,397.83	.0095
Keokuk	34	12.25	4,358.92	355.83	58,336.79	.0747
Kossuth	111	21.31	3,202.69	150.29	995,001.59	.0032
Linn	22	17.83	4,067.61	229.75	397,476.32	.0103
Linn	96	12.40	3,896.28	306.15	52,358.35	.0744
Lucas	63	24.40	5,171.71	211.87	182,248.16	.0283
Marion	7	18.00	3,094.85	171.93	77,466.90	.0396
Marshall	23	6.00	825.01	137.50	272,322.05	.003
Monroe	20	8.25	2,123.50	257.39	48,639.07	.0436
Montgomery	16	16.50	3,439.43	208.43	95,469.97	.036
Muscatine	40	19.40	3,379.19	174.18	105,207.41	.0321
O'Brien	43	22.48	3,046.55	135.62	1,063,248.45	.0029
Palo Alto	109	11.05	2,739.78	247.94	339,153.65	.0806

SCHEDULE SIXTY-TWO—Continued.

County	Total cost of plans	Cost of plans per mile	Estimated cost of project as per agreement	Cost of plans % of estimated cost of project		
Polk	80	7.35	2,142.52	291.50	340,179.67	.063
Polk	104	6.57	1,418.85	215.95	339,418.20	.0418
Polk	P-40	29.20	904.84	30.98	1,614,277.50	.0056
Pottawattamie	46	2.65	2,432.44	917.40	26,819.65	.0907
Ringgold	6	12.00	2,022.02	168.50	59,254.14	.0341
Scott	54	8.46	1,496.07	176.10	379,289.62	.0039
Scott	55	16.62	8,356.80	502.80	82,911.07	.1008
Scott	114	17.24	2,398.67	103.90	913,901.12	.0026
Shelby	P-42 Div. A	11.69	5,549.13	500.37	133,328.14	.0416
Sioux	28	24.30	5,038.64	207.35	77,728.10	.0648
Sioux	P-26	2.19	263.67	125.34	110,173.34	.0024
Van Buren	60	12.75	3,939.40	308.98	82,596.11	.0477
Van Buren	P-43	4.00	345.13	86.28	10,000.00	.0345
Wapello	42	10.50	3,975.03	378.57	90,646.27	.0438
Webster	13	12.15	2,463.00	202.71	132,639.23	.0186
Winnebago	30	7.45	1,079.22	144.88	50,813.34	.0212
Woodbury	2	54.75	6,861.31	124.95	141,193.09	.0486
Woodbury	78	2.73	1,236.33	452.83	160,785.62	.0077
Woodbury	P-45	14.00	612.78	43.76	839,014.55	.0007
Wright	29	14.67	2,102.53	143.32	161,640.32	.013
Totals		1,002.01	208,594.54	208.17	19,283,653.94	.0103

SCHEDULE SIXTY-THREE.

STATEMENT OF PRIMARY ROAD FUND. NOVEMBER 30, 1920. Funds Allotted to Iowa Counties.

FEDERAL FUNDS.

July 21, 1916	\$ 146,175.60
July 1, 1917	292,351.20
July 1, 1918	434,653.61
Mar. 4, 1919	1,443,046.20
July 1, 1919	577,218.48
July 1, 1919	2,164,569.31
July 1, 1920	720,332.18
July 1, 1920	2,160,906.56

\$ 7,939,343.14

STATE FUNDS.

Aug. 1, 1917	\$ 146,175.60
Aug. 1, 1917	292,351.20
April 1, 1918	217,326.81
Aug. 1, 1918	217,326.80
April 1, 1919	288,609.24
Aug. 1, 1919	288,609.24
April 3, 1920	4,479,603.66
April 13, 1920	6,307.46
June 30, 1920	1,321,118.55

*\$ 7,257,488.56 \$15,196,831.70

FUNDS EXPENDED.

July 4—Dec. 31, 1917	\$ 18,100.62
Jan. 1—Dec. 31, 1918	75,853.12
Jan. 1—Dec. 31, 1919	423,776.13
Jan. 1—Nov. 30, 1920	4,212,256.00

\$ 4,729,985.96
10,466,845.74

*Refund.

\$15,196,831.70

SCHEDULE SIXTY-FOUR.
STATEMENT OF PRIMARY ROAD FUND.
NOVEMBER 30, 1920.
ALLOTMENTS BY COUNTIES.

County	No. of Sq. Mi. in county	Total allotment to Nov. 30, 1920	Expended previous to 1920	Expended Jan. 1 to Nov. 30, 1920	Total Expended	Balance
Adair.....	573	\$ 155,024.07	-----	\$ 34,916.56	\$ 34,916.56	\$ 120,108.11
Adams.....	427	115,524.49	-----	88,850.08	88,850.08	26,674.41
Allamakee.....	671	181,538.49	-----	16,828.41	16,826.41	164,712.08
Appanoose.....	513	138,791.71	-----	67,206.89	67,206.89	71,584.82
Audubon.....	443	119,863.29	-----	3,649.43	3,649.43	116,203.86
Benton.....	712	192,630.99	-----	19,174.15	19,174.15	173,456.84
Black Hawk.....	596	153,130.84	\$ 68,956.06	57,545.12	126,501.18	26,629.66
Boone.....	578	156,377.42	-----	106,731.30	106,731.30	49,646.12
Bremer.....	434	117,418.35	-----	12,171.32	12,171.32	105,247.03
Buchanan.....	507	153,401.38	-----	2,553.85	2,553.85	150,847.53
Buena Vista.....	580	156,918.52	-----	124,776.97	124,776.97	32,141.55
Butler.....	577	156,106.86	-----	12,451.84	12,451.84	143,655.02
Calhoun.....	571	154,483.58	4,862.83	143,248.15	148,110.98	6,372.60
Carroll.....	572	154,754.14	-----	5,650.26	5,650.26	149,103.88
Cass.....	564	152,689.74	-----	4,171.61	4,171.61	148,518.13
Cedar.....	578	156,377.41	-----	3,917.42	3,917.42	152,459.99
Cerro Gordo.....	575	155,535.77	46,759.10	248,762.19	295,521.29	*139,955.52
Cherokee.....	573	155,024.67	-----	8,075.04	8,075.04	146,949.63
Chickasaw.....	497	134,462.93	40,011.31	57,450.55	97,461.86	37,001.07
Clarke.....	428	115,795.04	-----	56,539.18	56,539.18	59,255.86
Clay.....	573	155,024.68	-----	-----	-----	155,024.68
Clayton.....	700	213,733.81	-----	-----	-----	213,733.81
Clinton.....	709	191,819.33	-----	9,143.60	9,143.60	182,675.73
Crawford.....	715	193,442.65	-----	3,801.35	3,801.35	189,641.30
Dallas.....	592	160,165.11	21,960.80	74,465.94	96,426.74	63,738.37
Davis.....	502	135,815.69	-----	5,159.41	5,159.41	130,656.28
Decatur.....	533	144,202.72	5,578.00	107,928.09	113,506.00	30,696.63

Delaware.....	571	154,483.58	-----	35,330.99	35,330.99	119,152.59
Des Moines.....	429	116,065.59	-----	7,026.72	7,026.72	109,038.87
Dickinson.....	411	111,195.70	-----	9,062.31	9,062.31	102,133.39
Dubuque.....	616	165,658.29	-----	72,319.19	72,319.19	94,339.10
Emmet.....	417	112,819.00	-----	36,034.75	36,034.75	76,784.25
Fayette.....	724	195,877.00	-----	6,207.46	6,207.46	189,670.14
Floyd.....	495	133,921.84	-----	250,523.27	250,523.27	*116,601.43
Franklin.....	578	156,377.41	-----	6,923.81	6,923.81	149,453.60
Fremont.....	522	141,226.67	-----	49,560.61	49,560.61	91,666.06
Greene.....	576	155,836.32	-----	95,946.11	95,946.11	59,890.21
Grundy.....	501	135,545.13	-----	12,107.58	12,107.58	123,437.55
Guthrie.....	597	161,517.86	-----	7,749.43	7,749.43	153,768.43
Hamilton.....	570	154,213.02	-----	16,421.19	16,421.19	137,791.83
Hancock.....	573	155,024.68	-----	6,064.64	6,064.64	148,960.04
Hardin.....	569	153,942.47	-----	5,302.87	5,302.87	148,639.60
Harrison.....	712	192,630.99	-----	75,035.30	75,035.30	117,595.69
Henry.....	427	115,524.49	-----	23,778.97	23,778.97	91,745.52
Howard.....	468	126,613.99	11,685.95	36,342.05	48,028.00	78,585.99
Humboldt.....	434	117,418.35	-----	56,090.35	56,090.35	61,328.00
Ida.....	430	116,336.14	-----	24,220.78	24,220.78	92,115.36
Iowa.....	583	157,730.17	-----	14,221.65	14,221.65	143,508.52
Jackson.....	649	175,586.44	-----	7,097.50	7,097.50	168,488.94
Jasper.....	730	197,500.89	-----	9,485.60	9,485.60	188,015.29
Jefferson.....	431	116,606.69	47,215.60	38,403.11	85,618.71	30,987.98
Johnson.....	611	165,305.54	-----	13,017.88	13,017.88	152,287.63
Jones.....	569	153,942.47	-----	2,633.96	2,633.96	151,308.51
Keokuk.....	578	156,377.42	23,930.55	64,091.50	88,022.05	68,355.37
Kossuth.....	974	263,514.89	-----	19,992.93	19,992.93	243,521.96
Lee.....	545	147,449.28	-----	6,682.54	6,682.54	140,766.74
Linn.....	717	200,291.20	53,805.35	150,277.16	207,082.51	*6,791.31
Louisa.....	426	115,253.95	-----	6,997.23	6,997.23	108,256.72
Lucas.....	432	116,877.25	-----	19,402.34	19,402.34	97,474.92
Lyon.....	582	157,459.60	-----	6,322.85	6,322.85	151,136.75
Madison.....	563	152,319.19	-----	5,747.90	5,747.90	146,571.29
Mahaska.....	575	155,565.77	-----	10,364.32	10,364.32	145,201.45
Marion.....	577	156,106.86	45,063.70	7,342.11	52,405.81	103,701.06
Marshall.....	572	154,754.14	-----	67,271.16	67,271.16	87,482.98
Mills.....	447	120,935.48	-----	23,440.97	23,440.97	97,494.51
Mitchell.....	463	125,264.25	-----	14,018.88	14,018.88	111,245.37
Monona.....	708	191,548.81	-----	8,010.03	8,010.03	183,538.78
Monroe.....	433	117,147.78	28,350.26	55,837.11	84,187.37	32,960.41
Montgomery.....	424	114,712.84	50,474.65	168,969.93	219,444.58	*104,731.74
Muscatine.....	455	123,069.87	-----	29,138.85	29,138.85	93,931.02
O'Brien.....	569	153,942.47	-----	60,811.76	60,811.76	93,130.71
Osceola.....	395	106,866.93	-----	21,959.82	21,959.82	84,907.11
Page.....	531	143,661.63	-----	-----	-----	143,661.63
Palo Alto.....	572	154,754.14	-----	162,948.70	162,948.70	*8,194.56

SCHEDULE SIXTY-FOUR—Continued.

County	No. of Sq. Mi. in county	Total allotment to Nov. 30, 1929	Expended previous to 1929	Expended Jan. 1 to Nov. 30, 1929	Total Expended	Balance
Plymouth	861	232,942.84		3,466.92	3,466.92	229,475.92
Pocahontas	580	155,918.32		31,145.00	31,145.00	125,773.32
Polk	596	161,247.29		162,568.80	162,568.80	*1,351.00
Pottawattamie	958	259,186.10		57,824.16	57,824.16	201,361.94
Poweshiek	580	156,918.52		10,968.60	10,968.60	145,949.92
Ringgold	340	145,093.31		66,502.18	70,286.09	75,810.44
Ringgold	340	145,093.31		31,089.25	31,089.25	72,330.54
Sac	579	185,839.32	3,693.91	56,331.43	38,516.89	88,041.32
Sac	470	127,158.11	7,427.63		34,331.43	103,022.07
Scott	580	159,353.50		144,123.41	144,123.41	61,403.98
Shelby	700	235,617.39		33,440.80	33,440.80	119,900.53
Sioux	567	153,401.42		3,625.76	3,625.76	181,169.66
Story	720	194,795.42		2,570.30	2,570.30	141,902.90
Tama	534	144,473.26		5,290.05	5,290.05	110,234.44
Taylor	427	115,524.49		42,479.72	42,479.72	99,089.37
Union	490	132,569.09		68,314.38	63,314.38	55,186.16
Van Buren	438	118,500.54		6,913.27	6,913.27	147,579.31
Wapello	971	154,481.58		10,759.24	10,759.24	140,477.77
Warren	559	151,337.01		2,447.49	2,447.49	139,329.96
Washington	524	141,737.75		139,896.31	139,896.31	58,711.75
Wayne	723	195,007.03		36,261.68	36,261.68	71,087.47
Webster	399	107,949.15		12,255.44	12,255.44	173,341.29
Winnebago	686	188,596.73		2,354.03	168,891.12	128,631.00
Woodbury	878	237,542.15	54,954.17	53,936.95	3,354.03	105,803.10
Worth	399	107,949.15		50,366.93	50,366.93	106,011.49
Wright	938	156,377.42				
Totals	56,147	\$15,106,831.70	\$ 517,729.87	\$ 4,212,256.00	\$ 4,729,983.00	\$ 10,466,845.74

*Overdrawn in anticipation of future allotments.

SCHEDULE SIXTY-FIVE
EXPENDITURES FOR PRIMARY ROAD CONSTRUCTION

County	Project number	Primary road fund	Primary road bond fund	Special assessments	County funds	Total
Cerro Gordo	1	\$ 44,907.50				\$ 44,907.50
Woodbury	1	94,104.84				94,104.84
Jefferson	3	82,014.14				82,014.14
Delaware	4	32,879.24				32,879.24
Buchanan	5					
Ringgold	6	67,198.19				67,198.19
Marion	7	45,063.70				45,063.70
Decatur	8	102,811.47				102,811.47
Johnson	9					
Calhoun	10	90,190.15				90,190.15
Dallas	11	54,539.02				54,539.02
Webster	13	105,875.36				105,875.36
Harrison	14	72,081.19				72,081.19
Mills	15	10,984.86				10,984.86
Montgomery	16	210,772.98				210,772.98
Dubuque	17	66,589.56				66,589.56
Clinton	18	1,511.82				1,511.82
Grundy	19	10,137.70				10,137.70
Monroe	20	76,655.54				76,655.54
Linn	22	174,893.64				174,893.64
Marshall	23	62,251.85				62,251.85
Black Hawk	25	36,139.29				36,139.29
Adams	28	82,282.35				82,282.35
Appanoose	28	60,526.84				60,526.84
Sioux	29	37,169.73				37,169.73
Wright	30	44,828.51				44,828.51
Winnebago	30	27,235.73				27,235.73
Howard	31	44,816.02				44,816.02
Des Moines	32	5,107.38				5,107.38
Clarke	32	45,686.66				45,686.66

SCHEDULE SIXTY-FIVE—Continued.

County	Project number	Primary road fund	Primary road bond fund	Special assessments	County funds	Total
Keokuk	34	80,065.06				80,065.06
Chickasaw	35	94,948.79				94,948.79
Buena Vista	37	72,197.32			178.00	72,197.32
Greene	39	90,606.79				90,606.79
Muscatine	40	20,841.21				20,841.21
Floyd	41	249,576.17	228,229.18	84,390.34		562,195.69
Wapello	42	60,464.77				60,464.77
O'Brien	43	58,849.39				58,849.39
Mitchell	45	8,905.00				8,905.00
Pottawattamie	46	36,613.51				36,613.51
Humboldt	48	54,409.10				54,409.10
Emmet	49	7,896.04				7,896.04
Davis	50	541.77				541.77
Guthrie	51	417.84				417.84
Scott	54	27,572.50	1,723.80			29,296.30
Henry	55		8,786.93			8,786.93
Benton	56	20,766.80				20,766.80
Van Buren	58	11,009.98				11,009.98
Cerro Gordo	60	40,311.88				40,311.88
Black Hawk	61	85,368.51	120,069.52	44,331.36		258,767.39
Lucas	62	20,699.58				20,699.58
Boone	63	13,802.70				13,802.70
Hamilton	65	92,264.97				92,264.97
Dickinson	67	27.86				27.86
Fremont	68	436.50				436.50
Ida	77	46,236.51				46,236.51
Sioux	80	16,343.84				16,343.84
Butler	84	84,754.96				84,754.96
Polk	85	12,451.84				12,451.84
Linn	89	4,503.16	58,225.67			62,728.83
Polk	96	21,326.95				21,326.95
Polk	104	127,855.21	121,559.49			249,414.70

Franklin	105	1,437.54				1,437.54
Palo Alto	109	160,992.30				160,992.30
Lyon	110	146.93				146.93
Kossuth	111	19,992.93				19,992.93
Scott	114	4,598.27	324,115.01			328,713.28
Cerro Gordo	115	161,879.11	190,379.12	41,272.02		393,530.25
Cherokee	116	1,899.17				1,899.17
Johnson	128	5,037.15				5,037.15
Winnebago	P-2	5,415.64				5,415.64
Polk	P-3	10,771.44				10,771.44
Calhoun	P-5	18,577.02				18,577.02
Pocahontas	P-7	21,811.07				21,811.07
Sac	P-10	5,759.22				5,759.22
Sac	P-11	4,978.66				4,978.66
Sac	P-12	61,465.30				61,465.30
Osceola	P-15	19,459.55				19,459.55
Calhoun	P-16	34,032.64				34,032.64
Hamilton	P-17	5,393.58				5,393.58
Buena Vista	P-18	36,031.19				36,031.19
Pocahontas	P-20	4,458.61				4,458.61
Webster	P-25	15,243.70				15,243.70
Sioux	P-26	1,307.42				1,307.42
Adair	P-28	28,512.70				28,512.70
Dallas	P-33	35,323.82				35,323.82
Shelby	P-42	51,836.20				51,836.20
Woodbury	P-45	235.64				235.64
Black Hawk	P-51	6,834.06				6,834.06
Des Moines	P-53	35.36				35.36
Dickinson	P-55	5,438.29				5,438.29
Emmet	P-57	25,361.24				25,361.24
Story	P-62	24,571.40				24,571.40
Polk	P-72	10,483.51	42,626.30			53,109.81
Floyd	P-73		4,664.19			4,664.19
Fremont	P-84	50.52				50.52
Totals		\$ 4,115,620.25	\$ 1,109,379.21	\$ 180,278.19	\$ 248,679.50	\$ 5,654,026.15

*This amount includes \$6,307.45 which was refunded by Linn County Treasurer. Net amount of expenditures, \$178,840.65.

CLASSIFICATION OF EXPENDITURES FOR PRIMARY ROAD CONSTRUCTION.

County	Project number	Grading	Graveling	Paving	Draining	Machinery and equipment	Engineering	Total
Cerro Gordo	1	\$ 7,476.98		\$ 83,803.64	\$ 6.00		\$ 415.00	\$ 91,701.62
Woodbury	2	143,775.94					4,840.03	148,615.97
Jefferson	3	70,351.32			6,051.68		5,611.14	82,014.14
Delaware	4	29,819.68			3,037.96		21.60	32,879.24
Buchanan	5				2,228.65			2,228.65
Ringgold	6	65,404.45					1,793.74	67,198.19
Marion	7	73,370.00			698.93			74,068.93
Decatur	8	97,882.18					4,929.29	102,811.47
Johnson	9	28,127.89					119.70	28,247.59
Calhoun	10		\$ 88,637.19				1,561.96	90,199.15
Dallas	12	46,060.28			7,177.30		1,292.08	54,529.66
Webster	13	35,834.15	62,564.26		7,100.21		376.74	105,875.36
Harrison	14	62,981.83			2,675.50		6,423.86	72,081.19
Mills	15	10,166.58					818.28	10,984.86
Montgomery	16	202,353.23			302.40		8,117.32	210,772.95
Dubuque	17	64,009.86			408.00		2,168.70	66,586.56
Clinton	18				1,511.82			1,511.82
Grundy	19	4,257.90			4,223.60		1,656.20	10,137.70
Monroe	20	75,118.21			544.19		993.14	76,655.54
Linn	22	49,705.64		108,159.72	14,061.42		6,913.87	178,840.65
Marshall	23			20,844.52		41,407.33		62,251.85
Black Hawk	25	13,859.17		159,944.28	2,163.99		4,882.97	180,850.41
Adams	26	76,904.18					5,383.37	82,287.55
Appanoose	27	60,273.38					253.46	60,526.84
Stout	28	53,081.59			93.50		4,024.64	57,199.73
Wright	29	30,544.84	2,119.68		9,067.33		2,196.68	44,828.51
Winnebago	30	21,065.19			5,438.35		762.18	27,265.72
Howard	31	21,066.00	19,292.83		1,821.67		2,606.00	44,846.62
Des Moines	32	1,443.81			1,547.93		115.61	3,107.35

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Clarke	33	43,734.22					1,954.44	45,688.66
Keokuk	34	77,046.38					3,018.68	80,065.06
Chickasaw	35	37,406.59	34,717.72		9,512.97	10,113.20	3,376.31	95,126.79
Buena Vista	37	67,380.05			3,508.12		1,219.15	72,107.32
Greene	39	34,580.23	1,318.10	49,905.30	1,194.40		3,608.76	90,606.79
Muscatine	40	17,145.47			1,377.11		2,318.63	20,841.21
Floyd	41	57,830.66		477,168.85	16,253.36		11,002.82	592,195.69
Wapello	42	56,189.13					4,275.64	60,464.77
O'Brien	43	4,691.25		45,238.42	6,172.94		2,746.78	58,849.39
Mitchell	45					8,905.00		8,905.00
Pottawattamie	46	35,154.25					1,459.26	36,613.51
Humboldt	48	9,334.08		41,312.57	1,618.16		1,844.29	54,009.10
Emmet	49				7,893.04			7,893.04
Davis	50	234.18					307.59	541.77
Guthrie	51						417.84	417.84
Scott	54	21,244.99			5,690.33		2,360.98	29,296.30
Scott	55	7,957.34					829.59	8,786.93
Henry	56	12,895.44			6,362.11		1,509.25	20,766.80
Benton	58	10,077.01					932.97	11,009.98
Van Buren	60	32,927.50			5,669.87		1,714.51	40,311.88
Cerro Gordo	61	16,981.41		232,883.71	4,110.19		4,792.08	258,767.39
Black Hawk	62				19,390.87		1,308.71	20,699.58
Lucas	63	13,390.54					408.16	13,798.70
Boone	65	36,495.08	42,368.85		7,879.93		5,521.11	92,264.97
Hamilton	67						27.88	27.88
Dickinson	68				436.50			436.50
Fremont	77	43,900.62					2,335.89	46,236.51
Ida	80	14,763.47					1,580.37	16,343.84
Sioux	84	8,779.08		71,894.69	573.19		3,508.00	84,754.96
Butler	85	7,675.50			3,530.34		1,249.00	12,454.84
Polk	89			61,030.63			1,608.20	62,728.83
Linn	96	17,320.52			2,812.27		1,194.16	21,326.95
Polk	104	20,388.91		219,232.48	2,494.69		7,300.62	249,414.70
Franklin	105				1,064.13		373.41	1,437.54
Palo Alto	109	31,681.11		92,261.16	8,099.54	23,511.92	5,408.47	160,932.20
Lyon	110						146.93	146.93
Kossuth	111				19,021.23		971.70	19,992.93
Scott	114	64,069.50		240,325.83	13,284.51		11,003.44	328,713.28
Cerro Gordo	115	49,935.63		316,302.22	18,848.36		8,444.01	393,530.25
Cherokee	116	1,574.10					325.07	1,899.17
Johnson	128	3,106.46		1,499.65			431.04	5,037.15
Winnebago	P-2	2,448.00	1,345.25		1,308.11		314.28	5,415.64
Polk	P-3	10,771.44						10,771.44
Calhoun	P-5		15,266.34		2,850.97		459.71	18,577.02
Pocahontas	P-7	20,790.00					1,021.07	21,811.07
Sac	P-10		1,800.69		3,298.56		566.97	5,756.22
Sac	P-11		4,378.18		52.00		548.48	4,978.66
Sac	P-12	315.51	52,939.60		5,302.45		2,907.74	61,465.30

County	Project number	Grading	Graveling	Paving	Drainage	Machinery and equipment	Engineering	Total
Oseola	P-15	19,178.55	28,590.49				281.00	19,459.55
Calhoun	P-16		2,308.51		5,056.46		386.69	34,062.64
Hamilton	P-17		6,881.29		2,739.14		345.93	5,333.58
Buena Vista	P-18		1,588.26		14,585.00		1,066.03	36,001.19
Pocahontas	P-20		13,580.53		706.58		153.37	4,458.61
Webster	P-25			8.00	1,043.80		1,663.17	15,243.70
Sioux	P-26				2,629.13		255.62	1,397.42
Adair	P-28		24,091.51		6,847.62		1,792.06	28,512.70
Dallas	P-33		27,646.35		190.00		829.85	35,323.82
Shelby	P-42		48,554.17		164.39		3,092.03	51,836.29
Woodbury	P-45				6,829.56		71.25	235.64
Black Hawk	P-51						4.50	6,834.06
Des Moines	P-53						8.71	35.36
Dickinson	P-55				25,361.24			5,438.29
Emmet	P-57				23,830.49		731.91	25,561.24
Story	P-62				4,664.10		1,194.03	24,571.40
Polk	P-72							53,109.81
Floyd	P-73							4,664.10
Fremont	P-84							50.52
Totals		\$2,454,055.97	\$372,345.99	\$2,222,055.67	\$345,450.34	\$83,937.45	\$189,903.27	\$5,617,718.69
								*6,307.46
								\$5,654,026.15

*Refund from Linn county treasurer.

SCHEDULE SIXTY-SEVEN.

EXPENDITURES FROM PRIMARY ROAD FUND MAINTENANCE,
JULY 1, 1920, TO NOVEMBER 30, 1920

County	Amount Expended On				Total
	Earth roads	Gravel roads	Paved roads	Primary road marking	
Adair	\$ 6,403.86				\$ 6,403.86
Adams	6,402.29			\$ 190.24	6,592.53
Allamakee	16,433.64			392.77	16,826.41
Appanoose	6,527.44			152.61	6,680.05
Audubon	3,649.43				3,649.43
Benton	7,377.26		\$ 242.19	544.72	8,164.17
Black Hawk	5,279.88	\$ 100.45	892.50	58.45	5,831.28
Boone	7,700.24	6,472.10		293.99	14,466.33
Bremer	8,611.10	2,898.35		661.87	12,171.32
Buchanan	2,553.85				2,553.85
Buena Vista	960.25	15,434.32		153.89	16,548.46
Butler					
Calhoun	2,419.95	2,391.27		490.95	5,302.17
Carroll	2,795.09	2,855.17			5,650.26
Cass	4,171.61				4,171.61
Cedar	3,701.91			215.51	3,917.42
Cerro Gordo	3,027.00		332.67	8.50	3,368.17
Cherokee	5,953.52			222.35	6,175.87
Chickasaw	1,457.10	1,055.97			2,513.07
Clarke	10,572.07			278.45	10,850.52
Clay					
Clayton					
Clinton	6,714.80	846.00		70.98	7,631.78
Crawford	3,801.35				3,801.35
Dallas	3,030.90	3,120.12		422.24	6,573.26
Davis	4,477.56			140.08	4,617.64
Decatur	10,331.36			363.26	10,694.62
Delaware	2,427.75	24.00			2,451.75
Des Moines	3,745.73	8.25		130.00	3,883.98
Dickinson		2,833.36		344.16	3,177.52
Dubuque	1,929.26	1,781.99	1,889.58	631.80	5,732.63
Emmet		2,528.27		249.20	2,777.47
Fayette	6,064.55			142.91	6,207.46
Floyd	666.79	280.31			917.10
Franklin	4,537.52	618.45		330.30	5,486.27
Fremont	3,198.09			80.52	3,278.61
Greene	1,114.37	3,799.13		425.82	5,339.32
Grundy	1,960.88				1,960.88
Guthrie	5,644.40	61.80		625.39	7,331.59
Hamilton	3,019.07	7,819.93		160.75	10,999.75
Hancock	4,124.50	1,940.14			6,064.64
Hardin	2,574.53	2,417.57		310.77	5,302.87
Harrison	2,895.84			58.27	2,954.11
Henry	3,012.17				3,012.17
Howard	2,199.26	510.65		471.47	3,181.38
Humboldt	144.65	1,538.60			1,683.25
Ida	7,423.38			453.56	7,876.94
Iowa	14,221.65				14,221.65
Jackson	5,157.48	1,777.86		162.16	7,097.50
Jasper	9,485.60				9,485.60
Jefferson	3,604.57				3,604.57
Johnson	7,779.77			200.96	7,980.73
Jones	2,488.25			145.71	2,633.96
Keokuk	7,294.82			662.17	7,956.99
Kossuth					
Lee	5,436.20	1,148.37		97.97	6,682.54
Linn	6,605.92	3,274.79	47.01	964.20	10,891.92
Louisa	6,997.23				6,997.23
Lucas	5,397.01			209.63	5,606.64
Lyon	5,970.46			205.46	6,175.92
Madison	5,337.82			410.08	5,747.90

SCHEDULE SIXTY-SEVEN—Continued.

County	Amount Expended On				Total
	Earth roads	Gravel roads	Paved roads	Primary road marking	
Mahaska	10,364.32				10,364.32
Marion	6,737.26			604.85	7,342.11
Marshall	4,738.20			281.11	5,019.31
Mills	12,290.67			165.44	12,456.11
Mitchell	3,125.65	1,944.25		43.98	5,113.88
Monona	7,948.80			61.23	8,010.03
Monroe	7,478.38			53.45	7,531.83
Montgomery	8,671.60				8,671.60
Muscatine	7,662.18	83.47	2.00	549.99	8,297.64
O'Brien	1,598.99	168.00		195.38	1,962.37
Osceola	2,500.27				2,500.27
Page					
Palo Alto	1,822.84			163.66	1,986.50
Plymouth	3,357.35			109.57	3,466.92
Pocahontas	963.30	3,882.11			4,845.41
Polk	5,973.13	2,472.75	539.69		8,985.57
Pottawattamie	20,959.80			250.85	21,210.65
Poweshiek	10,667.76			300.84	10,968.60
Ringgold	2,070.45			117.45	3,087.90
Sac	5,967.10	5,338.50			11,305.60
Scott	5,512.99	715.88		117.25	6,346.12
Shelby	4,440.28			54.95	4,495.23
Sioux	789.46			71.84	861.30
Story	2,600.98	5,892.89		375.62	8,869.49
Tama	2,934.09			691.67	3,625.76
Taylor	2,570.30				2,570.30
Union	4,976.83			313.22	5,290.05
Van Buren	2,167.84				2,167.84
Wapello	2,849.61				2,849.61
Warren	6,661.52			251.75	6,913.27
Washington	10,177.99			581.25	10,759.24
Wayne	1,979.90			467.59	2,447.49
Webster	6,969.58	8,164.65		642.02	15,776.25
Winnebago	3,420.46			189.86	3,610.32
Winneshiek	11,218.95			1,036.49	12,255.44
Woodbury	14,550.64				14,550.64
Worth	1,304.40	921.56		128.09	2,354.05
Wright	5,537.42				5,537.42
Total	\$494,308.27	\$ 97,119.28	\$ 2,945.64	\$ 19,923.52	\$ 614,296.71

PART II

County Engineers' Report

INTRODUCTION.

This summary is prepared from the annual reports of the county engineers of the ninety-nine counties of Iowa and is prepared and submitted in accordance with the provisions of Section 1527-s2, S. S. 1915.

The county engineers' reports include detailed statements of all county expenditures for road and bridge work. Efforts were made through the county engineers to secure detailed reports of township expenditures. Out of 1,606 townships, reports were secured from 1,348 up to date when this report was tabulated.

Statements of expenditures are based on warrants issued by the county auditors for the period covered by this report. The county engineers are dependent upon the following sources for information contained in their reports:

(a) Total expenditures from County Bridge, County Motor Vehicle Road, and County Road Cash Funds; County Auditor's Warrant Register; Detailed classification of these expenditures must be made by the county engineer.

(b) Expenditures from Primary Road Fund are taken from records of the State Highway Commission.

(c) Financial statement of the receipts and disbursements in above named funds, County Treasurer's Cash Book.

(d) Statement of county's indebtedness, records of county auditor and county treasurer combined.

(e) Statement of classified expenditures from all township funds, and financial statement of receipts and disbursements in said funds, annual reports of township clerks.

This report includes a general summary of the activities of the ninety-nine counties, paragraph summaries of the road and bridge expenditures of the individual counties, and thirty-two summary tables showing in detail the expenditures for road and bridge work from all funds and the present financial condition of the several counties.

Summary of Financial Statement for Entire State

ANNUAL REPORTS OF COUNTY ENGINEERS

JANUARY 1, 1920, TO JANUARY 1, 1921.

Total Expenditures.

From January 1, 1920, to January 1, 1921, the counties and townships spent \$28,024,945.25 for road and bridge work on the 104,082 miles of road in the primary, county and township road systems. The total expenditure for both road and bridge work is an average of \$269.25 per mile on the total mileage above named. The total expenditure is \$11,870,866.80, or 73.5% more than the total expenditure reported for 1919. The expenditures are classified as follows:

Bridge work, on all roads.....	\$ 9,804,213.40
Road work on primary system	7,483,973.54
Road work on primary system	5,795,553.64
Road work on township roads	4,977,204.77
Total	28,024,945.25

The expenditure for bridge work alone averaged \$94.20 per mile on the entire mileage of roads.

The expenditure for road work on the primary system averaged \$1,130.66 per mile. For road work on the county system an average of \$545.82 per mile and on the township road system \$67.29 per mile.

The following schedule compares expenditures for the past several years, according to purpose for which spent and according to the fund from which derived.

TOTAL EXPENDITURES FOR ROAD AND BRIDGE WORK.

	1916	1917	1918	1919	1920
Bridge work on both county and township roads	\$ 7,172,246.02	\$ 7,466,796.60	\$ 6,806,818.16	\$ 6,854,722.43	\$ 9,804,213.40
Road work on primary roads				440,008.58	7,483,973.54
Road work on county roads	3,276,025.71	4,140,349.58	3,856,051.88	4,817,475.77	5,795,553.64
Road work on township roads	3,072,022.02	3,558,338.51	3,430,882.57	4,041,871.72	4,977,204.77
Totals	\$13,020,294.65	\$15,165,475.70	\$14,095,702.61	\$16,154,078.45	\$28,024,945.25

TOTAL EXPENDITURES FROM SEVERAL FUNDS.

	1916	1917	1918	1919	1920
County bridge fund.....	\$ 6,130,409.81	\$ 6,540,024.03	\$ 5,808,300.45	\$ 5,827,432.14	\$ 9,110,408.77
Primary road fund.....		18,100.92	75,833.12	440,008.58	5,198,849.94
Primary road bond fund.....					1,180,670.16
Primary road certificates.....					253,968.23
County road cash fund.....	3,236,318.71	3,719,383.92	3,514,576.57	4,418,388.16	6,065,835.84
Motor vehicle road fund.....	966,292.47	1,223,745.65	1,215,801.72	1,359,384.19	564,789.18
Secondary road dist.					
Spl. assts.					36,229.96
Township funds	3,072,022.02	3,558,338.51	3,306,309.50	4,008,701.05	4,801,137.38
All other sources	83,550.84	105,888.52	84,822.24	129,214.03	192,286.09
Totals	\$13,020,294.65	\$15,165,475.70	\$14,095,702.61	\$16,154,078.45	\$28,024,945.25

Cash Balances January 1, 1921.

On January 1, 1921, there were cash balances on hand in the county and township road and bridge funds amounting to \$1,411,012.69 as follows:

County bridge fund	\$489,892.03
County road cash fund	3,191.96
County motor vehicle road fund.....	160,963.36
Total county balance.....	654,047.35
Township road, drag and drainage funds	756,965.34
Total	\$1,411,012.69

Indebtedness.

On January 1, 1921, there were outstanding bonds, for road and bridge work, amounting to \$15,778,758.36 as follows:

Bridge bonds outstanding	\$11,109,020.76
Road bonds outstanding	4,667,737.60
Total bonds outstanding	\$15,776,758.36*

During the year funding bonds were issued as follows:

Bridge bonds	\$2,254,521.80
Road bonds	1,923,319.51
Total	\$4,177,841.31

Bonds were retired during the year as follows:

Bridge bonds	\$275,473.21
Road bonds	45,526.79
Total	\$321,000.00

*\$1,335,000.00 Primary Road Bonds not included.

TOTAL INDEBTEDNESS FOR ROAD AND BRIDGE WORK
COUNTY BRIDGE FUND.

	January 1, 1917	January 1, 1918	January 1, 1919	January 1, 1920	January 1, 1921
Outstanding bills	\$ 216,253.16	\$ 152,426.34	\$ 157,910.05	\$ 128,968.05	\$ 122,641.65
Outstanding warrants ..	2,556,460.00	2,414,748.15	2,081,701.72	1,994,273.45	2,680,018.52
Outstanding bonds	3,872,817.27	6,308,041.35	7,954,280.13	9,101,876.74	11,109,020.76
Total bridge indebtedness	\$ 6,645,530.43	\$ 8,875,215.84	\$10,193,891.90	\$11,225,118.24	\$13,911,680.93

COUNTY ROAD FUND.

	January 1, 1917	January 1, 1918	January 1, 1919	January 1, 1920	January 1, 1921
Outstanding bills	\$ 125,475.25	\$ 86,709.12	\$ 114,530.96	\$ 81,914.93	\$ 108,603.33
Outstanding warrants ..	809,505.17	1,174,430.27	837,137.99	1,367,540.14	2,093,472.46
Outstanding bonds	454,457.08	1,054,645.79	2,054,020.95	2,965,551.08	4,667,737.60
Total road indebtedness	\$ 1,389,438.45	\$ 2,315,785.18	\$ 3,005,689.90	\$ 4,115,006.15	\$ 6,869,813.39
Total indebtedness	\$ 8,034,968.88	\$11,191,001.02	\$13,199,581.80	\$15,340,124.39	\$20,781,494.32

EQUIPMENT AND TOOLS ON HAND

Reports of county engineers show that the several counties owned equipment and tools for road and bridge work on January 1, 1921, at \$1,065,274. A summary of the principal items of equipment reported is as follows:

Items	Number	Estimated Value
Tractors	199	321,963
Trucks	88	157,045
Concrete Mixers	114	24,285
Pile Drivers	81	10,971
Blade Graders	960	223,605
Wheeled Scrapers	1,148	27,932
Slip Scrapers	1,478	9,835
Road Drags	3,847	52,351
Fresnos	161	2,646
Road Planers	213	47,727
Plows	517	7,263
Gas Engines	29	2,865
Camp Equipment		26,567
Small Tools and Miscell.		150,219
Total		\$1,065,274

A detailed statement of the inventory of equipment in each county is given in Summary Table No. 32, Parts 1 and 2.

This does not include equipment owned by townships which consists principally of blade graders, tractors, drags, wheeled scrapers, slip scrapers, plows, and small tools.

SUMMARY OF BRIDGE WORK AND EXPENDITURES FOR
ENTIRE STATE

January 1, 1920 to January 1, 1921

The total expenditure for bridges and culverts in the state during 1920 was \$9,804,213.40, or \$2,949,490.97 more than the total expenditure for like purpose in 1919.

Below is a comparison of the classified expenditures for each of the past five years including 1920, a comparison of permanent and temporary construction and a statement of the amounts spent for the various types of construction for the past four years. The amounts given were expended on work classified as shown.

Permanent bridges and culverts include only structures composed entirely of masonry or steel construction. If a part of the work is of a temporary nature, the structure is classified under the heading of temporary construction. Pipe culverts not provided with masonry bulk heads are classified as temporary construction.

The item of culvert material purchased for townships appears only for the years 1917, 1918, 1919 and 1920 as the law providing that such material shall be furnished became effective in 1917. Prior to that time the counties not only furnished the material for temporary culverts on the township road system, but installed same, so that for the year 1916 this item is included under temporary bridges and culverts constructed.

COMPARISON OF CLASSIFIED BRIDGE EXPENDITURES

AMOUNTS.

Classification	1916	1917	1918	1919	1920	Total Five Year Period
Permanent bridges and culverts	\$4,026,309.01	\$4,485,781.23	\$3,578,451.05	\$3,827,081.17	\$5,407,243.64	\$21,324,866.10
Temporary bridges and culverts	1,222,023.37	603,490.24	598,426.88	577,741.33	824,261.37	3,825,943.19
Repairs	1,026,735.79	1,039,391.95	1,027,526.00	1,187,365.80	1,646,527.13	5,927,546.67
Culverts purchased for townships		463,553.59	410,171.73	370,651.19	514,146.30	1,758,522.81
Equipment and unused material	318,140.67	356,255.98	650,984.96	391,728.43	684,392.24	2,401,502.28
Filling bridges and culverts	386,626.82	392,319.27	385,118.02	329,335.46	420,188.15	1,883,587.72
Special cases	192,410.36	156,004.43	158,139.52	170,819.05	307,454.57	984,827.03
Totals	\$7,172,246.02	\$7,466,796.69	\$6,808,818.16	\$7,854,722.43	\$9,804,213.40	\$38,106,796.70

PERCENTAGES.

Classification	1916	1917	1918	1919	1920	Total Five Year Period
Permanent bridges and culverts	56.20	60.08	52.00	55.83	55.15	55.96
Temporary bridges and culverts	17.03	8.08	8.78	8.43	8.41	10.04
Repairs	14.30	13.91	15.08	17.32	16.79	15.55
Culverts purchased for townships		6.20	6.02	5.41	5.24	4.62
Equipment and unused material	4.42	4.78	9.55	5.71	6.98	6.30
Filling bridges and culverts	5.40	4.86	5.65	4.81	4.29	4.94
Special cases	2.65	2.09	2.32	2.49	3.14	2.50
Totals	100.00	100.00	100.00	100.00	100.00	100.00

COMPARISON OF EXPENDITURES FOR PERMANENT AND TEMPORARY BRIDGE CONSTRUCTION

	1916 Expenditures	%	1917 Expenditures	%	1918 Expenditures	%
Permanent bridges and culverts	\$ 4,026,309.01	76.7	\$ 4,485,781.23	80.77	\$ 3,578,451.05	78.00
Temporary bridges and culverts	1,222,023.37	23.3	603,490.24	10.88	598,426.88	13.05
**Culvert materials furnished townships			463,553.59	8.35	410,171.73	8.95
Total	\$ 5,248,332.38	100.00	\$ 5,552,825.06	100.00	\$ 4,587,049.66	100.00

	1919 Expenditures	%	1920 Expenditures	%	Five Year Period Expenditures	%
Permanent bridges and culverts	\$ 3,827,081.17	80.14	\$ 5,407,243.64	80.16	\$ 21,324,866.10	79.25
Temporary bridges and culverts	577,741.33	12.11	824,261.37	12.22	3,825,943.19	14.22
**Culvert materials furnished townships	370,651.19	7.75	514,146.30	7.62	1,758,522.81	6.53
Total	\$ 4,775,473.69	100.00	\$ 6,745,651.31	100.00	\$ 26,909,332.10	100.00

**Included under Temporary Bridges and Culverts for 1916.

CULVERT MATERIAL PURCHASED FOR TOWNSHIPS

Operating under the law which provides that counties may furnish townships with the materials for temporary culverts, the 1606 townships were furnished material in 1920 at a total cost to the counties of \$514,146.30.

A summary of the cost of material of various classes furnished in 1918, 1919 and 1920 is as follows:

	1918	1919	1920
Corrugated pipe	\$ 320,010.96	\$ 240,429.40	\$ 356,838.65
Concrete pipe	47,558.33	64,411.00	65,666.96
Lumber	27,589.07	41,229.52	72,719.38
Miscellaneous material	15,013.37	24,581.27	18,021.43
Totals	\$ 410,171.73	\$ 370,651.19	\$ 514,146.30

SUMMARY OF ROAD WORK AND EXPENDITURES FOR ENTIRE STATE

January 1, 1920 to January 1, 1921

Primary and County Road Expenditures.

During the year 1920, the total expenditure for road work on the primary and county roads was \$13,243,527.08. A division of this expenditure by road systems and the average amount spent per mile of road is shown by the following table:

Road System	Number Miles in System	Amount Expended	Average Per Mile
Primary	6,619.10	\$ 7,483,973.54	\$ 1,130.66
County	10,551.97	5,759,553.54	545.82
Total	17,171.07	\$ 13,243,527.08	

Under the primary road law the cost of maintenance of primary roads for the first six months of the year 1920 was borne by the counties and figures given above showing amounts expended on the primary system include all sums spent from both county and primary road funds.

The above total expenditure on roads does not include items amounting to \$420,188.15 listed under bridge work for filling of bridges and culverts, but paid for out of county road cash fund.

The classification of work, amount and percentage of entire expenditure spent for construction, maintenance and special cases is shown below:

Road System	Construction		Maintenance		R. R. Cross Special Cases	
	Amount	%	Amount	%	Amount	%
Primary	\$ 5,817,297.37	78	\$ 1,593,654.13	21	\$ 73,022.04	1
County	2,618,348.38	45	2,084,537.15	47	456,168.01	8
Total	\$ 8,436,145.75		\$ 4,278,191.28		\$ 529,190.05	

During the year there were 325.45 miles of county road built to finished grade at a cost of \$1,200,764.01, or an average of \$3,689.55 per mile. There were 373.03 miles surfaced with gravel at a cost of \$896,141.62, or an average of \$2,402.33 per mile; and .02 of a mile was hard surfaced at a cost of \$1,503.92. \$413,362.94 was spent for tiling and drainage assessments and \$107,075.89 for equipment and tools used on construction work.

During the year construction work of bringing primary roads to permanent grade was carried forward in 89 counties at a cost of \$567,458.04. Paving was carried forward in 16 counties at a cost of \$2,269,516.35. In 83 counties tiling was done and drainage assessments were paid to the amount of \$462,674.90, while equipment and tools to the amount of \$80,307.20 were purchased.

A total of 43.35 miles of paving on the primary system was completed during the year 1920, 40.66 miles being built of concrete at an average price of \$3.99 per square yard and 2.69 miles built of brick at an average cost of \$4.94 per square yard.

Condition of the primary and county road systems January 1, 1921, was as follows:

Condition	Primary	County
Miles earth road not built.....	4,738.60	8,680.62
Miles earth road built to permanent grade.....	1,021.40	1,022.96
Miles surfaced with gravel.....	792.30	846.38
Miles paved	66.80	2.01
Total miles in system.....	6,619.10	10,551.97

The total expenditure for repairing and maintaining primary roads was \$1,593,654.13, of which \$811,933.72 was spent for patrol maintenance, \$581,653.11 for gang maintenance, \$148,053.94 for

equipment and tools, and \$52,013.36 for materials, or a total average cost of \$240.77 per mile.

The total expenditure for repairing and maintaining county roads was \$2,684,537.15, of which \$1,098,605.86 was spent for patrol maintenance, including dragging, \$895,368.78 for gang maintenance, and \$590,562.51 for equipment and tools, or an average of \$254.41 per mile.

The comparative cost of maintenance of earth, gravel and paved roads of the primary and county systems is shown by the following table:

Road System	Earth		Gravel		Paved	
	Cost of Maintenance	Average Per Mile	Cost of Maintenance	Average Per Mile	Cost of Maintenance	Average Per Mile
Primary	\$ 1,292,974.51	224.47	\$ 288,553.69	364.20	\$ 12,125.93	181.53
County	2,472,912.62	254.84	210,842.48	249.11	782.05	389.68

*Of this amount \$3,200.00 was spent for guard rail, building gravel shoulders and should be classed as construction work; with this amount deducted the average cost of maintenance of paved roads would be reduced to \$133.62 per mile.

Detailed comparisons of the road work and expenditures on primary, county and township systems are shown in tables 12 to 32 inclusive, and charts showing comparative mileage of roads built to finished grade, surfaced with gravel and paved will be found immediately following this summary.

Township Road Work.

Reports from 1,348 of the 1606 townships were received, the 258 townships which did not report are not included in tabulations in this report.

The 1,348 townships reporting show a total road expenditure of \$4,977,204.77, or an average of \$3,692.28 per township. In 1919 the average township expenditure was \$2,824.51.

The township road work for 1920 is classified as follows:

Construction	\$ 943,791.88	19%
Maintenance	3,970,713.45	80%
Special cases	62,699.44	1%
Total	\$ 4,977,204.77	100%

The township expenditures reported are shown in detail in summary tables Nos. 4, 25 and 31.

ADAIR COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920, were \$108,912.61, of which \$61,309.81 or 57% was spent for permanent bridges and culverts; \$6,310.48 or 6% for temporary bridges and culverts; \$10,928.67 or 10% for repairs; \$15,337.88 or 13.3% for culvert material for townships; \$5,407.27 or 5% for equipment and unused materials; \$8,861.00 or 8% for filling bridges and culverts; and \$757.50 or 0.7% for special cases.

Of the total amount, \$67,620.29, spent for new bridges and culverts, \$61,309.81 or 91% was spent for permanent work and \$6,310.48 or 9% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$32,178.50; head walls and culverts lengthened, \$3,348; concrete pipe, \$6,310.48; concrete abutments, \$4,742; I-beam spans—concrete abutments, \$5,471.80; pony truss—concrete abutments, \$15,341.41; miscellaneous permanent bridges and culverts, \$227.42.

1. Primary Roads.

The total expenditure was \$46,284.92 of which \$32,415.98 or 70% was spent for construction and \$13,868.94 or 30% for maintenance. Grading was done on 3.88 miles at a cost of \$28,836.27. The total amount spent for tiling and drainage was \$3,579.71.

56.6 miles earth road, the entire system, were maintained at a cost of \$13,868.94 or an average of \$245.03 per mile.

On January 1, 1921, the county had 56.6 miles of earth roads not built.

2. County Roads.

The total county road expenditure was \$24,094.92 of which \$833.81 or 3% was spent for construction and \$23,261.11 or 97% for maintenance. The total amount spent for tiling and drainage was \$833.81.

109.40 miles of earth road, the entire system, were maintained at a cost of \$23,261.11 or an average of \$212.00 per mile. The total average expenditure per mile of county road was \$220.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$41,223.92.

ADAMS COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$100,265.95, of which \$54,154.78 or 54% was spent for permanent bridges and culverts; \$12,886.45 or 12.8% for temporary bridges and culverts; \$15,288.37 or 15.2% for repairs; \$4,125.53 or 4.1% for culvert material for townships; \$8,097.32 or 8.1% for equipment and unused materials; \$4,658.00 or 4.7% for filling bridges and culverts; and \$1,056.72 or 1.1% for special cases.

Of the total amount, \$67,041.23, spent for new bridges and culverts, \$54,154.78 or 80.8% was spent for permanent work and \$12,886.45 or 19.2% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$40,550.22; head walls and culverts lengthened, \$1,057.60; concrete slab bridges, \$6,753.07; wood trestle bridges, \$8,972.06; concrete pipe, \$3,914.39; pony truss—concrete abutments, \$4,933.40; miscellaneous permanent bridges and culverts, \$860.49.

1. Primary Roads.

The total expenditure was \$91,572.98, of which \$82,385.81 or 91% was spent for construction and \$8,188.17 or 9% for maintenance. Grading was done on 6.67 miles at a cost of \$82,385.81.

35.2 miles of earth road, the entire system, were maintained at a cost of \$8,188.17 or an average of \$232.62 per mile.

On January 1, 1921, the county had 28.2 miles of earth roads not built and 7.0 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$31,855.89, of which \$27,841.26 or 87% was spent for maintenance and \$4,374.53 or 13% for special cases.

106.25 miles of earth road, the entire system, were maintained at a cost of \$27,481.36 or an average of \$259.00 per mile. The total average expenditure per mile of county road was \$300.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$32,333.73.

ALLAMAKEE COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$52,154.87, of which \$19,249.12 or 37% was spent for permanent bridges and culverts; \$7,779.48 or 15% for temporary bridges and culverts; \$13,215.24 or 26% for repairs; \$7,649.83 or 15% for equipment and unused materials; \$249.52 or 0.5% for filling bridges and culverts; \$2,281.85 or 4.5% for special cases.

Of the total amount, \$27,028.60, spent for new bridges and culverts, \$19,249.12 or 71% was spent for permanent work and \$7,779.48 or 29% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$7,768.40; masonry culverts, \$1,194.45; concrete slab bridges, \$2,962.01; wooden trestle bridges, \$6,331.33; concrete pipe, \$1,483.15; I-beam spans—concrete abutments, \$3,398.00; pony truss—concrete abutments, \$3,926.26.

1. Primary Roads.

The total expenditure was \$28,984.46 and expended entirely for maintenance.

84.3 miles of earth road, the entire system, were maintained at an average cost of \$343.82 per mile.

On January 1, 1921, the county had 84.3 miles of earth roads not built.

2. County Roads.

The total county road expenditure was \$42,617.95, of which \$40,654.21 or 95% was spent for maintenance and \$1,961.71 or 5% for special cases.

92.50 miles of earth road, the entire system, were maintained at a cost of \$40,656.24 or an average of \$440.00 per mile. The total average expenditure per mile of county road was \$461.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$37,977.06.

APPANOOSE COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$4,331.44, of which \$40,997.66 or 48.6% was spent for permanent bridges and culverts; \$6,026.33 or 7.2% for temporary bridges and culverts; \$12,148.26 or 14.4% for repairs; \$18,437.41 or 21.9% for culvert material for townships; \$2,497.25 or 2.8% for equipment and unused materials; \$845.90 or 1.0% for filling bridges and culverts; \$3,468.63 or 4.1% for special cases.

Of the total amount, \$47,023.99, spent for new bridges and culverts, \$40,997.66 or 87.2% was spent for permanent work and \$6,026.33 or 12.8% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$19,549.60; masonry culverts, \$4,116.62; corrugated pipe, \$1,959.11; wood trestle bridges, \$747.26; corrugated, galvanized and boiler pipe, \$3,289.96; I-beam spans—concrete abutments, \$13,563.89; pony truss—concrete abutments, \$3,735.95; miscellaneous permanent bridges and culverts, \$11.60.

1. Primary Roads.

The total expenditure was \$73,721.84, of which \$60,526.84 or 82% was spent for construction and \$13,195.00 or 18% for maintenance. Grading was done on 10.46 miles at a cost of \$60,526.84.

88.1 miles of earth road, the entire system, were maintained at a cost of \$13,195.00 or an average of \$227.11 per mile.

On January 1, 1921, the county had 47.1 miles of earth roads not built and 11 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$41,886.84, of which \$32,917.29 or 79% was spent for maintenance and \$8,969.55 or 21% for special cases.

114.5 miles of earth road, the entire system, were maintained at a cost of \$32,917.29 or an average of \$287.00 per mile. The total average expenditure per mile of county road was \$365.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 16 of the 17 townships was \$37,092.00.

AUDUBON COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$64,499.10 of which \$22,129.37 or 34% was spent for permanent bridges and culverts; \$14,708.93 or 23% for temporary bridges and culverts; \$7,239.88 or 10% for repairs; \$6,007.32 or 8% for culvert material for townships; \$13,928.20 or 21% for equipment and unused materials; \$795.30 or 1% for filling bridges and culverts; \$2,690.10 or 3% for special cases.

Of the total amount, \$36,838.30, spent for new bridges and culverts, \$22,129.37 or 61% was spent for permanent work and \$14,708.93 or 39% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$9,777.68; head walls and culverts lengthened, \$2,340.49; wooden trestle bridges, \$14,708.93; I-beam spans—concrete abutments, \$19,011.20.

1. Primary Roads.

The total expenditure was \$5,748.77, and expended entirely for maintenance.

There were 46.1 miles of earth road, the entire system, maintained at an average cost of \$124.70 per mile.

On January 1, 1921, the county had 46.1 miles of earth roads not built.

2. County Roads.

The total county road expenditure was \$15,445.79 of which \$72.20 or 1% was spent for construction, \$14,318.38 or 92% for maintenance and \$1,055.21 or 7% for special cases. The total amount spent for tiling and drainage was \$72.20.

There were 36.9 miles of earth road, the entire system, maintained at a cost of \$14,318.38 or an average of \$147.00 per mile. The total average expenditure per mile of county road was \$160.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 10 of the 12 townships was \$36,840.57.

BENTON COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$176,563.49 of which \$124,452.85 or 71% was spent for permanent bridges and culverts; \$3,917.66 or 2.2% for temporary bridges and culverts; \$21,479.19 or 12% for repairs; \$4,302.33 or 2.3% for culvert material for townships; \$13,039.52 or 7.3% for equipment and unused materials; \$2,234.93 or 4% for filling bridges and culverts; \$2,137.01 or 1.2% for special cases.

Of the total amount, \$128,370.61, spent for new bridges and culverts, \$124,452.85 or 97% was spent for permanent work and \$3,917.66 or 3% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$59,707.65; concrete slab bridges, \$12,278.65; concrete pipe, \$3,667.72; concrete thru girders, \$20,891.30; concrete deck girders, \$11,194.65; I-beam spans—concrete abutments, \$10,365.13; steel concrete abutments, \$242.95; pony truss—concrete abutments, \$9,772.51; miscellaneous temporary bridges and culverts, \$249.34.

1. Primary Roads.

The total expenditure was \$48,163.56, of which \$24,541.46 or 50.9% was spent for construction and \$23,622.10 or 49.1% for maintenance; \$15,548.19 was spent for grading and \$8,693.36 was spent for paving with concrete.

There were 88.4 miles of earth road maintained at a cost of \$23,259.24 or an average of \$263.11 per mile. One mile of paved road was maintained at a cost of \$362.86. There were 89.4 miles in the entire system maintained at a cost of \$23,622.10 or an average of \$264.23 per mile.

On January 1, 1921, the county had 83.4 miles of earth roads not built, 5 miles of earth road built to permanent grade and 1 mile of paved road.

2. County Roads.

The total county road expenditure was \$47,230.59 of which \$2,684.34 or 6% was spent for construction, \$43,298.24 or 92% for maintenance and \$1,248.01 or 2% for special cases. The total amount spent for tiling and drainage was \$2,684.34.

There were 150.5 miles of earth road, the entire system, maintained at a cost of \$43,298.24 or an average of \$288.00 per mile. The total average expenditure per mile of county road was \$314.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 15 of the 20 townships was \$60,460.70.

BLACK HAWK COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$213,886.42, of which \$160,887.71 or 75.5% was spent for permanent bridges and culverts; \$6,231.86 or 2.9% for temporary bridges and culverts; \$6,397.83 or 3% for repairs; \$4,576.20 or 2.1% for culvert material for townships; \$14,285.48 or 6.7% for equipment and unused materials; \$4,828.46 or 2.3% for filling bridges and culverts; \$15,878.78 or 7.5% for special cases.

Of the total amount, \$167,119.57, spent for new bridges and culverts, \$160,887.71 or 96.3% was spent for permanent work and \$6,231.86 or 3.7% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$82,748.90; concrete pipe, \$1,390.48; head walls and culverts lengthened, \$783.00; corrugated pipe, \$1,273.82; wood trestle bridges, \$1,567.56; concrete abutments, \$2,271.20; I-beam spans—concrete abutments, \$18,965.44; pony truss—concrete abutments, \$39,016.61; high steel trusses—concrete abutments, \$17,102.56.

1. Primary Roads.

The total expenditure was \$92,627.34, of which \$71,253.83 or 77% was spent for construction and \$21,373.51 or 23% for maintenance; \$4,605.21 were spent for grading; .75 mile was paved with concrete at a cost of \$30,140.99. The total amount spent for tiling and drainage was \$36,491.88. The total amount spent for equipment and tools was \$15.75.

The 70.9 miles of earth road were maintained at a cost of \$17,374.52 or an average of \$245.06 per mile; 3 miles of gravel road were maintained at a cost of \$106.30 or an average of \$35.10 per mile; 4.1 miles of paved road were maintained at a cost of \$3,893.69 or an average of \$949.68 per mile. However, these figures include \$3,200.00 spent for guard rail and construction of gravel shoulders. The entire system consisting of 78 miles was maintained at a cost of \$21,373.51 or an average of \$274.02 per mile.

On January 1, 1921, the county had 70.9 miles of earth roads not built, 2 miles surfaced with gravel and 4.1 miles paved.

2. County Roads.

The total county road expenditure was \$93,252.63, of which \$63,322.96 or 68% was spent for construction; \$26,635.93 or 28% for maintenance and \$3,294.64 or 4% for special cases; 6 miles were built to finished grade standard section at a cost of \$13,455.03 and 4 miles were surfaced with gravel at a cost of \$25,766.69. The total amount spent for tiling and drainage was \$12,576.86 and for equipment and tools, \$11,523.48.

The 104.9 miles of earth road were maintained at a cost of \$26,309.58 or an average of \$251.00 per mile; 6 miles of gravel road were maintained at a cost of \$326.35 or an average of \$54.00 per mile. The entire system consisting of 110.9 miles was maintained at a cost of \$26,635.93 or an average of \$240.00 per mile. The total average expenditure per mile of county road was \$841.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 15 of the 18 townships was \$49,552.70.

Bridges.

BOONE COUNTY

The total expenditures for bridge and culvert work during 1920 were \$145,927.99, of which \$152,768.62 or 82% was spent for permanent bridges and culverts; \$2,143.23 or 1.2% for temporary bridges and culverts; \$14,141.81 or 8% for repairs; \$2,331.07 or 1.3% for culvert material for town-

ships; \$2,942.09 or 1.4% for equipment and unused materials; \$7,428.54 or 4% for filling bridges and culverts; \$4,171.63 or 2.1% for special cases.

Of the total amount, \$154,911.85, spent for new bridges and culverts, \$152,768.62 or 98% was spent for permanent work and \$2,143.23 or 2% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$77,178.80; concrete slab bridges, \$27,763.42; concrete arch bridges, \$27,692.20; corrugated pipe, \$2,143.23; concrete deck girders, \$17,947.00; miscellaneous permanent bridges and culverts, \$2,187.20.

1. Primary Roads.

The total expenditure was \$131,318.68, of which \$97,346.30 or 74% was spent for construction and \$33,972.39 or 26% for maintenance; \$33,126.26 were spent for grading; 12.19 miles were surfaced with gravel at a cost of \$47,375.95. The total amount spent for tiling and drainage was \$10,844.09.

The 45.8 miles of earth road were maintained at a cost of \$12,852.05 or an average of \$280.61 per mile; 33 miles of gravel road were maintained at a cost of \$21,120.34 or an average of \$640.01 per mile. The entire system consisting of 78.8 miles was maintained at a cost of \$33,972.39 or an average of \$431.12 per mile.

On January 1, 1921, the county had 36.3 miles of earth roads not built, 9.5 miles of earth road built to permanent grade and 33 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$163,992.39, of which \$107,083.92 or 65% was for construction, \$45,408.03 or 28% for maintenance and \$11,500.44 or 7% for special cases; 24 miles were surfaced with gravel at a cost of \$82,730.79. The total amount spent for tiling and drainage was \$24,353.13.

The 96 miles of earth road were maintained at a cost of \$22,101.11 or an average of \$230.00 per mile; 26.5 miles of gravel road were maintained at a cost of \$17,306.92 or an average of \$654.00 per mile. The entire system consisting of 92.5 miles was maintained at a cost of \$45,408.03 or an average of \$491.00 per mile. The total average expenditure per mile of county road was \$1,770.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 12 of the 17 townships was \$85,908.06.

BREMER COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$64,135.41, of which \$14,864.65 or 23% was spent for permanent bridges and culverts; \$9,244.15 or 14% for temporary bridges and culverts; \$21,775.95 or 38% for repairs; \$5,977.72 or 9% for culvert material for townships; \$3,315.59 or 14.5% for equipment and unused materials; \$407.74 or 0.7% for filling bridges and culverts; \$549.61 or 0.8% for special cases. Of the total amount, \$24,108.80, spent for new bridges and culverts, \$14,864.65 or 62% was spent for permanent work and \$9,244.15 or 38% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$14,502.69; masonry culverts, \$161.96; wood truss bridges, \$4,051.67; wooden trestle bridges, \$3,860.68; corrugated pipe, \$1,321.40; pony truss—concrete abutments, \$200.00.

1. Primary Roads.

The total expenditure was \$26,622.15, of which \$1,431.26 or 5.4% was spent for construction and \$25,190.89 or 94.6% for maintenance. The total amount spent for tiling and drainage was \$1,431.26.

The 69.2 miles of earth road were maintained at a cost of \$21,136.76 or an average of \$305.44 per mile; 2 miles of gravel road were maintained at a cost of \$4,054.13 or an average of \$2,027.07 per mile. The entire system consisting of 71.2 miles was maintained at a cost of \$25,190.89 or an average of \$353.51 per mile.

On January 1, 1921, the county had 66.2 miles of earth roads not built, 2 miles of earth road built to permanent grade and 2 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$24,642.40, of which \$5,970.10 or 24% was spent for construction, \$18,136.61 or 74% for maintenance and a cost of \$1,604.83. The total amount spent for tiling and drainage was \$4,365.37.

The 58 miles of earth road were maintained at a cost of \$17,843.61 or an average of \$308.00 per mile; 2.5 miles of gravel road were maintained at a cost of \$293.00 or an average of \$117.00 per mile. The entire system consisting of 60.5 miles was maintained at a cost of \$18,136.61 or an average of \$300.00 per mile. The total average expenditure per mile of county road was \$408.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 11 of the 14 townships was \$36,795.59.

BUCHANAN COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$57,307.30, of which \$57,633.32 or 66% was spent for permanent bridges and culverts; \$7,006.96 or 8% for temporary bridges and culverts; \$13,795.22 or 18.1% for repairs; \$6,769.51 or 7.8% for culvert material for townships; \$70.79 or 0.1% for equipment and unused materials; \$28.50 or 0.0% for filling bridges and culverts.

Of the total amount, \$64,645.28, spent for new bridges and culverts, \$57,633.32 or 89.2% was spent for permanent work and \$7,006.96 or 10.8% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$46,988.04; concrete slab bridges, \$5,260.00; corrugated pipe, \$1,325.21; wood trestle bridges, \$5,126.30; concrete thru girders, \$4,836.00; retaining walls, \$704.08; miscellaneous temporary bridges and culverts, \$545.45.

1. Primary Roads.

The total expenditure was \$11,182.59, of which the entire amount was spent for maintenance.

The 46.0 miles of earth road, the entire system, were maintained at an average cost of \$243.10 per mile.

On January 1, 1921, the county had 36 miles of earth road not built and 10 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$50,352.29, of which \$4,892.83 or 10% was spent for construction and \$43,461.53 or 86% for maintenance and \$1,997.93 or 4% for special cases; \$265.10 were spent for road signs. The total amount spent for tiling and drainage was \$4,627.73.

The 135 miles of earth road, the entire system, were maintained at a cost of \$43,461.53 or an average of \$322.00 per mile. The total average expenditure per mile of county road was \$373.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 11 of the 16 townships was \$43,454.96.

BUENA VISTA COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$24,516.43, of which \$7,950.59 or 32% was spent for permanent bridges and culverts; \$464.97 or 2.2% for temporary bridges and culverts; \$1,118.81 or 5% for repairs; \$196.80 or 0.8% for culvert material for townships; \$3,808.73 or 15% for equipment and unused materials; \$970.72 or 4% for filling bridges and culverts; \$10,005.00 or 40% for special cases.

Of the total amount, \$8,415.56, spent for new bridges and culverts, \$7,950.59 or 94% was spent for permanent work and \$464.97 or 6% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$6,578.86; concrete slab bridges, \$1,371.73; corrugated pipe (without headwalls), \$464.97.

1. Primary Roads.

The total expenditure was \$140,736.95, of which \$113,725.32 or 80% was spent for construction and \$27,011.63 or 19.2% for maintenance; \$7,488.35 was spent for grading; 16 miles were surfaced with gravel at a cost of \$86,084.00. The total amount spent for tiling and drainage was \$20,152.97.

The 8.5 miles of earth road were maintained at a cost of \$2,787.59 or an average of \$327.95 per mile; 58.2 miles of gravel road were maintained at a cost of \$24,224.04 or an average of \$416.22 per mile. The entire system consisting of 66.7 miles was maintained at a cost of \$27,011.63 or an average of \$404.97 per mile.

On January 1, 1921, the county had 1.5 miles of earth roads not built, 7 miles of earth road built to permanent grade and 58.2 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$116,413.81, of which \$91,611.49 or 79% was spent for construction, \$23,559.22 or 20% for maintenance and \$1,243.10 or 1% for special cases; 51.7 miles were surfaced with gravel at a cost of \$82,963.56. The total amount spent for tiling and drainage was \$4,234.41, and that for equipment and tools was \$4,412.52.

The 30.10 miles of earth road were maintained at a cost of \$9,326.04 or an average of \$309.00 per mile; 74.95 miles of gravel road were maintained at a cost of \$13,722.58 or an average of \$183.00 per mile. The entire system consisting of 105.05 miles was maintained at a cost of \$23,559.22 or an average of \$224.00 per mile. The total average expenditure per mile of county road was \$1,109.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 13 of the 17 townships was \$64,912.50.

BUTLER COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$56,787.09, of which \$10,981.40 or 19.3% was spent for permanent bridges

and culverts; \$9,799.29 or 17.3% for temporary bridges and culverts; \$20,581.32 or 36.2% for repairs; \$1,558.55 or 2.8% for culvert material for townships; \$11,350.05 or 20% for equipment and unused materials; \$2,516.48 or 4.4% for filling bridges and culverts.

Of the total amount, \$20,780.69, spent for new bridges and culverts, \$10,981.40 or 52.8% was spent for permanent work and \$9,799.29 or 47.2% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$10,981.40; wood truss bridges, \$1,201.19; and miscellaneous temporary bridges and culverts, \$8,598.10.

1. Primary Roads.

The total expenditure was \$34,776.75, of which \$20,304.52 or 58.4% was spent for construction and \$14,472.23 or 41.6% for maintenance; \$14,102.32 were spent for grading. There were .06 miles surfaced with gravel at a cost of \$285.54. The total amount spent for tiling and drainage was \$5,815.66.

The 10.7 miles of earth road, the entire system, were maintained at a cost of \$14,472.23 or an average of \$204.70 per mile.

On January 1, 1921, the county had 66.4 miles of earth roads not built and 43 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$48,857.26, of which \$10,224.33 or 21% was spent for construction, \$34,495.43 or 71% for maintenance and \$4,137.50 or 8% for special cases. There were 3 miles built to finished grade standard section at a cost of \$4,191.32. One mile was surfaced with gravel at a cost of \$2,013.00. The total amount spent for tiling and drainage was \$3,611.01, and that for equipment and tools \$469.00.

There were 125 miles of earth road maintained at a cost of \$34,095.68 or an average of \$273.00 per mile. There were 6.5 miles of gravel road maintained at a cost of \$396.75 or an average of \$61.00 per mile. The entire system consisting of 131.50 miles was maintained at a cost of \$34,495.43 or an average of \$262.00 per mile. The total average expenditure per mile of county road was \$372.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$52,902.46.

CALHOUN COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$23,561.53, of which \$14,784.82 or 63% was spent for permanent bridges and culverts; \$2,591.46 or 11% for temporary bridges and culverts; \$2,552.73 or 11% for repairs; \$1,002.68 or 4.3% culvert material for townships; \$13,024.58 or 56% equipment and unused materials; \$544.10 or 2.3% filling bridges and culverts; \$1,058.86 or 4.5% for special cases.

Of the total amount, \$17,376.28, spent for new bridges and culverts, \$14,784.82 or 85% was spent for permanent work and \$2,591.46 or 15% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$4,119.44; concrete pipe, \$1,817.62; wood trestle bridges, \$121.81; concrete abutments, \$2,371.60; pony truss on piling, \$77.25; pony truss—concrete abutments, \$8,287.78; miscellaneous—temporary bridges and culverts, \$382.78.

1. Primary Roads.

The total expenditure was \$158,498.70 of which \$142,711.93 or 90% was spent for construction and \$14,786.77 or 9.5% for maintenance.

There were \$1,096.65 spent on grading. There were 39.2 miles surfaced with gravel at a cost of \$131,878.84. Total amount spent for tilling and drainage was \$10,826.44.

The 23.6 miles of earth road were maintained at a cost of \$8,298.09 or an average of \$351.66 per mile; 49 miles of gravel road were maintained at a cost of \$6,487.68 or an average of \$132.40 per mile; 72.6 miles of entire system were maintained at a cost of \$14,786.77 or an average of \$202.87 per mile.

On January 1, 1921, the county had 5.6 miles of earth roads not built, 18 miles of earth road built to permanent grade and 49 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$145,792.12 of which \$105,329.11 or 72.3% was spent for construction; \$12,792.19 or 8.7% for maintenance and \$27,670.80 or 19% for special cases; 7.83 miles were built to finished grade standard section at a cost of \$28,997.73 and 15.78 miles were surfaced with gravel at a cost of \$54,977.70. Total amount spent for tilling and drainage was \$4,539.04 and total amount spent for equipment and tools was \$16,814.66.

The 73.62 miles of earth road were maintained at a cost of \$19,846.94 or an average of \$147.00 per mile; 25.78 miles of gravel road were maintained at a cost of \$1,945.25 or an average of \$74.00 per mile; 109.4 miles, being the entire system, were maintained at a cost of \$12,792.19 or an average of \$127.00 per mile. The total average expenditure per mile of county road was \$1,450.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$59,640.33.

CARROLL COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$94,545, of which \$44,958.78 or 48% was spent for permanent bridges and culverts; \$156.00 or 0.1% for temporary bridges and culverts; \$12,244.50 or 13% for repairs; \$605.31 or 0.6% for culvert material for townships; \$12,270.56 or 13.3% for equipment and unused materials; \$9,923.80 or 10% for filling bridges and culverts; \$14,384.15 or 15% for special cases.

Of the total amount, \$45,114.78, spent for new bridges and culverts, \$4,958.78 or 9% was spent for permanent work and \$156.00 or 1% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$26,522.53; head walls and culverts lengthened \$736.89, concrete slab bridges, \$12,744.00; corrugated pipe, \$156.00; I-beam spans—concrete abutments, \$4,553.96.

1. Primary Roads.

The total expenditure was \$20,174.53, of which \$406.49 or 2.1% was spent for construction and \$19,768.04 or 97.9% for maintenance. The total amount spent for tilling and drainage was \$406.09.

There were 65.5 miles of earth road maintained at a cost of \$10,601.41 or an average of \$160.33 per mile. There were 3 miles of gravel road maintained at a cost of \$9,266.56 or an average of \$3,088.85 per mile. The entire system consisting of 68.5 miles was maintained at a cost of \$19,768.04 or an average of \$288.58 per mile.

On January 1, 1921, the county had 43 miles of earth roads not built, 21.5 miles of earth road built to permanent grade and 3 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$33,466.60, of which \$3,906.96 or 12% was spent for construction, \$29,331.89 or 87% for maintenance and \$27.75 or 1% for special cases. The total amount spent for tilling and drainage was \$3,906.96.

The 116.75 miles of earth road, the entire system, were maintained at a cost of \$29,331.89 or an average of \$265.00 per mile. The total average expenditure per mile of county road was \$302.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 14 of the 16 townships was \$50,902.56.

CASS COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$260,526.58, of which \$128,213.37 or 62.9% was spent for permanent bridges and culverts; \$29,306.05 or 14.6% for temporary bridges and culverts; \$16,528.30 or 8.4% for repairs; \$6,014.72 or 3% for culvert material for townships; \$5,972.99 or 3% for equipment and unused materials; \$11,335.30 or 5.7% for filling bridges and culverts; \$2,755.85 or 1.4% for special cases.

Of the total amount, \$157,519.42, spent for new bridges and culverts, \$128,213.37 or 81.4% was spent for permanent work and \$29,306.05 or 18.6% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$114,386.16; concrete pipe, \$11,104.18; wood trestle bridges, \$15,354.50; wood truss bridges, \$1,372.02; I-beam spans—concrete abutments, \$3,602.85; pony truss—concrete abutments, \$10,223.36; miscellaneous temporary bridges and culverts, \$1,375.35.

1. Primary Roads.

The total expenditure was \$27,401.99, of which \$25,431.69 or 92.9% was spent for maintenance and \$1,920.30 or 7.1% for special cases.

There were 80.5 miles of earth road maintained at a cost of \$25,430.14 or an average of \$315.90 per mile. There were .5 miles paved road maintained at a cost of \$1.55 or an average of \$3.10 per mile. The entire system consisting of 81 miles was maintained at a cost of \$25,431.69 or an average of \$313.97 per mile.

On January 1, 1921, the county had 80 miles of earth roads not built, .5 mile of earth road built to permanent grade and .5 mile surfaced with gravel.

2. County Roads.

The total county road expenditure was \$27,822.34, of which \$1,151.78 or 4% was spent for construction, \$25,308.22 or 91% for maintenance and \$1,362.34 or 5% for special cases. The total amount spent for tilling and drainage was \$1,151.78.

There were 73 miles of earth road maintained at a cost of \$25,308.22 or an average of \$346.00 per mile. One-half mile of paved road was maintained without cost. The entire system consisting of 73.5 miles was maintained at a cost of \$25,308.22 or an average of \$344.00 per mile. The total average expenditure per mile of county road was \$376.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 15 of the 16 townships was \$52,225.50.

CEDAR COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$153,956.05, of which \$109,596.64 or 72% was spent for permanent bridges and culverts; \$518.43 or 0.3% for temporary bridges and culverts; \$28,462.47 or 23% for repairs; \$4,497.48 or 3% for culvert material for townships; \$1,194.20 or 0.7% for filling bridges and culverts; \$1,686.83 or 1.1% for special cases.

Of the total amount, \$110,115.07, spent for new bridges and culverts, \$109,596.64 or 99.3% was spent for permanent work and \$518.43 or 0.7% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$53,203.76; concrete abutments, \$4,241.78; corrugated pipe, \$470.00; I-beam spans—concrete abutments, \$23,524.88; pony truss—concrete abutments, \$28,626.22; miscellaneous temporary bridges and culverts, \$48.13.

1. Primary Roads.

The total expenditure was \$12,567.87, of which \$744.02 or 6% was spent for construction and \$11,823.85 or 94% for maintenance.

\$499.03 were spent for grading. The total amount spent for tiling and drainage was \$244.99.

There were 75.1 miles of earth road maintained at a cost of \$1,821.81 or an average of \$157.40 per mile. One mile of gravel road was maintained at a cost of \$2.84. The entire system consisting of 76.1 miles was maintained at a cost of \$1,823.85 or an average of \$155.37 per mile.

On January 1, 1921, the county had 66.1 miles of earth roads not built, 9 miles of earth road built to permanent grade and 1 mile surfaced with gravel.

2. County Roads.

The total county road expenditure was \$28,103.21, of which \$6,523.33 or 23% was spent for construction, \$26,033.54 or 72% for maintenance and \$1,542.85 or 5% for special cases. There were 0.37 miles built to finished grade standard section at cost of \$1,012.57. There were 1.41 miles surfaced with gravel at a cost of \$3,267.14. The total amount spent for tiling and drainage was \$2,147.11.

There were 85.94 miles of earth road maintained at a cost of \$20,022.54 or an average of \$233.00 per mile. The entire system consisting of 81.60 miles was maintained at a cost of \$20,033.54 or an average of \$219.00 per mile. The total average expenditure per mile of county road was \$221.94.

3. Township Roads.

The total expenditure of township roads as shown by reports from 15 to 17 townships was \$63,167.50.

CERRO GORDO COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$68,915.89, of which \$52,728.05 or 77% was spent for permanent bridges and culverts; \$2,130.10 or 3% for temporary bridges and culverts; \$5,604.22 or 8% for repairs; \$2,181.30 or 3% for culvert material for townships; \$5,231.48 or 8% for equipment and unused materials; \$428.85 or 0.6% for filling bridges and culverts; \$416.88 or 0.6% for special cases.

Of the total amount, \$54,858.15, spent for new bridges and culverts, \$52,728.05 or 96% was spent for permanent work and \$2,130.10 or 4% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$14,532.80; head walls and culverts lengthened, \$5,532.07; corrugated pipe, \$2,130.10; concrete deck girders, \$8,747.00; I-beam spans—concrete abutments, \$1,247.00; pony truss—concrete abutments, \$22,617.00.

1. Primary Roads.

The total expenditure was \$735,312.64, of which \$725,993.25 or 98.7% was spent for construction and \$9,319.39 or 1.3% for maintenance. \$32,557.22 were spent for grading. There were 14.98 miles paved with concrete at a cost of \$620,535.14. The total amount spent for tiling and drainage was \$21,900.89.

There were 32 miles of earth road maintained at a cost of \$7,051.73 or an average of \$220.37 per mile. There were 22.4 miles of paved road maintained at a cost of \$2,267.66 or an average of \$101.23 per mile. The entire system consisting of 54.4 miles was maintained at a cost of \$9,319.39 or an average of \$171.31 per mile.

On January 1, 1921, the county had 27 miles of earth roads not built, 5 miles of earth road built to permanent grade and 22.4 miles of paved road.

2. County Roads.

The total county road expenditure was \$31,811.23, of which \$9,547.84 or 30% was spent for construction, \$19,402.48 or 61% for maintenance and \$2,860.91 or 9% for special cases. The total amount spent for tiling and drainage was \$9,547.84.

There were 109.8 miles of earth road maintained at a cost of \$18,320.43 or an average of \$167.00 per mile. There was .74 mile of paved road maintained at a cost of \$782.65. The entire system consisting of 110.54 miles was maintained at a cost of \$19,402.48 or an average of \$178.00 per mile. The total average expenditure per mile of county road was \$288.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$72,155.09.

CHEROKEE COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$165,904.22, of which \$85,815.56 or 52% was spent for permanent bridges and culverts; \$16,507.81 or 10% for temporary bridges and culverts; \$18,550.73 or 11% for repairs; \$7,508.78 or 4.5% for culvert material for townships; \$12,313.72 or 7.4% for equipment and unused materials; \$13,180.97 or 8% for filling bridges and culverts; \$12,026.56 or 7.1% for special cases.

Of the total amount, \$102,322.37, spent for new bridges and culverts, \$85,815.56 or 84% was spent for permanent work and \$16,507.81 or 16% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$54,427.66; head walls and culverts lengthened, \$396.70; concrete slab bridges, \$39.21; corrugated pipe, \$1,377.45; I-beam spans—concrete abutments, \$27,364.79; I-beam spans—piling abutments, \$2,322.64; pony truss—concrete abutments, \$3,573.76; pony truss on piling, \$12,803.42; miscellaneous temporary bridges and culverts, \$4.30; miscellaneous permanent bridges and culverts, \$13.50.

1. Primary Roads.

The total expenditure was \$21,662.10, of which \$8,126.08 or 37.5% was spent for construction and \$13,536.02 or 62.5% for maintenance. Grading was done on 2.03 miles at a cost of \$8,126.08.

77.9 miles of earth road, the entire system, were maintained at a cost of \$13,536.02 or an average of \$173.76 per mile.

On January 1, 1921, the county had 44.9 miles of earth roads not built and 33 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$22,604.19, of which \$2,901.21 or 13% was spent for construction, \$18,579.98 or 82% for maintenance and \$1,123.00 or 5% for special cases. The total amount spent for tilling and drainage was \$2,901.21.

The 100 miles of earth road, the entire system, were maintained at a cost of \$18,579.98 or an average of \$186.00 per mile. The total average expenditure per mile of county road was \$226.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$67,780.72.

CHICKASAW COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$54,835.28, of which \$23,733.98 or 43% was spent for permanent bridges and culverts; \$10,961.74 or 20% for temporary bridges and culverts; \$12,239.54 or 24% for repairs; \$2,006.00 or 4% for culvert material for townships; \$3,852.20 or 7% for equipment and unused materials; \$1,041.82 or 2% for filling bridges and culverts.

Of the total amount, \$34,695.72, spent for new bridges and culverts, \$23,733.98 or 68% was spent for permanent work and \$10,961.74 or 32% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$3,957.16; wood truss bridges, \$10,255.83; corrugated pipe, \$705.91; pony truss—concrete abutments, \$19,970.00; high steel truss—concrete abutments, \$5,806.82.

1. Primary Roads.

The total expenditure was \$69,509.63, of which \$60,056.61 or 86.4% was spent for construction and \$9,453.02 or 13.6% for maintenance. \$16,921.15 were spent on grading. There were 10.22 miles surfaced with gravel at a cost of \$39,753.93.

There were 27.5 miles of earth road maintained at a cost of \$5,059.15 or an average of \$183.97 per mile. There were 17.3 miles of gravel road maintained at a cost of \$4,393.87 or an average of \$253.98 per mile. The entire system consisting of 44.8 miles was maintained at a cost of \$9,453.02 or an average of \$211.00 per mile.

On January 1, 1921, the county had 26.5 miles of earth road not built 1 mile of earth road built to permanent grade and 17.3 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$26,923.33, of which \$12,564.65 or 51% was spent for construction, \$11,236.91 or 42% for maintenance and \$2,021.74 or 7% for special cases. There were 3 miles built to finished grade standard section at a cost of \$7,603.79. One mile was surfaced with gravel at a cost of \$612.95. The total amount spent for tilling and drainage was \$1,012.84 and that for equipment and tools \$4,435.10.

There were 95 miles of earth road maintained at a cost of \$8,325.83 or an average of \$89.00 per mile. There were 19 miles of gravel road maintained at a cost of \$2,398.95 or an average of \$126.00 per mile. The entire system consisting of 114 miles was maintained at a cost of \$11,236.91 or an average of \$99.00 per mile. The total average expenditure per mile of county road was \$236.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$39,691.90

CLARKE COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$94,690.28 of which \$63,335.51 or 65% was spent for permanent bridges and culverts; \$6,229.37 or 7% for temporary bridges and culverts; \$10,572.11 or 11% for repairs; \$6,404.99 or 7% for culvert material for townships; \$2,838.21 or 5% for equipment and unused materials; \$4,068.09 or 5% for filling bridges and culverts.

Of the total amount, \$69,764.83, spent for new bridges and culverts, \$63,335.51 or 91% was spent for permanent work and \$6,229.37 or 9% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$33,584.26; concrete slab bridges, \$4,599.00; wood truss bridges, \$1,169.40; corrugated pipe, \$1,009.60; I-beam spans—concrete abutments, \$6,042.25; pony truss—concrete abutments, \$19,310.00; pony truss on piling, \$2,415.75; miscellaneous temporary bridges and culverts, \$1,634.62.

1. Primary Roads.

The total expenditure was \$62,282.83 of which \$47,061.21 or 75.6% was spent for construction and \$15,221.62 or 24.4% for maintenance. Grading was done on 5.32 miles at a cost of \$47,061.21.

There were 51.5 miles of earth road, the entire system, maintained at a cost of \$15,221.62 or an average of \$295.57 per mile.

On January 1, 1921, the county had 45 miles of earth roads not built and 6.5 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$21,944.00 of which \$16,338.15 or 75% was spent for maintenance and \$5,605.85 or 25% for special cases.

There were 76.1 miles of earth road, the entire system, maintained at a cost of \$16,338.15 or an average of \$215.00 per mile. The total average expenditure per mile of county road was \$288.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$30,413.45.

CLAY COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$12,946.49, of which \$10,198.13 or 79% was spent for permanent bridges and culverts; \$11,076.99 or 33% for repairs; \$2,798.00 or 11% for culvert material for townships; \$3,658.37 or 25.4% for equipment and unused materials; \$214.00 or 0.6% for filling bridges and culverts.

Of the total amount, \$10,198.13, spent for new bridges and culverts, \$10,198.13 or 100% was spent for permanent work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$5,758.33; and pony truss—concrete abutments, \$4,439.80.

1. Primary Roads.

The total expenditure was \$16,364.15, of which \$76.63 or 0.5% was spent for construction; \$15,738.89 or 96.2% for maintenance and \$548.64 or 3.3% for special cases. The total amount spent for tilling and drainage was \$76.63.

There were 5 miles of earth road maintained at a cost of \$1,394.75 or an average of \$278.95 per mile. There were 49 miles of gravel road maintained at a cost of \$14,344.13 or an average of \$292.74 per mile. The entire system

consisting of 54 miles was maintained at a cost of \$15,738.88 or an average of \$291.46 per mile.

On January 1, 1921 the county had 5 miles of earth road built to permanent grade and 49 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$88,473.20, of which \$74,237.15 or 84% was spent for construction, \$8,641.02 or 10% for maintenance and \$5,595.03 or 6% for special cases. There were 22.84 miles surfaced with gravel at a cost of \$73,013.05. The total amount spent for tiling and drainage was \$1,224.12.

There were 45 miles of earth road maintained at a cost of \$6,903.86 or an average of \$153.00 per mile. There were 56 miles of gravel road maintained at a cost of \$1,767.36 or an average of \$31.00 per mile. The entire system consisting of 101 miles was maintained at a cost of \$8,641.02 or an average of \$86.00 per mile. The total average expenditure per mile of county road was \$875.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 11 of the 16 townships was \$78,484.17.

CLAYTON COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 was \$91,055.05, of which \$71,658.94 or 79% was spent for permanent bridges and culverts; \$2,061.75 or 2% for temporary bridges and culverts; \$4,988.77 or 5% for repairs; \$2,532.49 or 3% for culvert material for townships; \$3,888.84 or 4% for equipment and unused materials; \$1,801.94 or 1.6% for filling bridges and culverts; and \$4,162.32 or 4.4% for special cases.

Of the total amount, \$73,720.69, spent for new bridges and culverts, \$71,658.94 or 9% was spent for permanent work and \$2,061.75 or 3% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$17,703.35; corrugated pipe, \$122.54; concrete deck girders, \$7,027.84; I-beam spans—piling abutments, \$1,269.96; pony truss on piling, \$345.50; pony truss—concrete abutments, \$12,107.75; high steel trusses—concrete abutments, \$34,820.00; miscellaneous temporary bridges and culverts, \$323.75.

1. Primary Roads.

The total expenditure was \$12,174.38 of which the entire amount was spent for maintenance.

There were 102.2 miles of earth road maintained at a cost of \$12,128.21 or an average of \$118.67 per mile. One mile of gravel road was maintained at a cost of \$46.56. The entire system consisting of 103.2 miles was maintained at a cost of \$12,174.89 or an average of \$117.97 per mile.

On January 1, 1921 the county had 102.2 miles of earth roads not built and 1 mile surfaced with gravel.

2. County Roads.

The total county road expenditure was \$25,024.02, the entire amount being expended for maintenance.

One hundred twenty-eight and three-tenths miles of earth road, the entire system, were maintained at an average cost of \$195.00 per mile. The total average expenditure per mile of county road was \$196.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 19 of 22 townships was \$53,005.89.

CLINTON COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 was \$67,292.29, of which \$24,485.57 or 36.4% was spent for permanent bridges and culverts; \$2,380.59 or 5% for temporary bridges and culverts; \$10,908.19 or 16.2% for repairs; \$6,863.82 or 10.2% for culvert material for townships; \$15,103.86 or 22.5% for equipment and unused materials; \$3,046.29 or 4.5% for filling bridges and culverts; \$2,502.97 or 3.7% for special cases.

Of the total amount, \$27,866.16, spent for new bridges and culverts, \$24,485.57 or 88% was spent for permanent work and \$3,380.59 or 12% for temporary work. The amounts last above referred to were spent on the following construction: Concrete culverts, \$7,528.66; corrugated pipe, \$2,949.58; wood trestle bridges, \$294.46; I-beam spans—concrete abutments, \$8,815.95; pony truss—concrete abutments, \$8,140.96; miscellaneous bridges and culverts, \$134.55.

1. Primary Roads.

The total expenditure was \$41,226.66 of which \$23,462.97 or 56.9% was spent for construction and \$17,763.69 or 43.1% for maintenance. \$11,732.44 was spent on grading, and \$10,132.62 for paving with concrete. The total amount spent for tiling and drainage was \$1,547.91.

There were 89 miles of earth road maintained at a cost of \$16,513.75 or an average of \$206.42 per mile. There were 6 miles of gravel road maintained at a cost of \$1,349.94 or an average of \$208.32 per mile. The entire system consisting of 86 miles was maintained at a cost of \$17,763.69 or an average of \$206.55 per mile.

On January 1, 1921 the county had 66.3 miles of earth roads not built, 13.7 miles of earth road built to permanent grade and 6 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$30,387.20 of which \$7,568.54 or 25% was spent for construction, \$19,217.48 or 63% for maintenance and \$3,601.28 or 12% for special cases. There were 2.5 miles built to finished grade standard section at a cost of \$7,362.80. The total amount spent for tiling and drainage was \$205.74.

There were 122.23 miles of earth road maintained at a cost of \$18,928.07 or an average of \$155.00 per mile. There were 5.77 miles of gravel road maintained at a cost of \$289.41 or an average of \$50.00 per mile. The entire system consisting of 128 miles was maintained at a cost of \$19,217.48 or an average of \$150.00 per mile. The total average expenditure per mile of county road was \$227.60.

3. Township Roads.

The total expenditure of township roads as shown by reports from 17 of the 20 townships was \$63,641.15.

CRAWFORD COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$180,673.83, of which \$75,602.20 or 41.8% was spent for permanent bridges and culverts; \$2,858.40 or 1.6% for temporary bridges and culverts; \$61,979.89 or 34.3% for repairs; \$17,208.85 or 9.5% for culvert material for townships; \$880.00 or 0.5% for equipment and unused materials; \$4,305.35 or 2.4% for filling bridges and culverts; \$16,863.19 or 9.3% for special cases.

Of the total amount, \$79,441.60, spent for new bridges and culverts, \$75,602.20 or 95.2% for permanent work and \$3,838.40 or 4.7% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$55,707.73; head walls and culverts lengthened, \$1,284.71; concrete slab bridges, \$2,124.26; wood trestle bridges, \$286.00; concrete pipe, \$1,162.48; corrugated pipe, \$1,389.92; pony truss—concrete abutments, \$16,486.50.

1. Primary Roads.

The total expenditure was \$14,863.16 and was expended entirely for maintenance.

There were 82.1 miles of earth road, the entire system, maintained at an average cost of \$181.04 per mile.

On January 1, 1921 the county had 15 miles of earth roads not built and 67.1 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$127,964.54, of which \$108,036.91 or 85% was spent for construction, \$16,942.46 or 13% for maintenance and \$2,985.17 or 2% for special cases. There were 14.79 miles built to finished grade standard section at a cost of \$108,036.91.

There were 75.6 miles of earth road, the entire system, maintained at a cost of \$16,942.46 or an average of \$224.00 per mile. The total average expenditure per mile of county road was \$1,690.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$76,315.58.

DALLAS COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$69,758.25, of which \$36,894.23 or 53% was spent for permanent bridges and culverts; \$3,051.95 or 4% for temporary bridges and culverts; \$20,730.02 or 31% for repairs; \$4,844.43 or 6% for culvert material for townships; \$836.72 or 1% for equipment and unused materials; \$3,400.90 or 5% for filling bridges and culverts.

Of the total amount, \$39,946.18, was spent for new bridges and culverts, \$36,894.23 or 92% was spent for permanent work and \$3,051.95 or 8% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$1,429.23; head walls and culverts lengthened, \$92.40; concrete slab bridges, \$6,760.20; concrete abutments, \$9,000.00; concrete pipe, \$2,221.95; corrugated pipe, \$830.00; I-beam spans—concrete abutments, \$6,983.00; high steel trusses—concrete abutments, \$12,629.40.

1. Primary Roads.

The total expenditure was \$86,998.06 of which \$68,948.71 or 79.3% was spent for construction and \$18,049.35 or 20.7% for maintenance. Grading was done on 14.6 miles at a cost of \$57,822.73. The total amount spent for tiling and drainage was \$11,118.80. The total amount spent for equipment and tools was \$7.18.

There were 77.2 miles of earth road maintained at a cost of \$13,977.86 or an average of \$181.06 per mile. There were 10 miles of gravel road maintained at a cost of \$4,071.49 or an average of \$407.15 per mile. The entire system consisting of 87.2 miles was maintained at a cost of \$18,049.35 or an average of \$206.99 per mile.

On January 1, 1921, the county had 52.2 miles of earth roads not built, 25 miles of earth road built to permanent grade and 10 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$74,794.66 of which \$44,089.43 or 59% was spent for construction; \$20,758.35 or 28% for maintenance and \$9,946.88 or 13% for special cases. There were 8.37 miles built to finished grade standard section at a cost of \$19,408.74. There were 7.88 miles surfaced with gravel at a cost of \$15,527.13. The total amount spent for tiling and drainage was \$8,963.38 and that for equipment and tools \$190.18.

There was .25 mile of paved road maintained without cost. There were 61.54 miles of earth road maintained at a cost of \$15,632.32 or an average of \$254.00 per mile. There were 28.28 miles of gravel road maintained at a cost of \$5,126.03 or an average of \$181.00 per mile. The entire system consisting of 90.07 miles was maintained at a cost of \$20,758.35 or an average of \$230.00 per mile. The total average expenditure per mile of county road was \$831.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$91,868.02.

DAVIS COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$105,813.81, of which \$64,094.18 or 60% was spent on permanent bridges and culverts; \$3,572.03 or 4% for temporary bridges and culverts; \$24,439.50 or 23% for repairs; \$1,785.46 or 1% for culvert material for townships; \$1,848.05 or 2% for equipment and unused materials; \$6,841.18 or 7% for filling bridges and culverts; \$3,233.41 or 3% for special cases.

Of the total amount, \$67,666.21, spent for new bridges and culverts, \$64,094.18 or 95% was spent for permanent work and \$3,572.03 or 5% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$49,090.65; pony truss on piling, \$3,572.03; pony truss—concrete abutments, \$2,765.21; high steel trusses—concrete abutments, \$12,238.32.

1. Primary Roads.

The total expenditure was \$12,575.84 of which \$583.93 or 4.6% was spent for construction and \$11,991.91 or 95.4% for maintenance. \$583.93 were spent for grading.

There were 46.6 miles of earth road, the entire system, maintained at a cost of \$11,991.91 or an average of \$257.34 per mile.

On January 1, 1921 the county had 46.6 miles of earth roads not built.

2. County Roads.

The total county road expenditure was \$35,494.33 of which \$295.24 or 0.8% was spent for construction, \$34,728.29 or 98% for maintenance and \$469.80 or 1.2% for special cases. The total amount spent for tiling and drainage was \$295.24.

There were 127.67 miles of earth road, the entire system, maintained at a cost of \$34,728.29 or an average of \$272.00 per mile. The total average expenditure per mile of county road was \$278.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$44,491.91.

DECATUR COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$113,922.83, of which \$27,837.75 or 24.4% was spent for permanent bridges and culverts; \$7,231.34 or 6.3% for temporary bridges and culverts; \$30,596.50 or 26.9% for repairs; \$6,372.97 or 5.6% for culvert material for townships; \$30,779.71 or 27% for equipment and unused materials; \$9,313.11 or 8.2% for filling bridges and culverts; \$1,791.47 or 1.6% for special cases.

Of the total amount, \$35,069.07, spent for new bridges and culverts, \$27,837.73 or 79.4% was spent for permanent work and \$7,231.34 or 20.6% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$10,428.13; corrugated pipe, \$5,655.40; pony truss—piling abutments, \$1,575.94; high steel trusses—concrete abutments, \$17,409.60.

1. Primary Roads.

The total expenditure was \$136,140.51 of which \$120,397.51 or 88.5% was spent for construction, \$15,627.50 or 11.5% for maintenance and \$115.50 or 0.0% for special cases. Grading was done on 8.95 miles at a cost of \$120,397.51.

There were 52.1 miles of earth road, the entire system, maintained at a cost of \$15,627.50 or an average of \$299.95 per mile.

On January 1, 1921 the county had 42.3 miles of earth roads not built and 9.8 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$34,228.65 of which \$30,108.38 or 88% was spent for maintenance and \$4,120.27 or 12% for special cases.

There were 113.23 miles of earth road, the entire system, maintained at a cost of \$30,108.38 or an average of \$266.00 per mile. Total average expenditure per mile was \$302.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 7 of the 16 townships was \$12,121.75.

DELAWARE COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$59,069.04, of which \$39,197.35 or 66% was spent for permanent bridges and culverts; \$3,459.96 or 6% for temporary bridges and culverts; \$12,215.33 or 19% for repairs; \$3,255.52 or 6% for culvert material for townships; \$129.53 or 0.5% for equipment and unused materials; \$631.55 or 2% for filling bridges and culverts; \$179.80 or 0.5% for special cases.

Of the total amount, \$42,657.31, spent for new bridges and culverts, \$39,197.35 or 92% was spent for permanent work and \$3,459.96 or 8% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$17,193.46; head walls and culverts lengthened, \$385.25; concrete arch bridges, \$1,319.64; corrugated pipe, \$1,224.00; wood trestle bridges, \$1,275.69; wood truss bridges, \$960.27; I-beam spans—concrete abutments, \$1,100.00; pony truss—concrete abutments, \$19,199.00.

1. Primary Roads.

The total expenditure was \$48,339.78 of which \$41,075.06 or 85% was spent for construction and \$7,264.72 or 15% for maintenance. Grading was done on 12.27 miles at a cost of \$36,484.62. The total amount spent for tiling and drainage was \$4,590.44.

There were 41.5 miles of earth road maintained at a cost of \$7,043.22 or an average of \$169.72 per mile. There were 4 miles of gravel road maintained at a cost of \$221.50 or an average of \$55.38 per mile. The entire system consisting of 45.5 miles was maintained at a cost of \$7,264.72 or an average of \$159.67 per mile.

On January 1, 1921 the county had 29 miles of earth roads not built, 12.5 miles of earth road built to permanent grade and 4 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$57,679.14 of which \$40,702.07 or 70.9% was spent for construction, \$16,911.37 or 29% for maintenance and \$65.70 for special cases. There were 10.5 miles built to finished grade standard

section at a cost of \$32,211.02; there were 2.38 miles surfaced with gravel at a cost of \$2,820.25. The total amount spent for tiling and drainage was \$107.10 and that for equipment and tools \$5,663.70.

There were 117.75 miles of earth road maintained at a cost of \$15,642.24 or an average of \$133.00 per mile. There were 14.25 miles of gravel road maintained at a cost of \$1,269.13 or an average of \$89.00 per mile. The entire system consisting of 132 miles was maintained at a cost of \$16,911.37 or an average of \$128.00 per mile. The total average expenditure per mile of county road was \$437.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 13 of the 16 townships was \$48,922.82.

DES MOINES COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$39,842.47, of which \$19,207.30 or 48.3% was spent for permanent bridges and culverts; \$5,950.52 or 14.9% for repairs; \$6,185.01 or 15.5% for culvert material for townships; \$5,404.86 or 13.5% for equipment and unused materials, and \$3,094.78 or 7.8% for special cases.

Of the total amount, \$19,207.30, spent for new bridges and culverts, \$19,207.30 or 100% was spent for permanent work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$15,255.16; head walls and culverts lengthened, \$3,778.23; miscellaneous permanent bridges and culverts, \$173.91.

1. Primary Roads.

The total expenditure was \$20,339.33 of which \$10,954.65 or 53.8% was spent for construction and \$9,384.68 or 46.2% for maintenance.

Grading was done on 1.77 miles at a cost of \$3,963.94. The total amount spent for tiling and drainage was \$6,990.71.

There were 37.8 miles of earth road maintained at a cost of \$9,370.08 or an average of \$247.89 per mile. One mile of paved road was maintained at a cost of \$3.35 or an average of \$3.35 per mile. The entire system of 38.8 miles was maintained at a cost of \$9,384.68 or an average of \$241.87 per mile.

On January 1, 1921, the county had 36.8 miles of earth roads not built, one mile of earth road built to permanent grade and one mile paved.

2. County Roads.

The total county road expenditure was \$28,366.29, of which \$17,980.62 or 63% was spent for maintenance and \$10,385.67 or 37% for special cases.

There were 47.75 miles of earth road, the entire system, maintained at a cost of \$17,980.62 or an average of \$376.00 per mile.

The total average expenditure per mile of county road was \$595.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$40,101.55.

DICKINSON COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$18,524.04, of which \$10,241.56 or 56% was spent for permanent bridges and culverts, \$3,164.53 or 17.4% for temporary bridges and culverts; \$3,081.39 or 16.5% was spent for repairs; \$1,156.53 or 6% for culvert material for townships; \$821.98 or 4% for equipment and unused materials, and \$58.05 or 0.1% for filling bridges and culverts.

Of the total amount, \$13,406.09, spent for new bridges and culverts, \$10,241.56 or 76.4% was spent for permanent work and \$3,164.53 or 23.6% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$10,052.66; masonry culverts, \$188.90; concrete pipe, \$584.53; wood trestle bridges, \$2,580.00.

1. Primary Roads.

The total expenditure was \$20,571.94, of which \$12,187.68 or 59.3% was spent for construction and \$8,384.26 or 40.7% for maintenance.

Grading was done on 1.4 miles at a cost of \$5,438.29. \$5,226.61 was spent for paving with concrete. The total amount spent for tiling and drainage was \$1,522.78.

There were 1.5 miles of earth road maintained at a cost of \$174.45 or an average of \$116.30 per mile; 40.6 miles of gravel road were maintained at a cost of \$8,209.81 or an average of \$202.21 per mile; the entire system of 42.1 miles was maintained at a cost of \$8,384.26 or an average of \$199.15 per mile.

On January 1, 1921, the county had no earth roads not built, 1.5 miles of earth road built to permanent grade and 40.6 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$51,651.25 of which \$27,861.65 or 54% was spent for construction, \$17,835.60 or 35% for maintenance, and \$5,960.00 or 11% for special cases.

There were 8.5 miles surfaced with gravel at a cost of \$22,251.44. The total amount spent for tiling and drainage was \$5,610.21.

There were 62.10 miles of earth road maintained at a cost of \$12,181.16 or an average of \$196.00 per mile; 8.5 miles of gravel road maintained at a cost of \$5,654.44 or an average of \$665.00 per mile; 70.6 miles, the entire system, was maintained at a cost of \$17,835.60 or an average of \$253.00 per mile.

The total average expenditure per mile of county road was \$731.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$44,252.20.

DUBUQUE COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$94,467.07 of which \$77,580.95 or 82.3% was spent for permanent bridges and culverts; \$706.38 or 0.7% for temporary bridges and culverts; \$13,036.66 or 13.8% for repairs; \$2,860.58 or 2.9% for culvert material for townships; \$282.50 or 0.3% for filling bridges and culverts.

Of the total amount, \$78,287.33, spent for new bridges and culverts, \$77,580.95 or 99.1% was spent for permanent work and \$706.38 or 0.9% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$22,543.44; concrete abutments, \$7,169.49; concrete deck girders, \$14,818.30; I-beam spans—concrete abutments, \$6,448.40; pony truss—concrete abutments, \$12,527.91; miscellaneous permanent bridges and culverts, \$4,073.41.

1. Primary Roads.

The total expenditure was \$89,987.82 of which \$70,489.99 or 78.5% was spent for construction and \$19,497.83 or 21.5% for maintenance. Grading was done on 12.15 miles at a cost of \$67,150.66. The total amount spent for tiling and drainage was \$3,339.33.

There were 50.6 miles of earth road maintained at a cost of \$5,087.41 or an average of \$100.54. There were 26 miles of gravel road maintained at a cost of \$10,749.72 or an average of \$413.45 per mile. There were 3 miles of paved road maintained at a cost of \$3,660.70 or an average of \$1,220.23 per mile; however, this includes \$3,619.63 for reconstruction of defective pavement, rejected under original construction contract. The entire system consisting of 79.6 was maintained at a cost of \$19,497.83 or an average of \$244.95 per mile.

On January 1, 1921 the county had 50.6 miles of earth roads not built, 26 miles surfaced with gravel and 3 miles paved.

2. County Roads.

The total county road expenditure was \$26,053.91 of which \$18,881.27 or 72% was spent for maintenance and \$7,172.69 or 28% for special cases.

There were 87.65 miles of earth road maintained at a cost of \$18,679.19 or an average of \$213.00 per mile. There were 4 miles of gravel road maintained at a cost of \$202.08 or an average of \$51.00 per mile. The entire system consisting of 91.65 miles was maintained at a cost of \$18,881.21 or an average of \$206.00 per mile. The total average expenditure per mile of county road was \$285.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 7 of the 10 townships was \$17,576.62.

EMMET COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$30,315.62, of which \$15,457.67 or 51% was spent for permanent bridges and culverts; \$7,038.74 or 23% for temporary bridges and culverts; \$6,207.33 or 20% for repairs; \$1,104.01 or 4% for culvert material for townships; \$67.69 or 0.4% for equipment and unused materials; \$350.40 or 1.2% for filling bridges and culverts, and \$89.78 or 0.6% for special cases.

Of the total amount, \$22,496.41, spent for new bridges and culverts, \$15,457.67 or 67% was spent for permanent work and \$7,038.74 or 33% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$6,489.65; concrete slab bridges, \$2,930.13; wood trestle bridges, \$7,038.74; concrete abutment \$1,845.84; concrete deck girders \$1,275.32; I-beam spans—concrete abutments, \$2,753.98; pony truss—concrete abutments, \$162.75.

1. Primary Roads.

The total expenditure was \$70,392.01 of which \$56,674.18 or 80.5% was spent for construction and \$13,718.43 or 19.5% for maintenance.

Grading was done at a cost of \$1,120.60, and graveling at a cost of \$6,789.54. The total amount spent for tiling and drainage was \$48,764.04.

One mile of earth road was maintained at a cost of \$6.00 or an average of \$6.00 per mile; 40.6 miles of gravel road were maintained at a cost of \$13,718.43 or an average of \$337.74 per mile. The entire system of 41.6 miles was maintained at a cost of \$13,718.43 or an average of \$329.77 per mile.

On January 1, 1921, the county had one mile of earth road built to permanent grade and 40.6 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$69,075.20 of which \$50,878.72 or 74% was spent for construction, \$12,263.63 or 18% for maintenance, and \$5,932.85 or 8% for special cases.

There were two miles built to finished grade standard section at a cost of \$9,487.47; 32 miles were surfaced with gravel at a cost of \$36,498.73. The total amount spent for tiling and drainage was \$4,892.52.

There were 8.25 miles of earth road maintained at a cost of \$2,192.47 or an average of \$266.00 per mile; 55 miles of gravel road maintained at a cost of \$10,071.04 or an average of \$183.00 per mile. The entire system of 63.25 miles was maintained at a cost of \$12,263.63 or an average of \$194.00 per mile.

The total average expenditure per mile of county road was \$1,093.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$48,346.51.

FAYETTE COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$139,025.42, of which \$100,737.65 or 72% was spent for permanent bridges and culverts; \$163.90 or 0.1% for temporary bridges and culverts; \$25,798.77 or 19% for repairs; \$2,581.10 or 2% for culverts material for townships; \$5,875.21 or 4% for equipment and unused materials; \$2,949.30 or 2.3% for filling bridges and culverts; \$919.49 or 0.6% for special cases.

Of the total amount \$100,901.55, spent for new bridges and culverts, \$100,737.65 or 99.9% for permanent work and \$163.90 or 0.1% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$21,491.87; head walls and culverts lengthened, \$589.24; concrete slab bridges, \$48,315.94; corrugated pipe, \$163.90; concrete abutments, \$2,002.32; concrete through girders, \$3,741.76; concrete deck girders, \$16,635.35; pony truss—concrete abutments, \$8,061.17.

1. Primary Roads.

The total expenditure was \$18,099.04, the entire amount being expended for maintenance.

There were 95 miles of earth road, the entire system, maintained at an average cost of \$190.52 per mile.

On January 1, 1921 the county had 78.7 miles of earth roads not built and 16.3 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$54,001.34 of which \$396.25 or 0.7% was spent for construction, \$47,936.68 or 89% for maintenance and \$5,668.41 or 10.3% for special cases. The total amount spent for filling and drainage was \$396.25.

There were 108.1 miles of earth road, the entire system, maintained at a cost of \$47,936.68 or an average of \$443.00 per mile. The total average expenditure per mile of county road was \$500.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$60,280.73.

FLOYD COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$71,132.66, of which \$39,313.67 or 55% was spent for permanent bridges and culverts; \$12,358.13 or 17.6% for temporary bridges and culverts; \$9,321.35 or 13% for repairs; \$2,236.24 or 3% for culvert material for townships; \$6,658.43 or 9.7% for equipment and unused materials; \$1,165.84 or 1.6% for filling bridges and culverts, and \$79.00 or 0.1% for special cases.

Of the total amount, \$51,671.80, spent for new bridges and culverts, \$39,313.67 or 76% was spent for permanent work and \$12,358.13 or 24% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$20,435.13; head walls and culverts lengthened, \$2,478.16; concrete slab bridges, \$5,273.69; wood trestle bridges, \$12,358.13; concrete deck girders, \$10,991.20; miscellaneous permanent bridges and culverts, \$135.49.

1. Primary Roads.

The total expenditure was \$587,958.73, of which \$581,644.80 or 98.9% was spent for construction and \$6,313.93 or 1.1% for maintenance.

Grading was done at a cost of \$59,718.16; 11.42 miles were paved with concrete at a cost of \$500,034.13; the total amount spent for tiling and drainage was \$21,892.51.

There were 47.2 miles of earth road maintained at a cost of \$3,116.28 or an average of \$66.02 per mile; 10.8 miles of gravel road maintained at a cost of

\$3,042.76 or an average of \$281.74 per mile; 11.0 miles of paved road maintained at a cost of \$154.89 or an average of \$14.08 per mile; the entire system of 69 miles was maintained at a cost of \$6,313.93 or an average of \$91.51 per mile.

On January 1, 1921, the county had 47.2 miles of earth roads not built; 10.8 miles surfaced with gravel, and 11 miles paved.

2. County Roads.

The total county road expenditure was \$102,254.11, of which \$58,231.15 or 57% was spent for construction, \$37,937.42 or 37% for maintenance, and \$6,085.54 or 6% for special cases.

There were 7.70 miles built to finished grade, standard section, at a cost of \$14,729.01; 2.80 miles were surfaced with gravel at a cost of \$5,168.88. The total amount spent for tiling and drainage was \$23,920.91 and the total amount spent for equipment and tools was \$14,412.35.

There were 79.42 miles of earth road maintained at a cost of \$29,553.65 or an average of \$373.00 per mile; 9.36 miles of gravel road maintained at a cost of \$8,383.77 or an average of \$89.00 per mile. The entire system of 88.78 miles was maintained at a cost of \$37,937.42 or an average of \$427.00 per mile.

3. Township Roads.

The total average expenditures of township roads as shown by reports from all townships was \$53,216.54.

FRANKLIN COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$70,467.16, of which \$40,662.61 or 54.3% was spent for permanent bridges and culverts; \$1,886.92 or 3% was spent for temporary bridges and culverts; \$15,182.52 or 23% for repairs; \$2,534.40 or 4% for culvert material for townships; \$10,145.91 or 15.6% for equipment and unused materials, and \$54.80 or 0.1% for special cases.

Of the total amount, \$42,549.53, spent for new bridges and culverts, \$40,662.61 or 95.5% was spent for permanent work and \$1,886.92 or 4.5% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$19,095.42; head walls and culverts lengthened, \$2,000.64; concrete slab bridges, \$7,582.67; corrugated pipe, \$1,886.92; pony truss—concrete abutments, \$11,983.88.

1. Primary Roads.

The total expenditure was \$17,785.18, of which \$8,401.66 or 47.2% was spent for construction and \$9,383.52 or 52.8% for maintenance.

Grading was done on .54 miles at a cost of \$1,300.61. The total amount spent for tiling and drainage was \$7,101.05.

There were 31.2 miles of earth road maintained at a cost of \$6,819.92 or an average of \$218.59 per mile; 10 miles of gravel road maintained at a cost of \$2,563.60 or an average of \$256.36 per mile; the entire system of 41.2 miles was maintained at a cost of \$9,383.52 or an average of \$227.76 per mile.

On January 1, 1921, the county had 30.2 miles of earth roads not built, one mile of earth road built to permanent grade, and 10 miles surfaced with gravel.

2. County Roads.

The total road expenditure was \$197,026.68, of which \$149,207.25 or 76% was spent for construction, \$28,588.63 or 14% for maintenance, and \$19,330.80 or 10% for special cases.

There were 14.00 miles built to finished grade, standard section, at a cost of \$85,071.12; 20.50 miles were surfaced with gravel at a cost of \$46,600.62. The total amount spent for tiling and drainage was \$13,821.53 and the total amount spent for equipment and tools was \$3,713.98.

There were 138.25 miles of earth road maintained at a cost of \$21,191.73 or an average of \$153.00 per mile; 20.50 miles of gravel road maintained at a

cost of \$7,396.90 or an average of \$360.00 per mile; the entire system of 158.75 miles was maintained at a cost of \$28,588.63 or an average of \$180.66 per mile.

The total average expenditure per mile of county road was \$1,241.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 11 of the 16 townships was \$44,483.58.

FREMONT COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$121,267.67, of which \$48,760.17 or 41% was spent for permanent bridges and culverts; \$8,102.62 or 6.4% for temporary bridges and culverts; \$37,231.58 or 30.5% for repairs; \$4,830.00 or 4% for culvert material for townships; \$18,744.25 or 13% for equipment and unused materials; \$378.79 or 0.1% for filling bridges and culverts, and \$6,220.28 or 5% for special cases.

Of the total amount, \$56,862.79, spent for new bridges and culverts, \$48,760.17 or 86% was spent for permanent work and \$8,102.62 or 14% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$48,760.17; wood trestle bridges, 6,742.62; concrete pipe, \$450.00; miscellaneous temporary bridges and culverts, \$910.00.

1. Primary Roads.

The total expenditure was \$74,962.08, of which \$63,652.83 or 84.9% was spent for construction and \$11,309.25 or 15.1% for maintenance.

Grading was done on 7.41 miles at a cost of \$63,552.98. The total amount spent for equipment and tools was \$99.85.

The entire system of 50 miles was maintained at a cost of \$11,309.25 or an average of \$228.19 per mile.

On January 1, 1921, the county had 43.5 miles of earth roads not built and 6.5 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$29,598.24, of which \$5,662.18 or 19% was spent for construction; \$20,479.89 or 70% for maintenance, and \$3,456.17 or 11% for special cases.

There was one mile built to finished grade, standard section, at a cost of \$5,662.18.

The entire system of 110 miles was maintained at a cost of \$20,479.89 or an average of \$186.00 per mile.

The total average expenditure per mile of county road was \$269.00.

3. Township Roads.

The total expenditure of township roads as shown on reports from 10 of the 13 townships was \$38,294.54.

GREENE COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$264,590.19, of which \$183,285.39 or 69.3% was spent for permanent bridges and culverts; \$202.41 or 0.1% for temporary bridges and culverts; \$43,340.38 or 16.6% for repairs; \$2,125.74 or 0.8% for culvert material for townships; \$3,788.08 or 1.4% for equipment and unused materials; \$27,016.32 or 10% for filling bridges and culverts; and \$4,231.19 or 1.6% for special cases.

Of the total amount, \$183,285.39 was spent for new bridges and culverts, \$183,285.39 or 99.9% for permanent work and \$202.41 or 0.1% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$126,615.45; head walls and culverts lengthened, \$4,990.00; concrete slab bridges \$600.00; concrete pipe, \$202.41; concrete deck girders, \$25,192.60; and pony truss—concrete abutments \$15,887.34.

1. Primary Roads.

The total expenditure was \$112,895.82, of which \$93,180.46 or 82.5% was spent for construction, and \$19,715.36 or 17.5% for maintenance.

Grading was done on 5 miles at cost of \$28,514.14; .5 mile was surfaced with gravel at cost of \$1,398.12; 1.05 miles were paved with concrete at cost of \$51,989.29; total amount spent for tilling and drainage \$1,262.91; total amount spent for equipment and tools \$16.00.

There were 22.7 miles earth road maintained at cost of \$9,014.75 or average cost of \$275.68 per mile; 24.3 miles graveled road maintained at a cost of \$10,634.35 or average cost of \$311.79 per mile; 1 mile paved road maintained at a cost of \$6.26 or average cost of \$6.26 per mile; 68 miles entire system maintained at cost of \$19,715.36 or average cost of \$289.93 per mile.

On January 1, 1921 the county had 30.2 miles of earth roads not built, 2.5 miles of earth road built to permanent grade, 34.3 miles surfaced with gravel, and 1 mile paved.

2. County Roads.

The total county road expenditure was \$35,014.68 of which \$16,481.23 or 47% construction; \$14,135.14 or 40% for maintenance; and \$4,398.29 or 13% for special cases.

There were 3.25 miles built to finished grade standard section at a cost of \$10,536.17; 2.5 miles were surfaced with gravel at cost of \$3,497.68. The total amount spent for equipment and tools was \$2,447.38.

There were 50.75 miles of earth road maintained at a cost of \$9,861.59 or average of \$194.00 per mile; 20.25 miles gravel road maintained at cost of \$4,375.55 or average of \$211.00 per mile; 71 miles entire system maintained at cost of \$14,135.14 or average of \$199.00 per mile. The total average expenditure per mile of county road was \$493.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$78,312.68.

GRUNDY COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$220,856.68 of which \$176,520.70 or 79.9% was spent for permanent bridges and culverts; \$6,255.99 or 2.8% for temporary bridges and culverts; \$4,830.98 or 2.2% for repairs; \$2,023.64 or 0.9% for culvert material for townships; \$6,495.84 or 3% for filling bridges and culverts; \$23,735.53 or 10.7% for special cases.

Of the total amount, \$182,776.69, spent for new bridges and culverts, \$176,520.70 or 96.6% was spent for permanent work and \$6,255.99 or 3.4% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$52,364.36; head walls and culverts lengthened, \$566.80; concrete slab bridges, \$15,915.35; wood trestle bridges, \$3,844.51; corrugated pipe, \$1,520.00; concrete through girders, \$6,720.00; I-beam spans—concrete abutments, \$22,359.24; pony truss—concrete abutments, \$78,174.95; miscellaneous temporary bridges and culverts, \$891.48.

1. Primary Roads.

The total expenditure was \$17,749.38 of which \$13,050.40 or 73.5% was spent for construction and \$4,698.98 or 26.5% for maintenance. Grading was done on 2.47 miles at a cost of \$5,218.83. The total amount spent for tilling and drainage was \$7,831.57.

There were 60.2 miles of earth road, the entire system, maintained at a cost of \$1,498.98 or an average of \$78.06 per mile.

On January 1, 1921 the county had 58.7 miles of earth roads not built and 1.5 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$67,140.63 of which \$33,138.96 or 50% was spent for construction, \$22,776.67 or 33% for maintenance and \$11,225.00 or 17% for special cases. There were 12.25 miles built to finished grade standard section at a cost of \$31,508.12. The total amount spent for tiling and drainage was \$1,630.84.

There were 119.5 miles of earth road, the entire system, maintained at a cost of \$22,776.67 or an average of \$191.00 per mile. The total average expenditure per mile of county road was \$562.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$49,232.76.

GUTHRIE COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$134,071.15 of which \$62,975.06 or 47% was spent for permanent bridges and culverts; \$4,582.91 or 3.4% for temporary bridges and culverts; \$31,189.04 or 23.3% for repairs; \$6,047.91 or 4.5% for culvert material for townships; \$23,109.49 or 17.2% for equipment and unused materials; \$3,812.49 or 2.8% for filling bridges and culverts; \$2,354.25 or 1.8% for special cases.

Of the total amount, \$67,557.97, spent for new bridges and culverts, \$62,975.06 or 93% was spent for permanent work and \$4,582.91 or 7% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$50,914.69; masonry culverts, \$929.70; corrugated pipe, \$3,006.25; wood truss bridges, \$1,576.66; I-beam spans—concrete abutments, \$6,289.03; pony truss—concrete abutments, \$4,841.64.

1. Primary Roads.

The total expenditure was \$16,236.29 of which \$434.64 or 2.7% was spent for construction and \$15,801.65 or 97.3% for maintenance. \$347.71 was spent for grading. The total amount spent for tiling and drainage was \$86.93.

There were 71 miles of earth road maintained at a cost of \$15,586.65 or an average of \$219.53 per mile. There were 2 miles of gravel road maintained at a cost of \$215.00 or an average of \$107.50 per mile. The entire system, consisting of 73 miles, was maintained at a cost of \$15,801.65 or an average of \$216.47 per mile.

On January 1, 1921 the county had 68.7 miles of earth roads not built, 2.3 miles of earth road built to permanent grade and 2 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$43,068.65 of which \$11,345.43 or 26% was spent for construction, \$30,484.67 or 71% for maintenance and \$1,238.55 or 3% for special cases. Three miles were built to finished grade standard section at a cost of \$2,448.45. Three miles were surfaced with gravel at a cost of \$8,330.35. The total amount spent for tiling and drainage was \$566.63.

There were 123.45 miles of earth road maintained at a cost of \$30,417.47 or an average of \$247.00 per mile. There were 3 miles of gravel road maintained at a cost of \$67.20 or an average of \$22.00 per mile. The entire system, consisting of 126.45 miles, was maintained at a cost of \$30,484.67 or an average of \$241.00 per mile. The total average expenditure per mile of county road was \$341.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 8 of the 17 townships was \$32,996.12.

HAMILTON COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$94,498.40, of which \$76,624.62 or 81% was spent for permanent bridges and culverts; \$525.10 or 0.6% for temporary bridges and culverts; \$11,305.46 or 12% for repairs; \$407.90 or 0.4% for culvert material for townships; \$1,508.60 or 1.5% for filling bridges and culverts, and \$4,126.72 or 4.5% for special cases.

Of the total amount, \$77,149.72, spent for new bridges and culverts, \$76,624.62 or 99.5% was spent for permanent work and \$525.10 or 0.5% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$26,708.20; masonry culverts, \$70.84; head walls and culverts lengthened, \$15,207.84; concrete pipe, \$525.10; concrete deck girders, \$17,419.58; pony truss—concrete abutments, \$11,863.16; high steel trusses—concrete abutments, \$5,355.00.

1. Primary Roads.

The total expenditure was \$34,770.53, of which \$17,865.26 or 51.4% was spent for construction and \$16,905.27 or 48.6% for maintenance.

There were .81 miles surfaced with gravel at a cost of \$7,876.03. The total amount spent for tiling and drainage was \$9,989.23.

There were 43.4 miles of earth road maintained at a cost of \$4,661.15 or an average of \$107.40 per mile. 23 miles of gravel road maintained at a cost of \$12,244.12 or an average of \$532.35 per mile; the entire system of 66.4 miles was maintained at a cost of \$16,905.27 or an average of \$254.60.

On January 1, 1921, the county had 37.2 miles of earth roads not built; 6.2 miles of earth road built to permanent grade, and 23 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$192,203.07, of which \$151,605.01 or 79% was spent for construction, \$36,383.66 or 19% for maintenance, and \$4,214.40 or 2% for special cases.

There were 14.25 miles built to finished grade, standard section, at a cost of \$29,174.96; 39.73 miles surfaced with gravel at a cost of \$104,600.45. The total amount spent for tiling and drainage was \$17,829.60.

There were 57.5 miles of earth road maintained at a cost of \$17,866.82 or an average cost of \$310.00 per mile. 90 miles of gravel road maintained at a cost of \$18,516.84 or an average cost of \$206.00 per mile. The entire system of 147.50 miles was maintained at a cost of \$36,383.66 or an average cost of \$247.00 per mile.

The total average expenditure per mile of county road was \$1,302.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 14 of the 16 townships was \$56,818.65.

HANCOCK COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$21,441.13, of which \$10,367.32 or 48% was spent for permanent bridges and culverts; \$2,747.72 or 13% for temporary bridges and culverts; \$3,178.30 or 15% for repairs; \$5,005.04 or 23% for culvert material for townships; \$64.50 or 0.4% for equipment and unused materials; \$78.24 or 0.6% for filling bridges and culverts.

Of the total amount, \$13,115.04, spent for new bridges and culverts, \$10,367.32 or 79.0% was spent for permanent work and \$2,747.72 or 21.0% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$6,574.92; head walls and culverts lengthened, \$477.20; corrugated pipe, \$252.00; concrete abutments, \$3,315.20; wood trestle bridges, \$2,369.39; and miscellaneous temporary bridges and culverts, \$126.33.

1. Primary Roads.

The total expenditure was \$12,922.00, of which \$2,265.20 or 17.5% was spent for construction and \$10,656.80 or 82.5% for maintenance.

The total amount spent for tilling and drainage was \$2,265.20.

There were 32.8 miles of earth road maintained at a cost of \$7,744.49 or an average of \$236.11 per mile; 14.5 miles of gravel road maintained at a cost of \$2,922.31 or an average of \$201.54 per mile; the entire system of 47.3 miles was maintained at a cost of \$10,656.80 or an average cost of \$225.51 per mile.

On January 1, 1921, the county had 32.8 miles of earth roads not built; and 14.5 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$39,443.90, of which \$20,255.51 or 56% was spent for construction; \$18,098.37 or 42% for maintenance, and \$1,050.00 or 2% for special cases.

There were 1.5 miles built to finished grade, standard section, at a cost of \$16,438.98. The total amount spent for tilling and drainage was \$3,856.55.

There were 115 miles of earth road maintained at a cost of \$17,606.37 or an average of \$153.00 per mile; 8 miles of gravel road maintained at a cost of \$492.00 or an average of \$62.00 per mile; the entire system of 123 miles was maintained at a cost of \$18,098.37 or an average of \$147.00 per mile.

The total average expenditure per mile of county road was \$321.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 13 of the 16 townships was \$56,769.26.

HARDIN COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$73,241.71, of which \$55,202.92 or 75.3% was spent for permanent bridges and culverts; \$1,947.16 or 2.7% for temporary bridges and culverts; \$3,645.41 or 5.0% for repairs; \$969.00 or 1.3% for culvert material for townships; \$320.82 or 1.2% for equipment and unused materials; \$8,975.63 or 12.3% for filling bridges and culverts; and \$1,581.50 or 2.2% for special cases.

Of the total amount, \$57,150.08, spent for new bridges and culverts, \$50,202.92 or 97% was spent for permanent work and \$1,947.16 or 3% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$35,766.84; corrugated pipe, \$999.81; head walls and culverts lengthened, \$1,019.91; concrete slab bridges, \$176.04; wood trestle bridges, \$550.00; I-beam spans piling abutments, \$198.94; concrete deck girders, \$4,372.08; I-beam spans—concrete abutments, \$5,568.66; pony truss—concrete abutments, \$8,053.36; miscellaneous temporary bridges and culverts \$198.41; miscellaneous permanent bridges and culverts, \$246.33.

1. Primary Roads.

The total expenditure was \$54,590.55, of which \$30,421.91 or 55.8% was spent for construction and \$24,168.64 or 44.2% for maintenance.

Grading was done at a cost of \$9,538.81, and gravel surfacing was done at a cost of \$16,701.93. The total amount spent for tilling and drainage was \$4,081.17.

There were 35.6 miles of earth road maintained at a cost of \$13,121.53 or an average of \$368.87 per mile; 26.7 miles of gravel road maintained at a cost of \$11,036.79 or an average of \$413.36 per mile; the entire system of 62.3 miles was maintained at a cost of \$24,168.64 or an average of \$387.94 per mile.

On January 1, 1921, the county had 6.1 miles of earth roads not built; 29.5 miles of earth road built to permanent grade, and 26.7 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$76,813.52, of which \$38,580.43 or 50.3% was spent for construction; \$32,156.73 or 41.8% for maintenance, and \$16,076.36 or 7.9% for special cases.

There were 9.47 miles built to finished grade, standard section, at a cost of \$28,621.94; 6.5 miles were surfaced with gravel at a cost of \$5,220.72; the total amount spent for tilling and drainage was \$5,327.77.

There were 93 miles of earth road maintained at a cost of \$22,604.94 or an average of \$243.00 per mile; 29 miles of gravel road maintained at a cost of \$9,251.79 or an average of \$329.00 per mile; the entire system of 122 miles was maintained at a cost of \$32,156.73 or an average of \$264.00 per mile.

The total average expenditure per mile of county road was \$630.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 14 of the 15 townships was \$49,773.13.

HARRISON COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$135,720.66, of which \$76,062.01 or 61% was spent for permanent bridges and culverts; \$2,136.77 or 2.5% for temporary bridges and culverts; \$22,073.55 or 35% for repairs; \$1,110.28 or 0.9% for culvert material for townships; \$7,588.45 or 6% for equipment and unused materials; \$3,692.90 or 2.9% for filling bridges and culverts, and \$2,076.70 or 1.7% for special cases.

Of the total amount, \$79,198.78, spent for new bridges and culverts, \$76,062.01 or 96% was spent for permanent work, and \$3,136.77 or 4% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$38,443.83; head walls and culverts lengthened, \$4,909.62; corrugated pipe, \$416.40; wood trestle bridges, \$2,489.33; I-beam spans—concrete abutments, \$26,269.73; pony truss—concrete abutments, \$6,428.83; miscellaneous temporary bridges and culverts, \$231.04.

1. Primary Roads.

The total expenditure was \$132,654.03 of which \$77,300.76 or 58.3% was spent for construction; \$14,759.32 or 11.1% for maintenance, and \$40,603.95 or 30.6% for special cases.

Grading was done on 14.15 miles at a cost of \$74,328.28. The total amount spent for tilling and drainage was \$2,972.48.

There were 80.5 miles of earth road, the entire system, maintained at a cost of \$14,759.32 or an average of \$183.35 per mile.

On January 1, 1921, the county had 66.5 miles of earth roads not built, and 14.8 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$14,202.13, of which \$891.06 or 87% was spent for construction, \$12,976.73 or 6% for maintenance, and \$935.35 or 7% for special cases.

The total amount spent for tilling and drainage was \$891.06.

The entire system of 92.5 miles of earth road was maintained at a cost of \$11,376.72, or an average of \$124.00 per mile.

The total average expenditure per mile of county road was \$154.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 17 of the 20 townships was \$51,134.39.

Bridges.**HENRY COUNTY**

The total expenditures for bridge and culvert work during 1920 were \$61,462.60, of which \$40,910.89 or 66.3% was spent for permanent bridges and cul-

verts; \$1,035.72 or 1.7% was spent for temporary bridges and culverts; \$10,233.30 or 16.6% for repairs; \$5,412.92 or 8.8% for culvert material for townships; \$3,620.55 or 5.9% for equipment and unused materials, and \$448.68 or 0.7% for special cases.

Of the total amount, \$41,946.61, spent for new bridges and culverts, \$40,910.89 or 97.5% was spent for permanent work, and \$1,035.72 or 2.5% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$34,954.05; corrugated pipe, \$1,035.72; concrete slab bridges, \$1,634.84; concrete abutments, \$3,062.00; I-beam spans—concrete abutments, \$1,260.00.

1. Primary Roads.

The total expenditure was \$38,244.25, of which \$26,180.44 or 68.5% was spent for construction and \$12,063.81 or 31.5% for maintenance.

Grading was done on 60.5 miles at a cost of \$17,362.82; the total amount spent for tiling and drainage was \$8,817.62.

The entire system of 46.2 miles of earth road was maintained at a cost of \$12,063.81 or an average of \$261.12 per mile.

On January 1, 1921, the county had 45.2 miles of earth road not built, and 1.0 mile of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$23,183.60 of which \$21,377.53 or 92% was spent for maintenance and \$1,806.07 for special cases, 8%.

The entire system of 96 miles was maintained at a cost of \$21,377.53 or an average of \$223.00 per mile.

The total average expenditure per mile of county road was \$242.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 10 of the 12 townships was \$39,807.40.

HOWARD COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$46,734.74, of which \$18,582.72 or 40% was spent for permanent bridges and culverts; \$10,223.71 or 22.3% for temporary bridges and culverts; \$8,536.53 or 18% for repairs; \$649.23 or 1.1% for culvert material for townships; \$8,071.55 or 17.4% for equipment and unused materials; \$614.27 or 1.0% for filling bridges and culverts, and \$56.73 or 0.2% for special cases.

Of the total amount, \$28,806.43, spent for new bridges and culverts, \$18,582.72 or 64% was spent for permanent work, and \$10,223.71 or 36% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$12,715.34; head walls and culverts lengthened, \$511.29; corrugated pipe, \$24.50; wood trestle bridges, \$10,004.88; I-beam spans—concrete abutments, \$211.43; pony truss—concrete abutments, \$5,144.66; miscellaneous temporary bridges and culverts, \$194.33.

1. Primary Roads.

The total expenditure was \$42,931.20, of which \$35,371.51 or 82.4% was spent for construction and \$7,559.69 or 17.6% for maintenance.

Grading was done at a cost of \$16,209.00. The total amount spent for tiling and drainage was \$3,887.46; 4.37 miles were surfaced with gravel at a cost of \$15,267.87; the total amount spent for equipment and tools was \$7.18.

There were 39.8 miles of earth road maintained at a cost of \$6,627.60 or an average of \$166.52 per mile; 11.0 miles of gravel road maintained at a cost of \$84.74 per mile; the entire system of 50.8 miles was maintained at a cost of \$7,559.69 or an average of \$148.81 per mile.

On January 1, 1921, the county had 36.8 miles of earth roads not built; 3.0 miles of earth road built to permanent grade, and 11.0 miles surfaced with gravel.

2. County Roads.

The total road expenditure was \$26,750.04, of which \$4,231.42 or 16% was spent for construction; \$19,940.15 or 75% for maintenance, and \$2,578.47 or 9% for special cases.

\$69.94 was spent for gravel surfacing, final payment of 1919 work; the total amount spent for tiling and drainage was \$3,748.06; the total amount spent for equipment and tools was \$413.42.

There were 71.68 miles of earth road maintained at a cost of \$19,719.56 or an average of \$275.00 per mile; 5 miles of gravel road maintained at a cost of \$220.59 or an average of \$44.00 per mile; the entire system of 76.68 miles was maintained at a cost of \$19,940.15 or an average of \$260.00 per mile.

The total average expenditure per mile of county road was \$348.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$34,683.41.

HUMBOLDT COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$42,112.92, of which \$35,375.72 or 85% was spent for permanent bridges and culverts; \$733.77 or 1.7% was spent for temporary bridges and culverts; \$1,065.47 or 2.4% for repairs; \$1,929.20 or 2.6% for culvert material for townships; \$2,913.66 or 8.0% for equipment and unused materials; and \$95.10 or 0.3% for special cases.

Of the total amount, \$36,109.49, spent for new bridges and culverts, \$35,375.72 or 98% was spent for permanent work, and \$733.77 or 2% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$2,299.07; concrete slab bridges, \$983.81; concrete arch bridges, \$30,797.32; corrugated pipe, \$63.50; retaining walls, \$595.52; miscellaneous temporary bridges and culverts, \$670.27; miscellaneous permanent bridges and culverts, \$700.00.

1. Primary Roads.

The total expenditure was \$75,642.43, of which \$65,262.01 or 86.3% was spent for construction and \$10,380.42 or 13.7% for maintenance.

Grading was done at a cost of \$12,981.52; gravel surfacing was done at a cost of \$385.85; concrete paving was done at a cost of \$49,590.37; the amount spent for tiling and drainage was \$2,288.27, and the total amount spent for equipment and tools was \$16.00.

There were 21.4 miles of earth road maintained at a cost of \$2,847.76 or an average of \$133.07 per mile; 19.5 miles of gravel road maintained at a cost of \$7,532.66 or an average of \$386.29 per mile; the entire system of 40.9 miles was maintained at a cost of \$10,380.42 or an average of \$253.80 per mile.

On January 1, 1921, the county had 7.9 miles of earth roads not built; 13.5 miles of earth road built to permanent grade, and 19.5 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$52,567.53, of which \$34,608.99 or 66% was spent for construction; \$16,458.54 or 31% for maintenance, and \$1,500.00 or 3% for special cases.

There were 0.6 mile surfaced with gravel at a cost of \$14,748.21; the total amount spent for tiling and drainage was \$15,252.06, and the total amount spent for equipment and tools was \$4,608.72.

There were 56.75 miles of earth road maintained at a cost of \$9,868.58, or an average of \$174.00 per mile; 37.85 miles of gravel road maintained at a cost of \$6,589.96 or an average of \$174.00 per mile; the entire system of 94.60 miles was maintained at a cost of \$16,458.54 or an average of \$174.00 per mile.

The total average expenditure per mile of county road was \$556.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 10 of the 12 townships was \$40,678.07.

IDA COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$131,453.51, of which \$42,069.45 or 32.1% was spent for permanent bridges and culverts; \$35,430.06 or 26.9% for temporary bridges and culverts; \$30,906.57 or 23.5% for repairs; \$2,540.27 or 1.9% for culvert material for townships; \$14,294.09 or 10.9 for equipment and unused materials; \$2,526.10 or 1.9% for filling bridges and culverts, and \$3,686.97 or 2.8% for special cases.

Of the total amount, \$77,499.51, spent for new bridges and culverts, \$42,069.45 or 54.3% was spent for permanent work and \$35,430.06 or 45.7% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$30,454.61; head walls and culverts lengthened, \$521.10; wood trestle bridges, \$5,724.80; wood truss bridges, \$8,487.85; concrete pipe, \$5,586.60; corrugated pipe, \$130.82; I-beam spans—piling abutments, \$3,364.48; pony truss—concrete abutments, \$10,524.54; pony truss—piling abutments, \$10,828.46; miscellaneous temporary bridges and culverts, \$1,307.05; miscellaneous permanent bridges and culverts, \$569.20.

1. Primary Roads.

The total expenditure was \$54,953.72, of which \$38,431.87 or 69.9% was spent for construction and \$16,521.85 or 30.1% for maintenance.

Grading was done on 8.54 miles at a cost of \$38,431.87.

The entire system of 51.5 miles of earth road was maintained at a cost of \$16,521.85, or an average of \$320.81 per mile.

On January 1, 1921, the county had 47.0 miles of earth roads not built, and 4.5 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$55,772.25, of which \$1,019.41 or 2% was spent for construction; \$51,476.32 or 92% for maintenance, and \$3,276.52 or 6% for special cases.

The total amount spent for tiling and drainage was \$1,019.41.

The entire system of 80 miles was maintained at a cost of \$51,476.32 or an average of \$643.00 per mile.

The total average expenditure per mile of county road was \$698.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 8 of the 12 townships was \$38,378.40.

IOWA COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$137,068.14, of which \$90,943.51 or 66.4% was spent for permanent bridges and culverts; \$13,477.16 or 9.8% for temporary bridges and culverts; \$11,034.88 or 8.0% for repairs; \$7,906.95 or 5.8% for culvert material for townships; \$9,529.09 or 7.0% for equipment and unused materials; \$3,734.45 or 2.7% for filling bridges and culverts, and \$472.10 or 0.3% for special cases.

The total amount, \$104,420.67, spent for new bridges and culverts, \$90,943.51 or 87.1% was spent for permanent work and \$13,477.16 or 12.9% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$43,306.63; head walls and culverts lengthened, \$840.00; concrete slab bridges, \$3,348.40; corrugated pipe, \$3,832.45; pony truss on piling, \$4,369.34; wood trestle bridges, \$5,275.37; I-beam spans—concrete abutments, \$9,766.00; pony truss—concrete abutments, \$17,210.64; miscellaneous permanent bridges and culverts, \$16,471.84.

1. Primary Roads.

The total expenditure was \$32,122.54, of which the entire amount was spent for maintenance.

The entire system of 69.2 miles was maintained at a cost of \$32,122.54 or an average of \$464.20 per mile.

On January 1, 1921, the county had 69.2 miles of earth roads not built.

2. County Roads.

The total county road expenditure was \$67,563.20 of which \$4,050.00 or 6% was spent for construction; \$62,769.26 or 93% for maintenance, and \$743.94 or 1% for special cases.

There were 0.75 miles built to finished grade, standard section, at a cost of \$4,050.00.

The entire system of 108.80 miles was maintained at a cost of \$62,769.26, or an average of \$577.00 per mile. The total average expenditure per mile of county road was \$622.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$64,617.25.

JACKSON COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$42,458.29, of which \$1,331.25 or 3.1% was spent for permanent bridges and culverts; \$7,627.05 or 18% for temporary bridges and culverts; \$25,550.20 or 60.2% for repairs; \$914.73 or 2.1% for culvert material for townships; \$6,305.88 or 14.9% for equipment and unused materials; \$4.78 or 0.0% for filling bridges and culverts; \$724.40 or 1.7% for special cases.

Of the total amount, \$8,958.30, spent for new bridges and culverts, \$1,331.25 or 14.8% was spent for permanent work and \$7,627.05 or 85.2% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$250.40; head walls and culverts lengthened \$212.00; corrugated pipe \$2,384.86; wood trestle bridges \$2,996.83; retaining walls \$280.55; I-beam spans—piling abutments \$1,475.52; pony truss—piling abutments \$100.00; miscellaneous temporary \$669.84; miscellaneous permanent bridges and culverts \$588.30.

1. Primary Roads.

The total expenditure was \$11,440.79 which was spent for maintenance.

There were 42.7 miles of earth road maintained at a cost of \$8,549.98 or an average of \$200.23 per mile. There were 4.5 miles of gravel road maintained at a cost of \$2,890.81 or an average of \$642.40 per mile. The entire system consisting of 47.2 miles was maintained at a cost of \$11,440.79 or an average of \$242.39 per mile.

On January 1, 1921, the county had 35.7 miles of earth roads not built, 7.0 miles of earth road built to permanent grade and 4.5 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$19,880.49 of which \$18,845.49 or 94.8% was spent for maintenance and \$1,035.00 or 5.2% for special cases.

There were 113 miles of earth road maintained at a cost of \$16,999.07 or an average of \$150.00 per mile. There were 2 miles of gravel road maintained at a cost of \$1,846.42 or an average of \$923.00 per mile. The entire system consisting of 115 miles was maintained at a cost of \$18,845.49 or an average of \$164.00 per mile. The total average expenditure per mile of county road was \$173.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$46,383.26.

JASPER COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$167,107.08, of which \$117,292.04 or 70.3% was spent for permanent bridges and culverts; \$865.00 or 0.5% for temporary bridges and culverts; \$32,793.96 or 19.6% for repairs; \$1,189.77 or 0.7% for equipment and unused materials; \$14,966.31 or 8.9% for filling bridges and culverts.

Of the total amount, \$118,157.04, spent for new bridges and culverts, \$117,292.04 or 99.3% was spent for permanent work and \$865.00 or 0.7% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$57,088.07; head walls and culverts lengthened \$2,252.01; concrete slab bridges, \$3,129.93; concrete arch bridges \$9,652.00; concrete abutments, \$5,983.00; corrugated pipe, \$850.00; I-beam spans—concrete abutments, \$3,437.03; pony truss—concrete abutments, \$35,750.00; miscellaneous temporary bridges and culverts, \$15.00.

1. Primary Roads.

The total expenditure was \$29,004.26 of which \$7,353.71 or 25.4% was spent for construction and \$21,650.55 or 74.6% for maintenance. Grading was done at a cost of \$7,346.26. The total amount spent for tiling and drainage was \$7.45.

There were 86.1 miles of earth road maintained at a cost of \$21,500.45 or an average of \$249.71 per mile. There were 3.5 miles of gravel road maintained at a cost of \$150.10 or an average of \$42.88 per mile. The entire system consisting of 89.6 was maintained at a cost of \$21,650.55 or an average of \$241.64 per mile.

On January 1, 1921, the county had 72.1 miles of earth roads not built, 14.0 miles of earth road built to permanent grade and 3.5 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$84,617.21 of which \$41,395.26 or 49% was spent for construction; \$36,770.10 or 43% for maintenance and \$6,451.85 or 8% for special cases. There were 8 miles built to finished grade standard section at a cost of \$41,025.37. The total amount spent for tiling and drainage was \$369.89.

There were 119 miles of earth road maintained at a cost of \$36,770.10, or an average of \$309.00 per mile. The entire system consisting of 119 miles was maintained at a cost of \$36,770.10 or an average of \$309.00 per mile. The total average expenditure per mile of county road was \$700.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 16 of the 19 townships was \$79,065.26.

JEFFERSON COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$48,769.81 of which \$20,466.61 or 42% was spent for permanent bridges and culverts; \$2,174.81 or 4.5% for temporary bridges and culverts; \$9,062.08 or 18.6% for repairs; \$9,333.61 or 19.2% for culvert material for townships;

\$6,903.05 or 14.2% for equipment and unused materials; \$352.35 or 0.7% for filling bridges and culverts; \$477.30 or 0.8% for special cases.

Of the total amount, \$22,641.42, spent for new bridges and culverts, \$20,466.61 or 94% was spent for permanent work and \$2,174.81 or 6% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$13,676.92; corrugated pipe, \$518.70; head walls and culverts lengthened, \$179.20; wood trestle bridges, \$1,656.11; pony truss—concrete abutments, \$6,610.49.

1. Primary Roads.

The total expenditure was \$51,316.19 of which \$44,250.43 or 86.3% was spent for construction and \$7,065.76 or 13.7% for maintenance. Grading was done on 4.28 miles at a cost of \$40,210.80. The total amount spent for tiling and drainage was \$4,032.24 and that for equipment and tools \$7.39.

There were 47.7 miles of earth road, the entire system, maintained at a cost of \$7,065.76 or an average of \$148.13 per mile.

On January 1, 1921, the county had 24.2 miles of earth roads not built and 23.5 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$33,994.27 of which \$33,519.27 or 98.6% was spent for maintenance and \$475.00 or 1.4% for special cases.

There were 93 miles of earth road, the entire system, maintained at a cost of \$33,519.27 or an average of \$362.57 per mile. The total average expenditure per mile of county road was \$365.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 10 of the 12 townships was \$49,730.06.

JOHNSON COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$66,602.61 of which \$14,617.48 or 22% was spent for permanent bridges and culverts; \$4,022.07 or 6% for temporary bridges and culverts; \$22,955.81 or 34% for repairs; \$13,792.99 or 21% for culvert material for townships; \$3,304.07 or 5% for equipment and unused materials; \$7,860.19 or 11.9% for filling bridges and culverts; \$50.00 or 0.1% for special cases.

Of the total amount, \$18,639.55, spent for new bridges and culverts, \$14,617.48 or 78% was spent for permanent work and \$4,022.07 or 22% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$9,271.93; head walls and culverts lengthened, \$1,438.55; corrugated pipe, \$2,290.50; I-beam spans—concrete abutments, \$1,395.25; high steel trusses, concrete abutments, \$2,511.75; miscellaneous temporary bridges and culverts, \$1,731.57.

1. Primary Roads.

The total expenditure was \$61,265.61 of which \$41,130.17 or 67.2% was spent for construction and \$20,135.44 or 32.8% for maintenance. Grading was done on 2.95 miles at a cost of \$36,770.20. Paving with concrete was done at a cost of \$3,367.88. The total amount spent for tiling and drainage was \$44.00. The total amount spent for equipment and tools was \$948.09.

There were 71.5 miles earth road maintained at a cost of \$20,135.44 or an average of \$281.61 per mile. The above constitutes the entire system.

On January 1, 1921, the county had 51.0 miles of earth roads not built, and 20.5 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditures was \$59,048.24 of which \$28,197.07 or 48% was spent for construction, \$24,392.53 or 41% for maintenance and \$6,458.64 or 11% for special cases. There were 1.94 miles built to finished

grade standard section at a cost of \$24,231.81. The total amount spent for tilling and drainage was \$1,083.76. The total amount spent for equipment and tools was \$2,881.50.

The entire system consisting of 108.20 miles of earth road was maintained at a cost of \$24,392.53 or an average of \$225.00 per mile. The total average expenditure per mile of county road was \$546.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 14 of the 21 townships was \$55,053.88.

JONES COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$83,275.14 of which \$45,756.96 or 55% was spent for permanent bridges and culverts; \$4,679.72 or 5.6% for temporary bridges and culverts; \$25,911.56 or 31% for repairs; \$5,429.70 or 6.4% for culvert material for townships; \$106.32 or 0.3% for equipment and unused materials; \$1,308.88 or 1.6% for filling bridges and culverts; \$62.00 or 0.1% for special cases.

Of the total amount \$50,436.68 spent for new bridges and culverts, \$45,756.94 or 91% was spent for permanent work and \$4,679.72 or 9% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$23,626.95; wood truss bridges, \$2,243.97; concrete pipe, \$112.19; corrugated pipe, \$975.57; concrete deck girders, \$16,425.98; I-beam spans—concrete abutments, \$5,704.03; miscellaneous temporary bridges and culverts, \$1,347.99.

1. Primary Roads.

The total expenditure was \$6,378.94 of which the entire amount was spent for maintenance.

There were 55.9 miles of earth road maintained at a cost of \$6,371.51 or an average of \$113.98 per mile. There were 3 miles of gravel road maintained at a cost of \$7.42 or an average of \$2.47 per mile. The entire system consisting of 58.9 miles was maintained at a cost of \$6,378.94 or an average of \$108.30 per mile.

On January 1, 1921 the county had 55.9 miles of earth roads not built and 3.0 miles surfaced with gravel.

2. County Roads.

The total county road expenditures was \$28,241.60 of which \$2,547.70 or 9% was spent for construction; \$25,424.80 or 90% for maintenance and \$269.10 or 1% for special cases. There were 0.5 miles built to finished grade standard section at a cost of \$2,112.20. The total amount spent for tilling and drainage was \$435.50.

There were 140.6 miles of earth road maintained at a cost of \$25,424.80 or an average of \$180.00 per mile. There were 2 miles of gravel road maintained without cost. The entire system consisting of 142.6 miles was maintained at a cost of \$25,424.80 or an average of \$178.00 per mile. The total average expenditure per mile of county road was \$198.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 11 of the 16 townships was \$39,378.53.

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$84,416.04, of which \$53,322.22 or 63% was spent for permanent bridges and culverts; \$3,922.75 or 4.6% for temporary bridges and culverts; \$19,964.46 or 23.4% for repairs, \$6,773.18 or 8.2% for culvert material for townships; \$1,435.44

or 2.1% for equipment and unused materials; \$5,167.02 or 6.2% for filling bridges and culverts, and \$434.98 or 0.5% for special cases.

Of the total amount, \$56,244.97, spent for new bridges and culverts, \$52,222.22 or 94% was spent for permanent work, and \$3,922.75 or 6% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$37,227.10; head walls and culverts lengthened, \$2,405.11; concrete slab bridges, \$4,224.20; concrete abutments, \$1,256.45; corrugated pipe, \$1,137.26; I-beam spans—concrete abutments, \$68.71; pony truss—concrete abutments, \$7,140.65; miscellaneous temporary bridges and culverts, \$2,785.55.

1. Primary Roads.

The total expenditure was \$71,272.91, of which \$58,667.76 or 82.3% was spent for construction and \$12,605.15 or 17.7% for maintenance.

Grading was done on 5.52 miles at a cost of \$5,866.76.

The entire mileage of the primary system, 79.5 miles, was maintained at a cost of \$12,605.15 or an average of \$158.56 per mile.

On January 1, 1921, the county had 68.9 miles of earth roads not built, and 11.5 miles of earth-road built to permanent grade.

2. County Roads.

The total county road expenditure was \$27,861.62 of which \$743.53 or 2% was spent for construction; \$25,208.26 or 91% for maintenance, and \$1,909.83 or 7% for special cases.

The total amount spent for tilling and drainage was \$743.53.

The entire system of 123.60 miles was maintained at a cost of \$25,208.26 or an average of \$201.00 per mile. The total average expenditure per mile of county road was \$222.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 14 of the 17 townships was \$48,100.40.

KOSSUTH COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$100,244.40, of which \$8,550.00 or 8.5% was spent for permanent bridges and culverts; \$33,626.95 or 33.5% for temporary bridges and culverts; \$46,635.68 or 46.6% for repairs; \$5,801.82 or 5.8% for culvert material for townships; \$274.50 or 0.3% for equipment and unused materials; \$730.45 or 0.7% for filling bridges and culverts, and \$4,625.00 or 4.6% for special cases.

Of the total amount, \$42,176.95, spent for new bridges and culverts, \$8,550.00 or 20.3% was spent for permanent work and \$33,626.95 or 79.7% for temporary work.

The amounts last above referred to were spent on the following construction: Corrugated pipe, \$3,237.85; wood trestle bridges, \$30,389.10; concrete arch bridges, \$8,550.00.

1. Primary Roads.

The total expenditure was \$48,260.66, of which \$37,621.87 or 77.9% was spent for construction and \$10,638.79 or 22.1% was spent for maintenance.

Grading was done at a cost of \$5,932.21; gravel surfacing was done at a cost of \$3,757.76. The total amount spent for tilling and drainage was \$23,411.36.

There were 59.0 miles of earth road maintained at a cost of \$8,056.12 or an average of \$136.54 per mile; 29.0 miles of gravel road maintained at a cost of \$2,582.67 or an average of \$89.06 per mile. The entire system of 88.0 miles was maintained at a cost of \$10,638.79, or an average of \$120.90 per mile.

On January 1, 1921, the county had 40.5 miles of earth road not built; 18.5 miles of earth road built to permanent grade, and 29.0 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$194,306.62, of which \$140,346.56 or 72% was spent for construction; \$46,077.57 or 24% for maintenance, and \$7,882.49 or 4% for special cases.

There were 22.50 miles built to finished grade, standard section, at a cost of \$101,246.06; 3 miles surfaced with gravel at a cost of \$7,906.94. The total amount spent for tilling and drainage was \$31,193.56.

There were 177.50 miles of earth road maintained at a cost of \$41,360.89 or an average cost of \$233.00 per mile; 13.50 miles of gravel road maintained at a cost of \$4,716.88 or an average cost of \$349.00 per mile; the entire system of 191.0 miles was maintained at a cost of \$46,077.57 or an average of \$241.00 per mile.

The total average expenditure per mile of county road was \$1,017.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 8 of the 20 townships was \$95,541.61.

LEE COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$91,233.85 of which \$57,172.18 or 63% was spent for permanent bridges and culverts; \$232.90 or 0.3% for temporary bridges and culverts; \$9,467.24 or 10% for repairs; \$2,339.34 or 2.6% for culvert material of townships; \$11,867.24 or 13% for equipment and unused materials; \$9,856.25 or 10.6% for filling bridges and culverts; \$298.70 or 0.3% for special cases.

Of the total amount, \$57,405.08, spent for new bridges and culverts, \$57,172.18 or 99.4% was spent for permanent work and \$232.90 or 0.6% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$12,674.78; head walls and culverts lengthened, \$1,144.54; wood trestle bridges, \$232.90; I-beam spans—concrete abutments, \$22,215.12; pony truss—concrete abutments, \$20,137.74.

1. Primary Roads.

The total expenditure was \$19,950.91 of which \$19,904.91 was spent for maintenance and \$46.00 for special cases.

There were 85.6 miles of earth road maintained at a cost of \$13,871.35 or an average of \$162.05 per mile. There were 3.5 miles of gravel road maintained at a cost of \$6,033.56 or an average of \$1,723.87 per mile. The entire system consisting of 89.1 miles was maintained at a cost of \$19,904.91 or an average of \$223.40 per mile.

On January 1, 1921 the county had 85.6 miles of earth roads not built and 3.5 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$23,306.00, the entire amount being spent for maintenance.

There were 83.50 miles of earth road maintained at a cost of \$17,156.56 or an average of \$205.00 per mile. There were 10 miles of gravel road maintained at a cost of \$6,149.44 or an average of \$615.00 per mile. There were 32.50 miles of road in the entire system maintained at a cost of \$23,306.00 or an average of \$249.00 per mile. The total average expenditure per mile of county road was \$249.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$38,198.38.

LINN COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$124,482.88 of which \$48,569.37 or 39% was spent for permanent bridges and culverts; \$24,470.10 or 20% for temporary bridges and culverts; \$22,194.81 or 18% for repairs; \$4,476.90 or 3.6% for culvert material for townships; \$16,487.70 or 13% for equipment and unused materials; \$4,859.00 or 0.1% for filling bridges and culverts; \$7,815.41 or 6.3% for special cases.

Of the total amount, \$73,039.47, spent for new bridges and culverts, \$48,569.37 or 66.5% was spent for permanent work and \$24,470.10 or 33.5% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$18,568.76; head walls and culverts lengthened, \$6,771.24; concrete slab bridges, \$4,304.92; wood trestle bridges, \$20,853.61; corrugated pipe, \$1,590.50; I-beam spans—concrete abutments, \$6,138.47; pony truss—concrete abutments, \$12,785.98; miscellaneous permanent bridges and culverts, \$2,925.99.

1. Primary Roads.

The total expenditure was \$190,004.10 of which \$157,835.55 or 83.1% was spent for construction and \$32,168.55 or 16.9% for maintenance. Grading was done on 5.65 miles at a cost of \$49,551.73. There were 1.66 miles paved with concrete at a cost of \$59,806.29. The total amount spent for tilling and drainage was \$18,477.53.

There were 85 miles of earth road maintained at a cost of \$20,412.47 or an average of \$240.15 per mile; 12 miles of gravel road maintained at a cost of \$11,670.87 or an average of \$972.57 per mile; 4 miles of paved road maintained at a cost of \$85.21 or an average of \$21.30 per mile. The entire system consisting of 101 miles was maintained at a cost of \$32,168.55 or an average of \$318.50 per mile.

On January 1, 1921 the county had 84 miles of earth roads not built, 1 mile of earth road built to permanent grade, 12 miles surfaced with gravel and 4 miles paved.

2. County Roads.

The total county road expenditure was \$49,450.42 of which \$1,918.52 or 3.9% was spent for construction, \$34,216.08 or 69.2% for maintenance and \$13,315.82 or 26.9% for special cases. The total amount spent for tilling and drainage was \$1,918.52.

There were 97 miles of earth road maintained at a cost of \$23,096.52 or an average of \$238.00 per mile. There were 15 miles of gravel road maintained at a cost of \$11,119.56 or an average cost of \$674.00 per mile. The entire system consisting of 112 miles was maintained at a cost of \$34,216.08 or an average of \$305.00 per mile. The total average expenditure per mile of county road was \$442.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$70,030.73.

LOUISA COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$79,041.49 of which \$33,557.59 or 42% was spent for permanent bridges and culverts; \$3,689.58 or 4.6% for temporary bridges and culverts; \$23,559.41 or 29% for repairs; \$3,702.60 or 4.7% for culvert material for townships; \$8,620.23 or 11.3% for equipment and unused materials; \$4,995.06 or 6.3% for filling bridges and culverts; \$886.93 or 0.1% for special cases.

Of the total amount, \$37,247.17, spent for new bridges and culverts, \$33,557.59 or 90% was spent for permanent work and \$3,689.58 or 10% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$18,527.03; masonry culverts, \$235.24; corrugated pipe, \$659.50; wood trestle bridges, \$3,030.08; high steel trusses—concrete abutments, \$14,795.32.

1. Primary Roads.

The total expenditure was \$9,779.86, the entire amount being spent for maintenance.

There were 49.5 miles of earth road maintained at a cost of \$9,767.24 or an average of \$197.32 per mile. There were 1.3 miles paved road maintained at a cost of \$12.62 or an average of \$9.71 per mile. The entire system consisting of 50.8 miles was maintained at a cost of \$9,779.86 or an average of \$192.51 per mile.

On January 1, 1921 the county had 46.5 miles of earth road not built, 3 miles of earth road built to permanent grade and 1.3 miles paved.

2. County Roads.

The total county road expenditure was \$34,002.89 of which \$10,644.83 or 31% was spent for construction; \$20,520.46 or 61% for maintenance, and \$2,837.59 or 8% for special cases. One mile was built to finished grade standard section at a cost of \$10,644.83.

There were 69 miles of earth road maintained at a cost of \$20,520.46 or an average of \$297.00 per mile. There were 1.5 miles of gravel road maintained without cost. The entire system, consisting of 70.5 miles, was maintained at a cost of \$20,520.46 or an average of \$291.00 per mile. The total average expenditure per mile of county road was \$482.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 9 of the 12 townships was \$38,509.24.

LUCAS COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$114,014.23 of which \$77,813.21 or 68.3% was spent for permanent bridges and culverts; \$3,483.16 or 3.0% for temporary bridges and culverts; \$11,256.52 or 9.9% for repairs; \$9,175.10 or 8.1% for culvert material for townships; \$2,144.20 or 1.9% for equipment and unused materials; \$8,207.60 or 7.2% for filling bridges and culverts; \$1,934.24 or 1.7% for special cases.

Of the total amount, \$81,296.47, spent for new bridges and culverts, \$77,813.21 or 95.7% was spent for permanent work and \$3,483.16 or 4.3% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$24,178.70; head walls and culverts lengthened, \$2,975.47; concrete pipe, \$3,102.83; corrugated pipe, \$380.33; I-beam spans—concrete abutments, \$11,029.44; pony truss—concrete abutments, \$21,092.46; high steel trusses—concrete abutments, \$18,537.68.

1. Primary Roads.

The total expenditure was \$28,722.65 of which \$20,287.53 or 70.6% was spent for construction and \$8,435.12 or 29.4% for maintenance. Grading was done on 1.33 miles at a cost of \$20,287.53.

There were 59 miles of earth road, the entire system, maintained at a cost of \$8,435.12 or an average of \$142.97 per mile.

On January 1, 1921 the county had 59 miles of earth roads not built.

2. County Roads.

The total county road expenditure was \$32,879.98 of which \$23,115.33 or 70.3% was spent for maintenance and \$9,764.10 or 29.7% for special cases.

There were 96 miles of earth road, the entire system, maintained at a cost

of \$23,115.33 or an average of \$241.00 per mile. The total average expenditure per mile was \$42.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 11 of the 12 townships was \$30,539.57.

LYON COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$97,761.82 of which \$43,464.96 or 44% was spent for permanent bridges and culverts; \$5,029.55 or 5% for temporary bridges and culverts; \$22,196.74 or 23% for repairs; \$7,231.84 or 7.4% for culvert material for townships; \$6,664.23 or 7% for equipment and unused materials; \$5,379.50 or 6% for filling bridges and culverts; \$7,695.20 or 7.6% for special cases.

Of the total amount \$48,494.51, spent for new bridges and culverts, \$43,464.96 or 90% was spent for permanent work and \$5,029.55 or 10% for temporary work. The amounts last above referred to were spent on the following construction: Concrete culverts, \$17,511.59; head walls and culverts lengthened, \$212.00; wood trestle bridges, \$3,617.10; corrugated pipe, \$1,195.00; retaining walls, \$135.00; I-beam spans—concrete abutments, \$9,385.74; pony truss—concrete abutments, \$15,820.63; miscellaneous temporary bridges and culverts, \$217.45.

1. Primary Roads.

The total expenditure was \$11,723.83 of which \$172.17 or 1.5% was spent for construction, \$10,843.58 or 92.5% for maintenance and \$707.88 or 6% for special cases. Grading was done on .34 miles at a cost of \$148.93. The total amount spent for tiling and drainage was \$25.24.

There were 68 miles of earth road, the entire system, maintained at a cost of \$10,843.58 or an average of \$159.46 per mile.

On January 1, 1921, the county had 66.5 miles of earth roads not built and 1.5 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$69,775.61 of which \$48,467.04 or 70% was spent for construction, \$20,802.47 or 29.3% for maintenance and \$506.10 or 0.7% for special cases. There were 7.65 miles built to finished grade standard section at a cost of \$25,159.72. There were 8 miles surfaced with gravel at a cost of \$22,779.07. The total amount spent for tiling and drainage was \$528.25.

There were 117.24 miles of earth road maintained at a cost of \$20,517.33 or an average of \$175.60 per mile. There were 8 miles of gravel road maintained at a cost of \$285.15 or an average of \$36.00 per mile. The entire system consisting of 125.24 miles was maintained at a cost of \$20,802.47 or an average of \$166.00 per mile. The total average expenditure per mile of county road was \$567.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 17 of the 18 townships was \$46,257.42.

MADISON COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$75,228.22 of which \$10,919.96 or 14.5% was spent for permanent bridges and culverts; \$9,921.73 or 13.2% for temporary bridges and culverts; \$26,942.38 or 36% for repairs; \$12,587.30 or 17% for culvert material for townships; \$11,419.22 or 15% for equipment and unused materials; \$1,179.55 or 1.3% for filling bridges and culverts; \$2,358.08 or 3% for special cases.

Of the total amount, \$20,841.69, spent for new bridges and culverts, \$10,919.96 or 52.5% was spent for permanent work and \$9,921.73 or 47.5% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$10,919.96; corrugated pipe, \$2,761.06; wood trestle bridges, \$7,160.67.

1. Primary Roads.

The total expenditure was \$11,204.08, being spent entirely for maintenance.

There were 56.3 miles of earth road, the entire system, maintained at an average cost of \$199.01 per mile.

On January 1, 1921 the county had 55.5 miles of earth roads not built, and .8 mile earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$32,389.87 of which \$30,499.51 or 94% was spent for maintenance and \$1,890.36 or 6% for special cases.

There were 119.25 miles of earth road, the entire system, maintained at a cost of \$30,499.51 or an average of \$256.00 per mile. The total average expenditure per mile of county road was \$271.00 per mile.

3. Township Roads.

The total expenditure of township roads as shown by reports from 15 of the 16 townships was \$47,648.96.

MAHASKA COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$54,925.17 of which \$31,270.23 or 57% was spent for permanent bridges and culverts; \$2,099.30 or 4% for temporary bridges and culverts; \$8,242.13 or 15% for repairs; \$4,312.50 or 8% for culvert material for townships; \$4,924.07 or 8.5% for equipment and unused material; \$2,302.31 or 4.2% for filling bridges and culverts; \$1,761.63 or 3.3% for special cases.

Of the total amount, \$33,369.53, spent for new bridges and culverts, \$31,270.23 or 94% was spent for permanent work and \$2,099.30 or 6% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$18,068.70; head walls and culverts lengthened, \$4,335.71; concrete pipe, \$14.00; corrugated pipe, \$2,085.30; high steel trusses—concrete abutments, \$8,865.82.

1. Primary Roads.

The total expenditure was \$22,120.71 of which \$374.55 or 1.7% was spent for construction and \$21,746.16 or 98.3% for maintenance. The total amount spent for tiling and drainage was \$374.55.

There were 86 miles of earth road, the entire system, maintained at a cost of \$21,746.16 or an average of \$252.86 per mile.

On January 1, 1921 the county had 80.5 miles of earth road not built and 5.5 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$43,503.73 of which \$9,755.29 or 22% was spent for construction, \$28,170.20 or 65% for maintenance and \$5,578.24 or 13% for special cases. One mile was built to finished grade standard section at a cost of \$7,007.96. The total amount spent for tiling and drainage was \$477.55 and that for equipment and tools was \$2,269.78.

There were 76 miles of earth road, the entire system, maintained at a cost of \$28,170.20 or an average of \$371.00 per mile. The total average expenditure per mile of county road was \$573.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$58,950.27.

MARION COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$76,182.37 of which \$22,060.52 or 29% was spent for permanent bridges and culverts and \$2,114.00 or 3% for temporary bridges and culverts; \$7,145.25 or 9% for repairs; \$8,585.74 or 11% for culvert material for townships; \$26,350.62 or 35% for equipment and unused materials; \$9,373.10 or 12.3% for filling bridges and culverts; \$553.14 or 0.7% for special cases.

Of the total amount \$24,174.52, spent for new bridges and culverts, \$22,060.52 or 91% was spent for permanent work and \$2,114.00 or 9% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$11,717.59; head walls and culverts lengthened, \$2,506.58; corrugated pipe, \$158.40; wood trestle bridges, \$1,262.85; I-beam spans—concrete abutments, \$7,836.35; miscellaneous temporary bridges and culverts, \$692.75.

1. Primary Roads.

The total expenditure was \$32,843.37 of which \$7,521.11 or 23% was spent for construction and \$25,322.26 or 77% for maintenance. The sum of \$6,822.15 was spent for grading. The total amount spent for tiling and drainage was \$698.96.

There were 92.5 miles of earth road, the entire system, maintained at a cost of \$25,322.26 or an average of \$273.75 per mile.

On January 1, 1921 the county had 75.5 miles of earth roads not built and 17 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$44,891.72 of which \$955.80 or 2% was spent for construction, \$37,179.57 or 83% for maintenance and \$6,756.35 or 15% for special cases. There was .05 mile built to finished grade standard section at a cost of \$506.37. There was .06 mile surfaced with gravel at a cost of \$199.00. The total amount spent for tiling and drainage was \$250.43.

There were 97.94 miles of earth road maintained at a cost of \$37,179.57 or an average of \$379.00 per mile. There was .06 mile of gravel road maintained without cost. The entire system consisting of 98 miles was maintained at a cost of \$37,179.57 or an average of \$379.00 per mile. The average expenditure per mile of county road was \$458.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 8 of the 15 townships was \$52,390.34.

MARSHALL COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$204,309.29 of which \$162,223.46 or 79% was spent for permanent bridges and culverts; \$10,125.64 or 5.5% for temporary bridges and culverts; \$6,467.93 or 3% for repairs; \$6,508.37 or 3.3% for culvert material for townships; \$1,811.36 or 0.7% for equipment and unused materials; \$12,373.45 or 6.5% for filling bridges and culverts; \$4,800.08 or 2% for special cases.

Of the total amount, \$172,349.10, spent for new bridges and culverts, \$162,223.46 or 94% was spent for permanent work and \$10,125.64 or 6% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$90,648.19; head walls and culverts lengthened, \$1,274.11; concrete slab bridges, \$14,689.50; wood trestle bridges, \$1,757.54; concrete pipe, \$3,020.15; cast iron pipe, \$4,299.78; I-beam spans—concrete abutments, \$15,573.36; pony truss—concrete abutments, \$24,491.94; high steel trusses—concrete abutments, \$14,546.36; miscellaneous temporary bridges and culverts, \$1,048.17.

1. Primary Roads.

The total expenditure was \$136,683.77 of which \$113,415.51 or 82% was spent for construction, \$12,861.90 or 9.4% for maintenance and \$10,406.36 or 7.6% for special cases. The total amount spent for grading was \$48,219.64. \$23,639.41 was spent on paving with concrete. The total amount spent for tilling and drainage was \$99.13 and that for equipment and tools was \$41,407.33.

There were 50.7 miles of earth road, the entire system, maintained at a cost of \$12,861.90 or an average of \$253.69.

On January 1, 1921 the county had 29.2 miles of earth roads not built and 21.5 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$149,535.24 of which \$99,370.05 or 66% was spent for construction, \$46,967.60 or 32% for maintenance and \$3,197.55 or 2% for special cases. There were 12 miles built to finished grade standard section at a cost of \$91,894.08. There were 6.25 miles surfaced with gravel at a cost of \$5,433.14. The total amount spent for tilling and drainage was \$1,161.25 and that for equipment and tools \$881.62.

There were 134.79 miles of earth road maintained at a cost of \$45,967.60 or an average of \$338.00 per mile. There were 8.36 miles of gravel roads maintained without cost. The entire system consisting of 143.15 miles was maintained at a cost of \$46,967.60 or an average of \$328.00 per mile. The total average expenditure per mile of county road was \$1,043.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$61,489.85.

MILLS COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$124,375.40 of which \$54,119.38 or 42% was spent for permanent bridges and culverts; \$23,481.83 or 18% for temporary bridges and culverts; \$14,832.92 or 12% for repairs; \$4,250.68 or 3.2% for culvert material for townships; \$11,721.80 or 8.8% for equipment and unused materials; \$16,488.52 or 13% for filling bridges and culverts; \$3,430.67 or 3% for special cases.

Of the total amount, \$77,661.21, spent for new bridges and culverts, \$54,119.38 or 70% was spent for permanent work and \$23,481.83 or 30% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$53,746.63; head walls and culverts lengthened, \$372.75; wood trestle bridges, \$2,177.82; concrete pipe, \$821.64; corrugated pipe, \$909.84; pony truss—on piling, \$16,795.22; miscellaneous temporary bridges and culverts, \$2,777.31.

1. Primary Roads.

The total expenditure was \$44,911.75 of which \$22,453.01 or 49.9% was spent for construction and \$22,458.74 or 50.1% for maintenance. Grading was done on 2.55 miles at a cost of \$22,453.01.

There were 48.1 miles of earth road, the entire system, maintained at a cost of \$22,458.74 or an average of \$466.92 per mile.

On January 1, 1921 the county had 48.1 miles of earth roads not built.

2. County Roads.

The total county road expenditure was \$41,696.54 of which \$39,727.79 or 95% was spent for maintenance and \$1,968.75 or 5% for special cases.

There were 67 miles of earth road, the entire system, maintained at a cost of \$39,727.79 or an average of \$593.00 per mile. The total average expenditure per mile of county road was \$622.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 11 of the 15 townships was \$46,350.67.

MITCHELL COUNTY.**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$51,653.07 of which \$30,449.42 or 59.7% was spent for permanent bridges and culverts; \$2,293.38 or 4.5% for temporary bridges and culverts; \$9,256.04 or 18.1% for repairs; \$1,565.34 or 3.1% for culvert material for townships; \$7,213.62 or 14.1% for equipment and unused materials; \$275.20 or 0.5% for special cases.

Of the total amount, \$32,742.80, spent for new bridges and culverts, \$30,449.42 or 93% was spent for permanent work and \$2,293.38 or 7% for temporary work. The amounts last above referred to were spent on the following construction: Concrete culverts, \$25,343.16; concrete slab bridges, \$1,761.39; corrugated pipe, \$2,293.38; concrete deck girders, \$22.50; I-beam spans—concrete abutments, \$429.73; pony truss—concrete abutments, \$2,892.71.

1. Primary Roads.

The total expenditure was \$56,265.99 of which \$37,839.29 or 67.3% was spent for construction and \$18,369.70 or 32.7% for maintenance. \$6,904.19 was spent for grading and \$18,432.59 for surfacing with gravel. The total amount spent for equipment and tools was \$12,502.51.

There were 44.5 miles of earth road maintained at a cost of \$10,749.33 or an average of \$241.42 per mile. There were 16.5 miles of gravel road maintained at a cost of \$7,626.37 or an average of \$462.20 per mile. The entire system consisting of 61 miles was maintained at a cost of \$18,369.70 or an average of \$301.14 per mile.

On January 1, 1921 the county had 44.5 miles of earth roads not built and 16.5 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$50,384.45 of which \$21,308.24 or 42.3% was spent for construction, \$28,276.21 or 56.3% for maintenance and \$800.00 or 1.6% for special cases. There were 1.25 miles built to finished grade standard section at a cost of \$584.94. There were 1.25 miles surfaced with gravel at a cost of \$4,282.25. The total amount spent for tilling and drainage was \$11,325.99 and that for equipment and tools \$5,105.03.

There were 81.45 miles of earth road maintained at a cost of \$28,276.21 or an average of \$347.00 per mile. There were 1.25 miles of gravel road maintained without cost. The entire system consisting of 82.7 miles was maintained at a cost of \$28,276.21 or an average of \$342.00 per mile. The total average expenditure per mile of county road was \$609.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$45,760.21.

MONONA COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$82,948.99 of which \$29,011.83 or 35% was spent for permanent bridges and culverts; \$4,325.34 or 5% for temporary bridges and culverts; \$12,341.91 or 15% for repairs; \$5,970.61 or 7.2% for culvert material for townships; \$6,486.09 or 7.8% for equipment and unused materials; \$14,259.53 or 17% for filling bridges and culverts; \$10,604.08 or 13% for special cases.

Of the total amount, \$33,237.07, spent for new bridges and culverts, \$29,011.83 or 87% was spent for permanent work and \$4,225.84 or 13% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$20,807.73; head walls and culverts lengthened, \$448.12; concrete slab bridges, \$1,070.00; wood trestle bridges, \$901.37; concrete pipe, \$89.60; corrugated pipe, \$893.32; I-beam spans—piling abutments, \$1,478.88; pony truss—concrete abutments, \$6,685.98; miscellaneous temporary bridges and culverts, \$862.67.

1. Primary Roads.

The total expenditure was \$20,051.92 of which \$19,262.62 or 96% was spent for maintenance and \$789.30 or 4% for special cases.

There were 77.1 miles of earth road, the entire system, maintained at a cost of \$19,262.62 or an average of \$249.84 per mile.

On January 1, 1921 the county had 70.1 miles of earth roads not built and 7 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$33,182.90 of which \$6,715.83 or 20% was spent for construction, \$25,181.07 or 76% for maintenance and \$1,286.00 or 4% for special cases.

There were 1.19 miles built to finished grade standard section at a cost of \$6,115.83. The total amount spent for tiling and drainage was \$600.00.

There were 89.5 miles of earth road, the entire system, maintained at a cost of \$25,181.07 or an average of \$281.00 per mile. The total average expenditure per mile of county road was \$371.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 12 of the 19 townships was \$35,726.09.

MONROE COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 was \$62,854.86 of which \$28,434.74 or 45% was spent for permanent bridges and culverts, \$3,019.58 or 5% for temporary bridges and culverts; \$21,640.37 or 34.3% for repairs; \$6,119.07 or 9.7% for culvert material for townships; \$719.55 or 1% for filling bridges and culverts; \$2,921.55 or 5% for special cases.

Of the total amount \$31,454.32 spent for new bridges and culverts, \$28,434.74 or 90% was spent for permanent work and \$3,019.58 or 10% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$8,451.51; masonry culverts, \$2,137.40; head walls and culverts lengthened, \$544.02; concrete slab bridges, \$3,568.40; wood truss bridges, \$1,630.60; corrugated pipe, \$1,388.98; I-beam spans—concrete abutments, \$4,371.60; pony truss—concrete abutments, \$9,361.81.

1. Primary Roads.

The total expenditure was \$68,091.38 of which \$55,962.09 or 82.2% was spent for construction; \$12,129.29 or 17.8% for maintenance. Grading was done on 5.19 miles at a cost of \$55,644.81. The total amount spent for tiling and drainage was \$317.28.

The entire system consisting of 56.3 miles of earth road was maintained at a cost of \$12,129.29 or an average of \$215.44 per mile.

On January 1, 1921 the county had 47.8 miles of earth roads not built and 8.5 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$31,347.15 of which \$24,345.26 or 78% was spent for maintenance and \$7,001.89 or 22% for special cases.

There were 115.25 miles of earth road maintained at a cost of \$24,345.26 or an average of \$211.00 per mile. The above constitutes the entire system. The total average expenditure per mile of county road was \$272.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$35,557.57.

MONTGOMERY COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$230,192.79 of which \$115,546.63 or 50% was spent for permanent bridges and culverts; \$39,558.41 or 17.3% for temporary bridges and culverts; \$16,999.55 or 7.4% for repairs; \$9,880.30 or 4.3% for culvert material for townships; \$31,903.87 or 13.9% for equipment and unused materials; \$8,958.77 or 3.9% for filling bridges and culverts; \$7,345.26 or 3.2% for special cases.

Of the total amount, \$155,105.04, spent for new bridges and culverts, \$115,546.63 or 74.5% was spent for permanent work and \$39,558.41 or 25.5% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$65,722.30; head walls and culverts lengthened, \$3,551.56; concrete pipe, \$964.68; wood trestle bridges, \$31,230.15; pony truss on piling, \$7,131.58; corrugated pipe, \$232.00; concrete deck girders, \$5,946.20; I-beam spans—concrete abutments, \$4,573.45; pony truss—concrete abutments, \$13,648.70; high steel trusses—concrete abutments, \$22,104.42.

1. Primary Roads.

The total expenditure was \$178,783.78 of which \$161,604.19 or 90.4% was spent for construction, \$17,137.59 or 9.6% for maintenance and \$42.00 for special cases. Grading was done on 10.64 miles at a cost of \$161,260.30. The total amount spent for tiling and drainage was \$343.89.

There were 51.8 miles of earth road, the entire system, maintained at a cost of \$17,137.59 or an average of \$330.84 per mile.

On January 1, 1921 the county had 36.8 miles of earth roads not built and 15 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$28,231.70 of which \$11,891.92 or 42% was spent for construction, \$14,406.22 or 51% for maintenance and \$1,933.56 or 7% for special cases. One mile was built to finished grade standard section at a cost of \$11,690.70. The total amount for tiling and drainage was \$51.22 and that for equipment and tools \$150.00.

There were 77.5 miles of earth road maintained at a cost of \$14,406.22 or an average of \$186.00 per mile, this mileage including the entire system. The total average expenditure per mile of county road was \$365.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$45,110.19.

MUSCATINE COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$45,814.40 of which \$24,735.00 or 54% was spent for permanent bridges and culverts; \$1,985.77 or 4% for temporary bridges and culverts; \$11,389.76 or 25.2% for repairs; \$1,779.91 or 39% for culvert material for townships; \$2,442.50 or 5.3% for equipment and unused materials; \$283.30 or 0.6% for filling bridges and culverts; \$3,198.26 or 7% for special cases.

Of the total amount \$26,721.67 spent for new bridges and culverts, \$24,735.00 or 93% for permanent work and \$1,985.77 or 7% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$20,541.60; head walls and culverts lengthened, \$840.18; concrete slab bridges, \$2,939.12; wood trestle bridges, \$1,153.66; concrete pipe,

\$438.53; corrugated and boiler pipe, \$372.48; pony truss—concrete abutments, \$415.00; miscellaneous temporary bridges and culverts, \$21.10.

1. Primary Roads.

The total expenditure was \$46,945.19 of which \$30,396.19 or 64.7% was spent for construction; \$16,369.98 or 34.9% for maintenance and \$179.02 or 0.4% for special cases. Grading was done on 7.18 miles at a cost of \$24,301.54. The total amount spent for tiling and drainage was \$6,094.65.

There were 78.9 miles of earth road maintained at a cost of \$16,105.26 or an average of \$204.12 per mile. There were 2.0 miles of gravel road maintained at a cost of \$243.89 or an average of \$121.94 per mile. There were .4 mile of paved road maintained at a cost of \$20.83 or an average of \$52.07 per mile. The entire system consisting of 81.3 miles was maintained at a cost of \$16,369.98 or an average of \$201.35 per mile.

On January 1, 1921 the county had 68.9 miles of earth road not built, 10.0 miles of earth road built to permanent grade, 2.0 miles surfaced with gravel, and .4 mile paved.

2. County Roads.

The total county road expenditure was \$33,487.70 of which \$14,792.14 or 44% was spent for construction; \$17,184.03 or 51% for maintenance, and \$1,511.53 or 5% for special cases. There were 2.16 miles built to finished grade standard section at a cost of \$11,696.67. There was 0.04 mile surfaced with gravel at a cost of \$408.45. The total amount spent for tiling and drainage was \$2,687.02.

There were 65.47 miles of earth road maintained at a cost of \$15,534.40 or an average of \$238.00 per mile. There were 8.08 miles of gravel road maintained at a cost of \$1,649.63 or an average of \$204.00 per mile. The entire system consisting of 73.55 miles was maintained at a cost of \$17,184.03 or an average of \$234.00 per mile. The total average expenditure per mile of county road was \$455.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$36,089.06.

O'BRIEN COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$161,550.98 of which \$123,846.44 or 75% was spent for permanent bridges and culverts; \$4,216.32 or 2.6% for temporary bridges and culverts; \$18,102.64 or 11% for repairs; \$4,373.59 or 2.7% for culvert material for townships; \$9,224.14 or 5.6% for equipment and unused materials; \$3,200.00 or 2.1% for filling bridges and culverts and \$1,587.75 or 1.0% for special cases.

Of the total amount \$128,062.76 spent for new bridges and culverts, \$123,846.44 or 97% was spent for permanent work and \$4,216.32 or 3% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$43,869.51; head walls and culverts lengthened, \$130.00; concrete slab bridges, \$13,172.04; concrete abutments, \$4,698.00; concrete pipe, \$4,015.79; I-beam spans—concrete abutments, \$26.00; pony truss—concrete abutments, \$61,847.29; miscellaneous temporary bridge and culverts, \$200.53; miscellaneous permanent bridges and culverts, \$103.60.

1. Primary Roads.

The total expenditure was \$66,619.87 of which \$59,279.73 or 89% was spent for construction and \$7,340.14 or 11% for maintenance. Grading was done at a cost of \$4,725.67. One mile was paved with concrete at a cost of \$48,038.42. The total amount spent for tiling and drainage was \$6,515.64.

There were 73.3 miles of earth road maintained at a cost of \$7,333.69 or an average of \$100.00 per mile. There was one mile of paved road maintained at

a cost of \$6.45 per mile. The entire system consisting of 74.3 miles was maintained at a cost of \$7,340.14 or an average of \$98.79 per mile.

On January 1, 1921 the county had 52.8 miles of earth roads not built, 20.5 miles of earth road built to permanent grade and 1 mile paved.

2. County Roads.

The total county road expenditure was \$69,313.16 of which \$41,942.31 or 60% was spent for construction, \$15,926.99 or 23% for maintenance and \$11,443.86 or 17% for special cases. There were 13.60 miles built to finished grade standard section at a cost of \$26,567.20. The total amount spent for tiling and drainage was \$7,744.93. The total amount spent for equipment and tools was \$7,630.18.

There were 123 miles of earth roads maintained at a cost of \$15,926.99 or an average of \$129.00 per mile. The above constitutes the entire system. The total average expenditure per mile of county road was \$563.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 14 of the 16 townships was \$51,754.47.

OSCEOLA COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$95,910.75 of which \$66,142.01 or 69% was spent for permanent bridges and culverts; \$15,097.26 or 15.6% for temporary bridges and culverts; \$3,763.00 or 4% for repairs; \$1,564.80 or 1.6% for culvert material for townships; \$2,930.81 or 3.1% for equipment and unused materials; \$3,322.43 or 3.5% for filling bridges and culverts; \$3,090.44 or 3.2% for special cases.

Of the total amount \$81,239.27 spent for new bridges and culverts, \$66,142.01 or 81% was spent for permanent work and \$15,097.26 or 19% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$35,930.66; concrete slab bridges, \$20,311.84; wood trestle bridges, \$15,097.26; concrete deck girders, \$1,625.00; pony truss—concrete abutments, \$5,080.74; miscellaneous permanent bridges and culverts, \$3,193.77.

1. Primary Roads.

The total expenditure was \$24,213.74 of which \$19,688.87 or 81.3% was spent for construction; \$4,478.73 or 18.5% for maintenance; \$46.14 or .2% for special cases. Grading was done on 9.04 miles at a cost of \$19,664.43. The total amount spent for tiling and drainage was \$24.44.

The entire system consisting of 41.5 miles of earth road was maintained at a cost of \$4,478.73 or an average of \$107.92 per mile.

On January 1, 1921 the county had 32 miles of earth roads not built and 9.5 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$47,094.86 of which \$12,871.99 or 27% was spent for construction, \$25,214.04 or 54% for maintenance and \$9,008.83 or 19% for special cases. The total amount spent for tiling and drainage was \$12,871.99.

There were 103 miles of earth road maintained at a cost of \$25,214.04 or an average of \$245.00 per mile. The above constitutes the entire system. The total average expenditure per mile of county road was \$457.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 7 of the 11 townships was \$30,329.34.

PAGE COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$134,408.53 of which \$57,538.42 or 43% was spent for permanent bridges and culverts; \$3,904.54 or 2.9% for temporary bridges and culverts; \$28,028.18 or 21% for repairs; \$8,342.74 or 6.2% for culvert material for townships; \$8,287.12 or 6.1% for equipment and unused materials; \$18,709.68 or 13.7% for filling bridges and culverts and \$9,597.85 or 7.1% for special cases.

Of the total amount \$61,442.96 was spent for new bridges and culverts, \$57,538.42 or 94% for permanent work and \$3,904.54 or 6% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, costing \$32,104.27; concrete pipe, \$820.60; head walls and culverts lengthened, \$1,103.80; corrugated pipe, \$499.72; wood trestle bridges, \$1,805.95; pony truss-concrete abutments, \$24,330.35, and high trusses on piling, \$778.27.

1. Primary Roads.

The total expenditure was \$15,738.25 of which \$306.90 or 1.9% was spent for construction and \$15,431.35 or 98.1% for maintenance. The total amount spent for tiling and drainage was \$306.90.

Fifty-nine and six-tenths miles of earth road, comprising the entire system, was maintained at a cost of \$15,431.35 or an average of \$258.92 per mile.

On January 1, 1921 the county had 57.1 miles of earth roads not built and 2.5 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$27,645.07 of which \$63.27 or .2% was spent for construction; \$24,386.64 or 88.2% for maintenance and \$3,195.16 or 11.6% for special cases. The total amount spent for tiling and drainage was \$63.27.

One hundred twenty-three and seventy-one hundredths miles of earth roads, the entire system, was maintained at a cost of \$24,386.64 or an average of \$197.00 per mile. The total average expenditure per mile of county road was \$224.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$46,614.59.

PALO ALTO COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$50,632.57 of which \$26,248.87 or 52% of the amount was spent for permanent bridges and culverts; \$2,922.29 or 6% for temporary bridges and culverts; \$4,380.56 or 9% for repairs; \$9,251.60 or 18% for culvert material for townships; \$4,126.73 or 8% for equipment and unused materials; \$1,586.30 or 3% for filling bridges and culverts and \$2,116.22 or 4% for special cases.

Of the total amount \$29,171.16 was spent for new bridges and culverts, \$26,248.87 or 90% for permanent work and \$2,922.29 or 10% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, costing \$3,549.00; head walls and culverts lengthened, \$1,903.50; concrete slab bridges, \$11,221.42; corrugated pipe, \$934.27; pony truss on piling, \$1,988.02; pony truss—concrete abutments, \$631.61, and high steel trusses—concrete abutments, \$8,943.34.

1. Primary Roads.

The total expenditure was \$175,680.03 of which \$169,390.03 or 96.4% was spent for construction; \$6,290.00 or 3.6% for maintenance. Grading work was done at a cost of \$34,570.01; 2.04 miles were paved with concrete at a cost of

\$101,553.02. The total amount spent for tiling and drainage was \$9,755.08 and for equipment and tools \$23,511.92.

Forty-six and nine-tenths miles of road were maintained at a cost of \$6,072.54, or an average of \$129.48 per mile. One mile of gravel road was maintained at a cost of \$3.27 or an average of \$3.27 per mile. Two miles of paved road were maintained at a cost of \$214.19 or an average of 107.10 per mile. Forty-nine and nine-tenths miles of the entire system were maintained at the cost of \$6,290.00 or an average of \$126.05 per mile.

On January 1, 1921 the county had 7.6 miles of earth roads not built, 39.3 miles of earth road built to permanent grade, 1 mile surfaced with gravel, and 2 miles paved.

2. County Roads.

The total county road expenditure was \$97,944.90 of which \$77,263.61 or 79% for construction; \$17,567.71 or 18% for maintenance and \$3,113.66 or 3% for special cases.

Twelve and one-tenth miles were built to finished grade standard section at a cost of \$30,527.40; 11.30 miles were surfaced with gravel at a cost of \$35,063.73. 102.29 miles of earth road were maintained at a cost of \$15,608.31 or an average of \$153.00 per mile; 12 miles of gravel road were maintained at a cost of \$1,959.40 or an average of \$163.00 per mile and 114.29 miles, the entire system, were maintained at a cost of \$17,567.71 or an average of \$154.00 per mile. The total average expenditure per mile of county road was \$856.00. The total amount spent for tiling and drainage was \$11,672.48.

3. Township Roads.

The total expenditure of township roads as shown by reports from 5 of the 16 townships was \$19,450.28.

PLYMOUTH COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$93,539.31 of which \$9,801.96 or 10.5% was spent for permanent bridges and culverts; \$19,485.18 or 20.8% for temporary bridges and culverts; \$31,785.69 or 34% for repairs; \$4,840.57 or 5.2% for culvert material for townships; \$15,351.42 or 16.4% for equipment and unused materials; \$8,043.46 or 8.6% for filling bridges and culverts and \$4,231.03 or 4.5% for special cases.

Of the total amount \$29,287.14 was spent for new bridges and culverts, \$9,801.96 or 33.4% for permanent work, and \$19,485.18 or 66.6% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, costing \$9,801.96; concrete pipe, \$160.10; corrugated pipe, \$3,586.61, and wood trestle bridges, \$15,738.47.

1. Primary Roads.

The total expenditure was \$20,757.62 of which the entire amount was spent for maintenance. 120.2 miles of earth road, comprising the entire system, were maintained at a cost of \$20,757.62 or an average of \$172.69.

On January 1, 1921 the county had 120.2 miles of earth road not built.

2. County Roads.

The total county road expenditure was \$74,836.80 of which \$41,575.17 or 56% was spent for construction; \$34,413.83 or 43% for maintenance and \$847.80 or 1% for special cases. 5.25 miles were built to finished grade standard section at a cost of \$21,964.09. The total amount spent for tiling and drainage was \$19,611.08.

One hundred sixteen miles of earth road were maintained at a cost of \$32,413.83 or an average of \$279.00 per mile. This covered the entire system. The total average expenditure per mile of county road was \$645.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 12 of the 24 townships was \$43,118.96.

POCAHONTAS COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$59,813.64 of which \$28,149.92 or 47% was spent for permanent bridges and culverts; \$11,025.27 or 18.4% for temporary bridges and culverts; \$13,185.75 or 22% for repairs; \$3,745.03 or 6.3% for culvert material for townships; \$186.02 or .3% for equipment and unused materials; \$1,156.08 or 2% for filling bridges and culverts; \$2,365.57 or 4% for special cases.

Of the total amount, \$39,175.19, spent for new bridges and culverts, \$28,149.92 or 71.9% was spent for permanent work and \$11,025.27 or 28.1% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$9,220.18; corrugated pipe, \$2,029.56; concrete slab bridges, \$7,155.00; wood trestle bridges, \$4,111.60; concrete deck girders, \$900.00; I-beam spans—concrete abutments, \$7,661.25; pony truss—concrete abutments, \$2,700.00; miscellaneous temporary bridges and culverts, \$4,884.11; miscellaneous permanent bridges and culverts, \$513.49.

1. Primary Roads.

The total expenditure was \$63,478.35 of which \$42,026.23 or 66.2% was spent for construction and \$21,452.12 or 33.8% for maintenance. Grading was done on 5 miles at a cost of \$25,716.03. There were 1.24 miles surfaced with gravel at a cost of \$4,654.92. The total amount spent for tiling and drainage was \$11,655.28.

There were 38.6 miles of earth roads maintained at a cost of \$4,871.26 or an average of \$126.20 per mile. There were 24.5 miles of gravel road maintained at a cost of \$16,580.86 or an average of \$676.77 per mile. The entire system, consisting of 63.1 miles, was maintained at a cost of \$21,452.12 or an average of \$339.97 per mile.

On January 1, 1921 the county had 11.1 miles of earth roads not built, 27.5 miles of earth roads built to permanent grade and 24.5 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$165,351.79 of which \$107,188.29 or 64.9% was spent for construction, \$36,935.79 or 22.3% for maintenance and \$21,227.71 or 12.8% for special cases. There were 18.6 miles built to finished grade standard section at a cost of \$62,155.03. There were 12.5 miles surfaced with gravel at a cost of \$40,107.67. The total amount spent for tiling and drainage was \$4,903.51 and that for equipment and tools \$22.08.

There were 53.05 miles of earth road maintained at a cost of \$6,937.55 or an average of \$130.00 per mile. There were 62.7 miles of gravel road maintained at a cost of \$29,998.24 or an average of \$478.00 per mile. The entire system consisting of 115.75 miles was maintained at a cost of \$36,935.79 or an average of \$319.00 per mile. The total average expenditure per mile of county road was \$1,430.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 17 of the 19 townships was \$75,283.05.

POLK COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$216,078.37 of which \$148,723.65 or 69% was spent for permanent bridges and culverts; \$8,577.05 or 4% for temporary bridges and culverts; \$15,335.62 or 7%

for repairs; \$10,196.67 or 5% for culvert material for townships; \$6,467.31 or 3% for equipment and unused materials; \$23,820.70 or 11% for filling bridges and culverts; \$2,957.37 or 1% for special cases. Of the total amount \$157,300.70 was spent for new bridges and culverts, \$148,723.65 or 95% for permanent work, and \$8,577.05 or 5% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, costing \$111,262.11; head walls and culverts lengthened, \$10,193.84; concrete slab bridges, \$7,309.70; wood trestle bridges, \$1,366.85; corrugated pipe, \$7,210.20; concrete through girders, \$4,335.00; concrete deck girders, \$2,238.00, and pony truss—concrete abutments, \$13,385.00.

1. Primary Roads.

The total expenditure was \$529,608.22 of which \$484,113.39 or 91.4% was spent for construction, \$32,914.18 or 6.2% for maintenance and \$12,580.65 or 2.4% for special cases. Grading was done on 18.6 miles at a cost of \$110,882.59; gravel surfacing was done in the amount of \$15,759.17; 6.6 miles were paved with concrete at a cost of \$346,902.72; the total amount spent for tiling and drainage was \$10,552.91, and for equipment and tools \$16.00.

Thirty-nine and eight-tenths miles of earth road were maintained at a cost of \$19,823.48 or an average of \$498.08 per mile. 37 miles of gravel road were maintained at a cost of \$11,660.91 or an average of \$315.16 per mile; 10 miles of paving were maintained at a cost of \$1,429.79 or an average of \$142.98 per mile. 86.8 miles, the entire system, were maintained at a cost of \$32,914.18 or an average of \$379.19 per mile.

On January 1, 1921 the county had 6.8 miles of earth roads not built, 33 miles of earth road built to permanent grade; 37 miles surfaced with gravel, and 10 miles paved.

2. County Roads.

The total county road expenditure was \$194,820.26 of which \$117,467.69 or 60% was spent for construction; \$47,227.31 or 24% for maintenance and \$30,125.26 or 16% for special cases.

Nineteen and seven-tenths miles were built to finished grade standard section at a cost of \$97,603.10; 5 miles were surfaced with gravel at a cost of \$9,685.51. The total amount spent for tiling and drainage was \$3,614.53. The total amount spent for equipment and tools was \$6,564.49; .5 mile of paved road on which there was no maintenance; 104.42 miles of earth road were maintained at a cost of \$41,500.66 or an average of \$397.00 per mile; 16.58 miles of gravel road were maintained at a cost of \$5,726.65 or an average of \$345.00 per mile; 121.50 miles, entire system, were maintained at a cost of \$47,227.31 or an average of \$389.00 per mile. The total average expenditure per mile of county road was \$1,605.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 12 of the 19 townships was \$36,580.12.

POTTAWATTAMIE COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$289,278.58 of which \$116,566.37 or 40.3% were spent for permanent bridges and culverts; \$83,079.66 or 28.7% for temporary bridges and culverts; \$25,066.80 or 8.7% for repairs; \$12,300.76 or 4.3% for culvert material for townships; \$41,772.66 or 14.4% for equipment and unused materials; \$1,160.55 or .4% for filling bridges and culverts, and \$9,331.78 or 3.2% for special cases.

Of the total amount \$199,646.03 was spent for new bridges and culverts, \$116,566.37 or 58.3% for permanent work; \$83,079.66 or 41.7% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, costing \$85,575.77; head walls and culverts lengthened, \$5,785.10; concrete pipe, \$1,659.35; corrugated pipe, \$544.80; pony truss on

piling, \$12,951.89; wood trestle bridges, \$57,167.12; wood truss bridges, \$2,081.00; I-beam spans—piling abutments, \$7,049.24; pony truss—concrete abutments, \$16,190.00 high steel trusses—concrete abutments, \$9,050.00; miscellaneous temporary bridges and culverts, \$1,626.26.

1. Primary Roads.

The total expenditure was \$89,919.95 of which \$42,782.77 or 47.6% was spent for construction; \$47,137.18 or 52.4% was spent for maintenance. Grading was done on 2.47 miles of road at a cost of \$42,782.77.

One hundred forty-four and three-tenths miles of earth road were maintained at a cost of \$47,130.63 or an average of \$326.62 per mile; 2.3 miles of gravel road were maintained at a cost of \$5.79 or an average of \$2.52 per mile; .3 mile of paved road was maintained at a cost of \$.75 or an average of \$2.53 per mile; 146.9 miles, the entire system, were maintained at a cost of \$47,137.18 or an average of \$320.88 per mile.

On January 1, 1921 the county had 135.3 miles of earth roads not built, 9 miles of earth road built to permanent grade, 23 miles surfaced with gravel and .3 mile paved.

2. County Roads.

The total county road expenditure was \$69,637.75 of which \$1,503.92 or 2% were spent for construction; \$65,476.66 or 94% for maintenance and \$2,657.15 or 4% for special cases.

Two one-hundredths mile was paved at a cost of \$1,503.92; 146.72 miles, the balance of the entire system, were maintained at a cost of \$65,476.66 or an average of \$446.00 per mile. There was no maintenance on the .02 mile of paving. The total average expenditure per mile of county road was \$475.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 18 of the 28 townships was \$62,009.50.

POWESHEIK COUNTY

Bridges.

The total expenditures for bridges and culvert work during 1920 were \$163,050.14 of which \$103,450.24 or 63% was spent for permanent bridges and culverts; \$8,558.40 or 5% for temporary bridges and culverts; \$31,314.34 or 20% for repairs; \$9,947.98 or 6% for culvert material for townships; \$2,956.94 or 1.8% for equipment and unused materials; \$3,203.11 or 1.9% for filling bridges and culverts; \$3,619.13 or 2.3% for special cases.

Of the total amount, \$112,008.64, spent for new bridges and culverts, \$103,450.24 or 93% was spent for permanent work and \$8,558.40 or 7% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$44,800.67; wood trestle bridges, \$7,914.90; concrete pipe, \$643.50; I-beam spans—concrete abutments, \$24,081.25; pony truss—concrete abutments, \$29,686.00; high steel trusses—concrete abutments, \$4,882.32.

1. Primary Roads.

The total expenditure was \$22,074.60 of which \$98.09 or .5% was spent for construction and \$21,976.51 or 99.5% for maintenance. The total amount spent for tiling and drainage was \$98.09.

There were 67 miles of earth road, the entire system, maintained at a cost of \$21,976.51 or an average of \$328.01 per mile.

On January 1, 1921 the county had 67 miles of earth roads not built.

2. County Roads.

The total county road expenditure was \$43,399.72 of which \$3,871.19 or 9% was spent for construction, \$39,333.31 or 90.6% for maintenance and \$195.22 or .4% for special cases. One mile was built to finished grade standard section at a cost of \$3,643.76. The total amount spent for tiling and drainage was \$227.43.

There were 91 miles of earth road, the entire system, maintained at a cost of \$39,333.31 or an average of \$432.00 per mile. The total average expenditure per mile of county road was \$477.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 11 of the 16 townships was \$41,609.47.

RINGGOLD COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$61,652.20 of which \$5,405.54 or 9% was spent for permanent bridges and culverts; \$3,922.70 or 6% for temporary bridges and culverts; \$37,805.43 or 62% for repairs; \$5,935.43 or 9.3% for culvert material for townships; \$5,795.84 or 9.2% for equipment and unused materials; \$1,080.16 or 1.7% for filling bridges and culverts; \$1,707.10 or 2.8% for special cases.

Of the total amount, \$9,328.24, spent for new bridges and culverts, \$5,405.54 or 58% was spent for permanent work and \$3,922.70 or 42% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$3,027.12; concrete pipe, \$3,123.30; corrugated pipe, \$691.40; I-beam spans—concrete abutments, \$1,499.92; pony truss—concrete abutments, \$878.50; miscellaneous temporary bridges and culverts, \$108.00.

1. Primary Roads.

The total expenditure was \$79,967.06 of which \$67,233.85 or 84.1% was spent for construction and \$12,733.21 or 15.9% for maintenance. Grading was done on 9.35 miles at a cost of \$67,232.85.

There were 51.4 miles of earth roads, the entire system, maintained at a cost of \$12,733.21 or an average of \$247.73 per mile.

On January 1, 1921 the county had 40.4 miles of earth roads not built and 11 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$25,919.41 of which \$25,202.81 or 97% was spent for maintenance and \$716.60 or 3% for special cases.

There were 132.85 miles of earth road, the entire system, maintained at a cost of \$25,202.81 or an average of \$190.00 per mile. The total average expenditure per mile of county road was \$195.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 12 of the 16 townships was \$24,486.75.

SAC COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$142,075.33, of which \$106,729.27 or 75% was spent for permanent bridges and culverts; \$1,246.02 or .9% for temporary bridges and culverts; \$4,516.21 or 3.1% for repairs; \$4,726.23 or 3.3% for culvert material for townships; \$5,186.00 or 3.7% for equipment and unused materials; \$9,255.46 or 6.5% for filling bridges and culverts, and \$10,416.14 or 7.5% for special cases.

Of the total amount, \$107,973.29, spent for new bridges and culverts, \$106,729.27 or 99% was spent for permanent work, and \$1,246.02 or 1% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$18,615.17; head walls and culverts lengthened, \$516.56; concrete slab bridges, \$6,826.00; wood trestle bridges, \$249.84; corrugated pipe, \$376.90; I-beam spans—concrete abutments, \$30,846.44; I-beam spans—piling abutments, \$625.28; pony truss—concrete abutments, \$16,657.00; high steel trusses—concrete abutments, \$33,268.10.

1. Primary Roads.

The total expenditure was \$112,138.18, of which \$78,625.11 or 70.1% was spent for construction and \$33,513.07 or 29.9% for maintenance.

Grading was done at a cost of \$1,321.50; 17.88 miles were surfaced with gravel at a cost of \$66,764.94. The total amount spent for tiling and drainage was \$10,538.67.

There were 49.1 miles of earth road maintained at a cost of \$15,061.77 or an average of \$306.76 per mile. There were 43 miles of gravel road maintained at a cost of \$18,451.30 or an average cost of \$429.10 per mile. The entire system of 92.1 miles was maintained at a cost of \$33,513.07 or an average of \$363.88 per mile.

On January 1, 1921, the county had no miles of earth road not built, 49.1 miles of earth road built to permanent grade, 43 miles surfaced with gravel, and no roads paved.

2. County Roads.

The total county road expenditure was \$43,918.75 of which \$28,292.85 or 65% was spent for construction, \$13,292.47 or 30% for maintenance, and \$2,333.43 or 5% for special cases.

There were 17.43 miles of road surfaced with gravel at a cost of \$25,167.01. The total amount spent for tiling and drainage was \$2,605.84, and the total amount spent for equipment and tools was \$520.00.

There were 27.42 miles of earth road maintained at a cost of \$7,642.93 or an average of \$279.00 per mile; 31.3 miles of gravel road maintained at a cost of \$5,650.54 or an average of \$181.00 per mile. The entire system of 58.72 miles was maintained at a cost of \$13,292.47 or an average of \$226.00 per mile. The total average expenditure per mile of county road was \$748.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$72,173.51.

SCOTT COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$124,866.44, of which \$105,173.16 or 84.3% was spent for permanent bridges and culverts; \$3,339.38 or 2.7% for temporary bridges and culverts; \$6,305.05 or 5% for repairs; \$1,268.82 or 1% for culvert material for townships; \$6,002.22 or 4.8% for equipment and unused materials; \$1,403.37 or 1.1% for filling bridges and culverts, and \$1,374.45 or 1.1% for special cases.

Of the total amount, \$108,512.54, spent for new bridges and culverts, \$105,173.16 or 96.9% was spent for permanent work and \$3,339.38 or 3.1% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$66,835.97; masonry culverts, \$2,338.41; corrugated pipe and boiler pipe, \$3,339.38; I-beam spans—concrete abutments, \$11,004.11; steel concrete abutments, \$24,775.25; miscellaneous permanent bridges and culverts, \$219.42.

1. Primary Roads.

The total expenditure was \$447,622.71 of which \$423,918.55 or 94.7% was spent for construction, \$18,717.86 or 4.2% for maintenance, and \$4,986.30 or 1.1% for special cases.

Grading was done on 12.98 miles at a cost of \$101,116.42; 1.94 miles were paved with concrete at a cost of \$301,767.26. The total amount spent for tiling and drainage was \$21,002.87, and the total amount spent for equipment and tools was \$32.00.

There were 47.1 miles of earth road maintained at a cost of \$13,248.31 or an average of \$281.28 per mile; 23 miles of gravel road maintained at a cost of \$5,466.29 or an average cost of \$237.66 per mile; 2 miles of paved road maintained at a cost of \$3.26 or an average of \$1.63 per mile. The entire

system of 72.1 miles was maintained at a cost of \$18,717.86 or an average of \$259.61 per mile.

On January 1, 1921, the county had 24.1 miles of earth roads not built; 23 miles of earth road built to permanent grade; 23 miles surfaced with gravel, and 2 miles paved.

2. County Roads.

The total county road expenditure was \$69,541.27, of which \$38,594.84 or 55% was spent for construction, \$19,433.39 or 28% was spent for maintenance, and \$11,513.04 or 17% for special cases.

There were 2.42 miles built to finished grade, standard section, at a cost of \$12,593.52; 3.17 miles were surfaced with gravel at a cost of \$26,001.32.

There were 65.43 miles of earth road maintained at a cost of \$12,411.27 or an average of \$190.00 per mile; 15.40 miles gravel road maintained at a cost of \$7,022.12 or an average of \$456.00 per mile, and the entire system of 80.83 miles was maintained at a cost of \$19,433.39 or an average of \$240.00 per mile. The total average expenditure per mile of county road was \$862.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$56,958.11.

SHELBY COUNTY**Bridges.**

The total expenditures for bridge and culvert work during 1920 were \$150,680.89, of which \$100,065.48 or 67% was spent for permanent bridges and culverts; \$19,901.38 or 13% for temporary bridges and culverts; \$18,276.03 or 12% for repairs; \$6,489.00 or 4.1% for culvert material for townships; \$354.32 or .2% for equipment and unused materials; \$3,539.93 or 2.3% for filling bridges and culverts, and \$2,054.75 or 1.4% for special cases.

Of the total amount, \$119,966.86, spent for new bridges and culverts, \$100,065.48 or 84% was spent for permanent work and \$19,901.38 or 16% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, \$61,483.29; concrete slab bridges, \$4,625.29; concrete arch bridges, \$15,892.00; concrete pipe, \$55.00; corrugated pipe, \$522.60; wood trestle bridges, \$19,323.78; pony truss—concrete abutments, \$18,064.90.

1. Primary Roads.

The total expenditure was \$71,030.49, of which \$58,646.45 or 82.6% was spent for construction and \$12,384.04 for maintenance, 17.4%.

Grading was done on 5.46 miles at a cost of \$58,425.52. The total amount spent for tiling and drainage was \$220.93.

The entire mileage of earth roads, 50.6 miles, was maintained at a cost of \$12,384.04 or an average of \$244.74 per mile.

On January 1, 1921, the county had 50.6 miles of earth roads not built.

2. County Roads.

The total county road expenditure was \$21,019.98, of which \$18,338.38 or 87% was spent for maintenance and \$2,681.60 or 13% was spent for special cases.

The entire mileage of the county road system, 107.15 miles, was maintained at a cost of \$18,338.38 or an average of \$171.00 per mile. The total average expenditure per mile of county road was \$196.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$61,636.53.

SIOUX COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$115,501.92, of which \$69,810.94 or 60.5% was spent for permanent bridges and culverts; \$27,092.68 or 23.4% for temporary bridges and culverts; \$10,621.59 or 9.2% for repairs; \$3,837.59 or 3.3% for culvert material for townships; \$3,069.54 or 2.7% for equipment and unused materials; \$408.45 or .3% for filling bridges and culverts, and \$661.13 or .6% for special cases.

Of the total amount \$96,903.62, spent for new bridges and culverts, \$69,810.94 or 72% was spent for permanent work, and \$27,092.68 or 28% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$51,514.11; concrete pipe, \$547.75; head walls and culverts lengthened, \$2,729.23; concrete slab bridges, \$4,831.60; corrugated pipe, \$1,451.50; wood trestle bridges, \$21,199.11; wood truss bridges, \$3,822.28; I-beam spans—concrete abutments, \$3,736.00; pony truss—concrete abutments, \$7,000.00; miscellaneous temporary bridges and culverts, \$72.04.

1. Primary Roads.

The total expenditure was \$152,381.80, of which \$149,533.21 or 98.1% was spent for construction and \$2,848.59 or 1.9% for maintenance.

Grading was done on 18.50 miles at a cost of \$69,274.26; 1.91 miles were paved with concrete at a cost of \$77,998.84. The total amount spent for tiling and drainage was \$2,244.11, and the total amount spent for equipment and tools was \$16.00.

There were 67.6 miles of earth road maintained at a cost of \$2,846.73 or an average of \$42.11 per mile; 1.8 miles of paved road maintained at a cost of \$1.86 or an average of \$1.03 per mile. The entire system of 69.4 miles was maintained at a cost of \$2,848.59 or an average of \$41.05 per mile.

On January 1, 1921, the county had 48.6 miles of earth roads not built, 19 miles of earth road built to permanent grade, and 1.8 miles paved.

2. County Roads.

The total county road expenditure was \$53,180.76, of which \$17,348.71 or 32.6% was spent for construction and \$28,699.52 or 54% for maintenance; and \$7,132.53 or 13.4% for special cases.

There were 6.75 miles built to finished grade, standard section, at a cost of \$12,993.33. The total amount spent for tiling and drainage was \$3,903.48, and the total amount spent for equipment and tools was \$451.90.

The entire system of 175 miles was maintained at a cost of \$28,699.52 or an average of \$164.00 per mile.

3. Township Roads.

The total expenditure of township roads as shown by reports from 22 of the 23 townships was \$75,477.62.

STORY COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$104,668.18, of which \$79,562.90 or 76% was spent for permanent bridges and culverts; \$17,511.09 or 16.6% was spent for repairs; \$5,136.43 or 5% for culvert material for townships; \$600.00 or .6% for equipment and unused materials; \$1,622.50 or 1.6% for filling bridges and culverts, and \$235.26 or .2% for special cases.

Of the total amount, \$79,562.90, spent for new bridges and culverts, \$79,562.90 or 100% was spent for permanent work.

The amount last above referred to was spent on the following construction:

Concrete culverts, \$26,878.00; I-beam spans—concrete abutments, \$14,691.40; steel concrete abutments, \$35,473.50; high steel trusses—concrete abutments, \$2,520.00.

1. Primary Roads.

The total expenditure was \$57,771.01, of which \$31,280.06 or 54.2% was spent for construction and \$26,490.95 or 45.8% was spent for maintenance.

The total amount spent for tiling and drainage was \$31,280.06.

There were 33.4 miles of earth road maintained at a cost of \$12,290.69 or an average of \$367.98 per mile; 31 miles of gravel road maintained at a cost of \$14,200.26 or an average of \$458.07 per mile. The entire system of 64.4 miles was maintained at a cost of \$26,490.95 or an average of \$411.34 per mile.

On January 1, 1921, the county had 8.2 miles of earth roads not built; 25.2 miles of earth road built to permanent grade, and 31 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$187,690.01, of which \$146,016.32 or 77.8% was spent for construction, \$37,596.31 or 20% for maintenance, and \$4,077.38 or 2.2% for special cases.

There were 26 miles surfaced with gravel at a cost of \$90,973.81. The total amount spent for tiling and drainage was \$44,712.75, and the total amount spent for equipment and tools was \$10,329.76.

There were 70.75 miles of earth road maintained at a cost of \$24,962.21 or an average of \$353.00 per mile; 58.75 miles of gravel road maintained at a cost of \$12,634.10 or an average of \$215.00 per mile. The entire system of 129.5 miles was maintained at a cost of \$37,596.31 or an average of \$290.00 per mile.

The total average expenditure per mile of county road was \$1,448.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 12 of the 16 townships was \$59,093.96.

TAMA COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$61,327.87 of which \$16,383.91 or 26.7% was spent for permanent bridges and culverts; \$8,305.03 or 13.5% for temporary bridges and culverts; \$26,146.16 or 42.7% for repairs; \$4,990.66 or 8.1% for culvert materials for townships; \$1,027.13 or 1.7% for equipment and unused materials; \$2,545.33 or 4.1% for filling bridges and culverts and \$1,929.65 or 3.2% for special cases.

Of the total amount \$24,688.94 was spent for new bridges and culverts; \$16,383.91 or 66.4% for permanent work and \$8,305.03 or 33.6% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, costing \$16,383.91; corrugated pipe, \$449.95; and wood trestle bridges, \$7,855.08.

1. Primary Roads.

The total expenditure was \$9,647.31 which was spent for maintenance; 70 miles of earth roads, comprising the entire system were maintained at a cost of \$9,647.31 or an average of \$137.82 per mile.

On January 1, 1921 the county had 56.2 miles of earth roads not built and 13.8 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$43,731.21, of which \$1,512.81 or 3% were spent for construction; \$33,973.87 or 78% for maintenance and \$8,244.53 or 19% for special cases. The total amount spent for tiling and drainage was \$1,512.81.

One hundred forty miles of earth road, the entire system, was maintained at a cost of \$33,973.87 or an average of \$243.00 per mile. The total average expenditure per mile of county road was \$312.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$75,491.00.

TAYLOR COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$95,880.68 of which \$33,755.62 or 35% was spent for permanent bridges and culverts; \$5,157.45 or 5.4% for temporary bridges and culverts; \$20,788.96 or 21.6% for repairs; \$8,036.18 or 8% for culvert material for townships; \$13,640.04 or 15% for equipment and unused materials; \$13,118.79 or 14% for filling bridges and culverts and \$1,383.64 or 1% for special cases.

Of the total amount \$38,913.07 was spent for new bridges and culverts, \$33,755.62 or 87% for permanent work and \$5,157.45 or 13% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts costing \$33,755.62; wood trestle bridges costing \$5,157.45.

1. Primary Roads.

The total expenditure was \$7,658.28 of which the entire amount was spent for maintenance; 49.6 miles of earth road were maintained at a cost of \$7,658.28 or an average of \$154.40 per mile. This 49.6 miles is the mileage of the entire system.

On January 1, 1921 the county had 49.6 miles of earth roads not built.

2. County Roads.

The total county road expenditure was \$26,894.20 which was spent for maintenance with the exception of \$65.00 or .2% which was spent for special cases.

One hundred thirty-seven miles of earth road, the entire system, were maintained at a cost of \$26,829.20 or an average of \$196.00 per mile. The total average expenditure per mile for county road was \$196.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$51,774.52.

UNION COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$46,200.23 of which \$17,888.02 or 38.7% was spent for permanent bridges and culverts; \$8,642.04 or 18.7% for temporary bridges and culverts; \$2,402.16 or 5.2% for repairs; \$11,122.55 or 24.1% for culvert material for townships; \$4,172.37 or 9.1% for equipment and unused materials; \$525.89 or 1.1% for filling bridges and culverts and \$1,447.20 or 3.1% for special cases.

Of the total amount \$26,530.06 was spent for new bridges and culverts, \$17,888.02 or 67.4% for permanent work and \$8,642.04 or 32.6% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, costing \$9,938.35; head walls and culverts lengthened, \$1,840.02; concrete pipe, \$5,318.80; wood trestle bridges, \$145.20; concrete abutments, \$828.44; retaining walls, \$178.43; I-beam spans—concrete abutments, \$269.96; miscellaneous temporary bridges and culverts, \$3,178.04, and miscellaneous permanent bridges and culverts, \$4,832.82.

1. Primary Roads.

The total expenditure was \$14,591.35 of which the entire amount was spent for maintenance; 52.9 miles of earth road, comprising the entire system, was maintained at a cost of \$14,591.35 or an average of \$275.83 per mile.

On January 1, 1921 the county had 52.9 miles of earth roads not built.

2. County Roads.

The total county road expenditure was \$30,912.91 of which \$28,268.73 or 91% was spent for maintenance and \$2,644.18 or 9% for special cases. 104 miles of road, the entire system, was maintained at a cost of \$28,268.73 or an average of \$272.00 per mile. The total average expenditure per mile of county road was \$297.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 10 of the 12 townships was \$25,024.55.

VAN BUREN COUNTY

Bridges.

The total expenditure for bridge and culvert work during 1920 were \$67,144.61 of which \$21,226.68 or 31.6% was spent for permanent bridges and culverts; \$403.00 or .6% for temporary bridges and culverts; \$21,013.78 or 31.3% for repairs; \$2,535.00 or 3.7% for culvert material for townships; \$9,432.25 or 14.1% for equipment and unused materials; \$206.40 or .3% for filling bridges and culverts and \$12,327.50 or 18.4% for special cases.

Of the total amount \$21,629.68 was spent for new bridges and culverts; \$21,226.68 or 98.1% for permanent work and \$403.00 or 1.9% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, costing \$20,085.58; masonry culverts, \$326.85; head walls and culverts lengthened, \$814.25, and corrugated pipe, \$403.00.

1. Primary Roads.

The total expenditure was \$60,224.14 of which \$50,780.71 or 84.4% was spent for construction; \$9,443.43 or 15.6% for maintenance. Grading was done on 10.06 miles at a cost of \$42,890.00. The total amount spent for tiling and drainage was \$7,890.71.

Forty-three and nine-tenths miles of earth road, the entire system, were maintained at a cost of \$9,443.43 or an average of \$215.11 per mile.

On January 1, 1921 the county had 33.9 miles of earth roads not built and 10 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$15,711.15 of which \$12,251.01 or 78% was spent for maintenance and \$3,460.14 or 22% for special cases.

Ninety-eight and seventy-six hundredths miles of earth road, the entire system, were maintained at a cost of \$12,251.01 or an average of \$124.00 per mile. The total average expenditure per mile of county road was \$159.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 13 of the 14 townships was \$33,461.39.

WAPELLO COUNTY

Bridges.

The total expenditure for bridge and culvert work during 1920 were \$95,510.39 of which \$73,133.62 or 76.5% was spent for permanent bridges and culverts; \$5,368.02 or 5.6% for temporary bridges and culverts; \$5,174.35 or 5.4% for repairs; \$5,315.11 or 5.6% for culvert material for townships; \$2,891.68 or 3% for equipment and unused materials; \$2,034.05 or 2.2% for filling bridges and culverts; \$1,593.56 or 1.7% for special cases.

Of the total amount, \$78,501.64, spent for new bridges and culverts, \$73,133.62 or 93% was spent for permanent work and \$5,368.02 or 7% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$31,554.29; corrugated pipe, \$2,449.07; concrete slab bridges, \$8,502.15; wood trestle bridges, \$2,099.28; I-beam spans—concrete abutments, \$9,307.47; pony truss—concrete abutments, \$23,769.71; miscellaneous temporary bridges and culverts, \$819.67.

1. Primary Roads.

The total expenditure was \$82,126.85 of which \$73,680.53 or 89.7% was spent for construction and \$8,446.32 or 10.3% for maintenance. Grading was done on 8.65 miles at a cost of \$73,680.53.

There were 44.1 miles of earth road, the entire system, maintained at a cost of \$8,446.32 or an average of \$191.53 per mile.

On January 1, 1921 the county had 38.1 miles of earth roads not built and 6 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$39,038.46 of which \$3,396.68 or 9% was spent for construction, \$26,180.41 or 67% for maintenance and \$9,461.37 or 24% for special cases. The total amount spent for tiling and drainage was \$3,396.68.

There were 100.25 miles of earth road, the entire system, maintained at a cost of \$26,180.41 or an average of \$261.00 per mile. The total average expenditure per mile of county road was \$390.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 13 of the 14 townships was \$34,368.90.

WARREN COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$71,091.01 of which \$27,059.56 or 38.1% was spent for permanent bridges and culverts; \$9,907.18 or 13.9% for temporary bridges and culverts; \$10,993.57 or 15.5% for repairs; \$6,605.00 or 9.3% for culvert material for townships; \$5,884.75 or 8.3% for equipment and unused materials for townships; \$6,906.06 or 9.7% for filling bridges and culverts and \$3,734.90 or 5.2% for special cases.

Of the total amount \$36,966.74 was spent for new bridges and culverts; \$27,059.56 or 73.2% for permanent work; and \$9,907.18 or 26.8% for temporary work.

The amounts last above referred to were spent on the following construction: Concrete culverts, costing \$13,165.72; concrete pipe, \$1,931.55; corrugated pipe, \$1,076.02; wood trestle bridges, \$5,598.67; high steel trusses—concrete abutments, \$13,893.83, and miscellaneous temporary bridges and culverts, \$1,301.94.

1. Primary Roads.

The total expenditure was \$15,237.59 of which \$254.92 or 1.7% was spent for construction; \$14,982.67 or 98.3% for maintenance. The total amount spent for tiling and drainage was \$254.92.

Eighty-five and three-tenths miles of earth road, the entire system, was maintained at a cost of \$14,982.67 or an average of \$175.65 per mile.

On January 1, 1921 the county had 82.3 miles of earth road not built and 3 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$18,244.20 of which \$17,827.58 or 98% was spent for maintenance and \$416.62 or 2% for special cases.

There were 92.25 miles of earth road maintained at a cost of \$17,827.58 or an average of \$193.00 per mile. This amount comprises the entire system.

3. Township Roads.

The total expenditure of township roads as shown by reports from 13 of the 16 townships was \$40,092.61.

WASHINGTON COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$67,830.25 of which \$18,547.79 or 27.3% was spent for permanent bridges and culverts; \$7,283.08 or 10.8% for temporary bridges and culverts; \$18,711.18 or 27.6% for repairs; \$8,563.36 or 12.6% for culvert material for townships; \$7,038.56 or 10.4% for equipment and unused materials; \$3,004.00 or 4.4% for filling bridges and culverts and \$4,681.78 or 6.9% for special cases.

Of the total amount \$25,830.87 was spent for new bridges and culverts, \$18,547.79 or 71.7% for permanent work and \$7,283.08 or 28.3% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$18,547.79; corrugated pipe, \$3,244.80; pony truss on piling, \$1,636.18, and wood trestle bridges, \$2,402.10.

1. Primary Roads.

The total expenditure was \$27,863.57 which was spent for maintenance work. Ninety miles of earth road, the entire system, were maintained at a cost of \$27,863.57 or an average of \$309.60 per mile.

On January 1, 1921 the county had 82 miles of roads not built and 8 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$31,803.55 of which \$29,734.20 or 94% was spent for maintenance and \$2,069.35 or 6% for special cases.

One hundred ten miles of earth road were maintained at a cost of \$29,734.20 or an average of \$270.00 per mile. This mileage is the entire system. The total average expenditure per mile of county road was \$289.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 10 of the 15 townships was \$48,555.57.

WAYNE COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$52,526.16 of which \$1,195.91 or 2.3% was spent for permanent bridges and culverts; \$20,751.77 or 39.7% for temporary bridges and culverts; \$15,504.31 or 29% for repairs; \$8,036.56 or 16% for culvert materials for townships; \$3,086.44 or 5.7% for equipment and unused materials; \$3,756.17 or 7% for filling bridges and culverts and \$185.00 or .3% for special cases.

Of the total amount \$21,947.68 was spent for new bridges and culverts; \$1,195.91 or 5% for permanent work and \$20,751.77 or 95% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts costing \$1,195.91; concrete pipe, \$6,182.25; corrugated pipe, \$610.80, and wood trestle bridges, \$13,958.72.

1. Primary Roads.

The total expenditure was \$14,090.83 which was spent for maintenance. Sixty-three miles of earth road, the entire system, was maintained at a cost of \$14,090.83 or an average cost of \$223.66 per mile.

On January 1, 1921 the county had 63 miles of earth roads not built.

2. County Roads.

The total county road expenditure was \$36,660.67 of which \$8,579.50 or 23% was spent for construction; \$27,937.67 or 76.6% for maintenance and \$143.50 or .4% for special cases.

One and twenty-five hundredths miles were built to finished grade at a cost of \$7,349.20. The total amount spent for tiling and drainage was \$890.30. The total amount spent for equipment and tools was \$340.00.

One hundred sixteen and fifty hundredths miles of earth road, the entire system, was maintained at a cost of \$27,937.67 or an average of \$240.00 per mile. The total average expenditure per mile of county road was \$314.00.

3. Township Roads.

The total expenditures of township roads as shown by reports from 13 of the 16 townships was \$27,135.15.

WEBSTER COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$59,687.01 of which \$32,834.91 or 55% was spent for permanent bridges and culverts; \$2,587.50 or 4.2% for temporary bridges and culverts; \$16,550.30 or 19% for repairs; \$6,071.40 or 10% for culvert material for townships; \$4,213.50 or 7% for equipment and unused materials; \$2,837.90 or 5% for filling bridges and culverts and \$191.00 or .8% for special cases.

Of the total amount \$35,422.41 was spent for new bridges and culverts, \$12,834.91 or 33% for permanent work, and \$2,587.50 or 7% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, costing \$7,358.07; masonry culverts,; head walls and culverts lengthened, \$11.20; concrete slab bridges, \$13,244.53; wood trestle bridges, \$96.50; concrete abutments, \$509.08; corrugated pipe, \$2,085.59; concrete deck girders, \$11,712.03, and I-beam spans—piling abutments, \$394.50, and miscellaneous temporary bridges and culverts, \$15.00.

1. Primary Roads.

The total expenditure was \$185,547.43 of which \$155,725.55 or 83.8% was spent for construction and \$29,821.88 or 16.2% for maintenance. Grading was done on 6.68 miles at a cost of \$59,367.19 and 6 miles were surfaced with gravel at a cost of \$82,227.32. The total amount spent for tiling and drainage was \$14,131.04.

There were 56.5 miles of earth road maintained at a cost of \$16,215.50 or an average of \$287.00 per mile; 28 miles of gravel road maintained at a cost of \$13,606.38 or average cost of \$485.81 per mile; 84.5 miles of the entire system were maintained at a cost of \$29,821.88 or average of \$352.92 per mile.

On January 1, 1921 the county had 39 miles of earth roads not built; 174 miles of earth road built to permanent grade and 28 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$43,107.28 of which \$8,191.12 or 19% was spent for construction; \$34,581.19 or 80% for maintenance and \$104.97 or 1% for special cases. There was .5 mile surfaced with gravel at a cost of \$712.77. The total amount spent for tiling and drainage was \$7,478.51.

There were 101.75 miles of earth road maintained at a cost of \$31,735.11 or an average of \$312.00 per mile; .5 mile of gravel road maintained at a cost of \$2,846.06 or an average of \$5,692.00 per mile; 102.25 miles, the entire system, was maintained at a cost of \$34,581.19 or an average of \$338.00 per mile. The total average expenditure per mile of county road was \$422.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$90,598.26.

WINNEBAGO COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$14,761.54 of which \$3,908.88 or 28.4% was spent for permanent bridges and culverts; \$740.50 or 5.4% for temporary bridges and culverts; \$259.22 or 1.9% for repairs; \$3,097.58 or 22.5% for culvert material for townships; \$5,755.24 or 41.8% for equipment and unused materials.

Of the total amount, \$4,649.38, spent for new bridges and culverts, \$3,908.88 or 84.1% was spent for permanent work and \$740.50 or 15.9% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, \$3,908.88; corrugated pipe, \$447.00; wood trestle bridges, \$293.50.

1. Primary Roads.

The total expenditure was \$77,330.48 of which \$69,841.30 or 90.4% was spent for construction and \$7,489.18 or 9.6% for maintenance. Grading was done on

111 miles at a cost of \$50,218.11. There were 4.81 miles surfaced with gravel at a cost of \$12,020.76. The total amount spent for tiling and drainage was \$1,602.43.

There were 44.8 miles of earth road maintained at a cost of \$7,473.65 or an average of \$166.82 per mile. There were 4 miles of gravel road maintained at a cost of \$15.53 or an average of \$3.88 per mile. The entire system, consisting of 48.8 miles, was maintained at a cost of \$7,489.18 or an average of \$153.47 per mile.

On January 1, 1921 the county had 3.8 miles of earth roads not built, 41 miles of earth road built to permanent grade and 4 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$50,700.30 of which \$27,004.48 or 53% was spent for construction, \$22,478.96 or 44% for maintenance and \$1,216.86 or 3% for special cases. There were 2.5 miles built to finished grade standard section at a cost of \$15,618.10. The total amount spent for tiling and drainage was \$11,386.28.

There were 97.75 miles of earth road, the entire system, maintained at a cost of \$22,478.96 or an average of \$230.00 per mile. The total average expenditure per mile of county road was \$518.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$47,460.86.

WINNESHIEK COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$73,119.47 of which \$30,321.00 or 41.4% was spent for permanent bridges and culverts; \$10,843.66 or 14.9% for temporary bridges and culverts; \$25,915.93 or 35.3% for repairs, \$302.38 or .4% for culvert material for townships; \$4,431.91 or 6% for equipment and unused materials; \$592.47 or .8% for filling bridges and culverts and \$912.12 or 1.2% for special cases.

Of the total amount \$41,164.66 was spent for new bridges and culverts, \$30,321.00 or 73.8% for permanent work and \$10,843.66 or 26.4% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, costing \$12,321.44; masonry culverts, \$404.60; corrugated pipe, \$46.15; wood trestle bridges, \$1,664.87; concrete abutments, \$6,571.81; concrete deck girders \$899.58; retaining walls, \$488.65; I-beam spans—concrete abutments, \$5,717.81; I-beam spans—piling abutments, \$2,443.12; miscellaneous temporary bridges and culverts, \$3,118.26; and miscellaneous permanent bridges and culverts, \$1,017.11, and wood truss, \$3,571.26.

1. Primary Roads.

The total expenditure was \$22,071.24 of which the entire amount was spent for maintenance; 83.4 miles of earth road were maintained at a cost of \$22,071.24, or an average of \$264.64 per mile. This mileage was the entire system.

On January 1, 1921 the county had 83.4 miles of earth roads not built.

2. County Roads.

The total county road expenditure was \$42,517.82 of which \$2,077.33 or 5% was spent for construction; \$28,591.69 or 91% for maintenance and \$1,848.80 or 4% for special cases. Total amount spent for equipment and tools was \$2,077.33.

One hundred nineteen and seventy-three hundredths miles of earth roads, the entire system, was maintained at a cost of \$38,591.69 or an average cost of \$323.00 per mile. The total average expenditure per mile of county road was \$355.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 13 of the 20 townships was \$38,546.89.

WOODBURY COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$186,253.65 of which \$81,058.09 or 43.5% was spent for permanent bridges and culverts; \$38,993.92 or 20.9% for temporary bridges and culverts; \$37,914.13 or 20.4% for repairs; \$6,366.78 or 3.4% for culvert material for townships; \$15,122.06 or 8.1% for equipment and unused materials; \$4,105.74 or 2.2% for filling bridges and culverts and \$2,692.93 or 1.5% for special cases. Of the total amount \$120,052.01 was spent for new bridges and culverts, \$81,058.09 or 67.5% for permanent work and \$38,993.92 or 32.5% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts costing \$37,651.00; head walls and culverts lengthened, \$6,638.56; concrete slab bridges, \$7,445.05; wood truss bridges, \$15,175.74; concrete pipe, \$4,065.09; I-beam on piling, \$18,409.16; pony truss on piling, \$1,290.78; I-beam spans—concrete abutments, \$2,914.27; pony truss—concrete abutments, \$26,409.11; miscellaneous temporary bridges and culverts, \$53.15.

1. Primary Roads.

The total expenditure was \$85,308.10, of which \$46,091.25 or 54% was spent for construction and \$39,216.85 or 46% for maintenance.

Grading was done on 1.61 miles at a cost of \$45,816.15. The total amount spent for tiling and drainage was \$275.10.

The entire system of 125.1 miles was maintained at a cost of \$39,216.85, or an average of \$313.48 per mile.

On January 1, 1921, the county had 61.6 miles of earth roads not built, and 63.5 miles of earth road built to permanent grade.

2. County Roads.

The total county road expenditure was \$117,726.27, of which \$61,535.85 or 52% was spent for construction, \$32,999.41 or 28% for maintenance, and \$23,191.01 or 20% for special cases.

There were 10.50 miles built to finished grade, standard section, at a cost of \$61,471.00. The total amount spent for tiling and drainage was \$64.05.

The entire system of 90.5 miles was maintained at a cost of \$32,999.41 or an average of \$365.00 per mile.

The total average expenditure per mile of county road was \$1,300.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 20 of the 23 townships was \$85,176.17.

WORTH COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$22,219.08 of which \$13,888.26 or 62.5% for permanent bridges and culverts; \$223.70 or 1% for temporary bridges and culverts; \$4,263.68 or 19.2% for repairs; \$1,873.25 or 8.4% for culvert material for townships; \$1,770.19 or 8% for equipment and unused materials, and \$200.00 or .9% for special cases.

Of the total amount \$14,111.96 was spent for new bridges and culverts; \$13,888.26 or 98.4% for permanent work and \$223.70 or 1.6% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, costing \$10,813.50; head walls and culverts lengthened, \$224.38; concrete slab bridges, \$1,864.35; I-beam spans—concrete abutments, \$986.03 and for miscellaneous temporary bridges and culverts \$223.70.

1. Primary Roads.

The total expenditure was \$6,646.40 of which the entire amount was spent for maintenance; 35.8 miles of earth road were maintained at a cost of \$4,220.85 or an average of \$117.00 per mile; 24.5 miles of gravel road maintained at a cost of \$2,425.55 or an average of \$99.00 per mile; 60.3 miles, the entire system, was maintained at a cost of \$6,646.40 or an average of \$110.22 per mile.

On January 1, 1921 the county had 35.8 miles of road not built and 24.5 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$40,115.49 of which \$22,410.48 or 56% was spent for construction; \$15,274.76 or 38% for maintenance and \$2,430.25 or 6% for special cases.

Two and twenty-five hundredths miles were built to finished grade standard section at a cost of \$10,407.66 and 3.75 miles were surfaced with gravel at a cost of \$4,060.70. \$6,588.01 were spent for tiling and drainage and \$1,354.11 for equipment and tools.

Sixty-nine and twenty-four hundredths miles of earth road were maintained at a cost of \$12,266.38 or an average of \$183.00 per mile; 10 miles of gravel road were maintained at a cost of \$3,007.38 or an average of \$301.00 per mile; 79.24 miles, the entire system, were maintained at a cost of \$15,274.76 or an average of \$193.00 per mile. The total average expenditure per mile of county road was \$507.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from all townships was \$34,138.84.

WRIGHT COUNTY

Bridges.

The total expenditures for bridge and culvert work during 1920 were \$63,344.25 of which \$37,537.31 or 59.3% was spent for permanent bridges and culverts; \$4,800.80 or 7.6% for temporary bridges and culverts; \$16,659.70 or 26.3% for repairs; \$3,781.42 or 6% for culvert material for townships; \$76.71 or .1% for equipment and unused materials and \$488.31 or .7% for filling bridges and culverts. Of the total amount \$42,377.31 was spent for new bridges and culverts, \$37,537.31 or 88.6% for permanent work and \$4,800.00 or 11.4% for temporary work.

The amounts last above referred to were spent on the following construction:

Concrete culverts, costing \$23,656.31; corrugated pipe, \$1,346.40; wood trestle bridges, \$3,454.40 and I-beam spans—concrete abutments, \$13,881.00.

1. Primary Roads.

The total expenditure was \$55,997.83 of which \$47,768.77 or 85.4% was spent for construction; \$8,229.06 or 14.6% for maintenance. Grading was done on 13.16 miles at a cost of \$32,644.84; .92 mile was surfaced with gravel at a cost of \$4,943.04. The total amount spent for tiling and drainage was \$10,170.39 and the total amount spent for equipment and tools was \$10.50.

Fifty-four and eight-tenths miles of earth road were maintained at a cost of \$8,229.06 or an average of \$150.17 per mile; 4.5 miles of gravel road were maintained without cost; 59.3 miles, the entire system, was maintained at a cost of \$8,229.06 or an average of \$138.77 per mile.

On January 1, 1921 the county had 41.3 miles of earth roads not built, 13.5 miles of earth road built to permanent grade and 4.5 miles surfaced with gravel.

2. County Roads.

The total county road expenditure was \$129,546.23 which was spent in the following manner: \$97,952.61 or 75% for construction; \$26,898.69 or 21% for maintenance and \$4,694.93 or 4% for special cases; 15.25 miles were built to finished grade standard section at a cost of \$44,269.85; 9.75 miles were surfaced with gravel at a cost of \$30,975.98 and the total amount spent for tiling and drainage was \$22,706.78.

One hundred ten and twenty-five hundredths miles of earth road were maintained at a cost of \$26,898.06 or an average of \$244.00 per mile; 9.75 miles of gravel road were maintained at a cost of nothing; 120 miles, the entire system, were maintained at a cost of \$26,898.06 or an average of \$224.00 per mile. The total average expenditure per mile of county road was \$1,079.00.

3. Township Roads.

The total expenditure of township roads as shown by reports from 14 of the 16 townships was \$61,723.66.

Summary of Road and Bridge Expenditures by Counties—January 1, 1920 to January 1, 1921.

SUMMARY TABLE NO. 1

Expenditures for Bridge and Road Work Primary, County and Township Roads—Annual Reports of County Engineers.

County	Bridges and Culverts	Primary Roads	County Roads	Township Roads	Total
Adair	\$ 108,912.61	\$ 46,284.92	\$ 24,094.92	\$ 41,223.92	\$ 220,516.37
Adams	100,265.95	91,573.98	31,855.89	32,388.79	256,084.61
Allamakee	52,154.87	28,984.46	42,617.95	37,977.06	161,734.34
Appanoose	84,231.44	73,721.84	41,883.84	37,902.00	237,842.12
Audubon	67,499.10	5,748.77	15,445.79	36,840.57	125,534.23
Benton	176,563.49	48,163.59	47,230.59	60,460.70	332,418.34
Black Hawk	213,086.42	92,627.34	93,252.63	49,552.70	448,519.09
Boone	185,927.90	131,318.69	163,992.39	85,908.06	547,147.13
Bremer	64,135.41	26,622.15	24,642.40	36,795.59	152,195.55
Buchanan	87,307.30	11,182.50	50,352.29	43,654.06	192,496.24
Buena Vista	24,516.43	140,733.95	116,413.81	64,912.50	346,579.69
Butler	56,787.09	34,776.75	48,857.26	52,902.46	193,323.56
Calhoun	35,561.53	158,498.70	145,792.12	59,640.33	399,492.68
Carroll	94,545.28	20,174.53	33,466.60	50,992.56	199,088.97
Cass	200,526.58	27,401.99	27,822.34	52,225.50	307,976.41
Cedar	153,956.05	12,567.87	28,103.21	63,167.50	257,794.63
Cerro Gordo	68,915.89	735,312.64	31,811.23	72,155.09	908,194.85
Cherokee	165,904.23	21,662.10	22,604.19	67,780.72	277,951.24
Chickasaw	54,835.28	69,509.63	26,923.33	39,691.90	190,990.14
Clarke	94,690.28	62,282.83	21,944.00	30,431.45	209,348.56
Clay	33,940.49	16,364.15	88,473.20	78,484.17	217,262.01
Clayton	91,055.05	12,174.89	25,094.92	53,065.89	181,250.85
Clinton	67,292.29	41,226.66	30,387.30	63,641.15	202,547.40
Crawford	180,678.88	14,863.16	127,964.54	76,315.58	399,822.16
Dallas	69,758.25	86,998.06	74,794.66	91,868.02	323,418.99
Davis	105,813.81	12,575.84	35,493.33	44,491.91	198,374.89
Decatur	113,922.83	136,140.51	34,228.65	12,121.75	296,413.74
Delaware	59,069.04	48,339.78	57,679.14	48,922.82	214,010.78
Des Moines	39,842.47	20,339.33	18,296.37	40,101.55	118,549.72
Dickinson	18,524.04	20,571.94	51,877.25	44,252.20	135,065.43
Dubuque	94,467.07	89,987.82	26,053.96	17,576.62	228,085.47
Emmet	30,315.62	70,392.61	69,075.20	48,346.51	218,129.94
Fayette	139,025.42	18,069.04	54,001.34	60,280.73	271,403.53
Floyd	71,132.66	587,958.73	102,254.11	53,218.54	814,562.04
Franklin	70,467.16	17,785.18	197,026.68	44,483.58	329,762.60
Fremont	121,267.67	74,962.08	29,598.24	38,394.54	264,222.53
Greene	264,590.19	112,895.82	35,014.66	78,312.68	490,813.35
Grundy	220,856.68	17,749.38	67,140.63	49,232.76	354,979.45
Guthrie	134,071.15	16,236.29	43,068.65	32,696.12	226,072.21
Hamilton	94,498.40	34,770.53	192,203.07	56,818.65	378,290.65
Hancock	21,441.13	12,932.00	39,443.90	56,769.26	130,586.29
Hardin	73,241.71	54,590.55	76,813.52	49,773.13	254,418.91
Harrison	125,720.66	132,664.03	14,293.13	51,134.39	323,722.21
Henry	61,662.06	38,244.25	23,183.60	39,807.40	162,897.31
Howard	46,734.74	42,931.20	26,750.04	34,683.41	151,099.39
Humboldt	42,112.92	75,642.43	52,567.53	40,678.07	211,000.95
Ida	131,453.51	54,953.72	55,772.25	38,378.40	280,557.88
Iowa	137,098.14	32,122.54	67,563.20	64,617.25	301,401.13
Jackson	42,458.29	11,440.79	19,880.49	46,383.23	120,162.83
Jasper	167,107.08	29,004.26	84,617.21	79,065.26	359,793.81
Jefferson	48,769.81	51,316.19	33,994.27	49,780.06	183,810.33
Johnson	66,092.61	61,265.61	59,048.24	55,053.88	241,450.34
Jones	83,275.14	6,378.94	28,241.60	39,378.58	157,274.26
Keokuk	84,416.04	71,272.91	27,861.62	48,100.40	231,650.97
Kossuth	100,244.40	48,260.66	194,306.62	95,541.61	438,353.29
Lee	91,233.85	19,950.91	23,306.00	38,198.38	172,689.14
Linn	124,062.88	190,004.10	49,450.42	70,030.72	433,548.13
Louisa	79,041.40	9,779.86	34,002.89	38,508.24	161,333.39
Lucas	114,014.23	28,722.65	32,879.98	30,539.57	206,156.43
Lyon	97,761.82	11,723.63	69,775.61	46,257.42	225,518.48

SUMMARY TABLE NO. 1—Continued

County	Bridges and Culverts	Primary Roads	County Roads	Township Roads	Total
Madison	75,328.22	11,204.08	32,389.87	47,648.96	166,571.13
Mahaska	54,925.17	22,120.71	43,503.73	58,950.27	179,499.88
Marion	76,182.37	32,843.37	44,891.72	52,390.34	206,307.80
Marshall	204,309.29	136,683.77	149,535.24	61,489.85	552,018.15
Mills	128,375.40	44,911.75	41,696.54	46,350.67	261,334.36
Mitchell	51,053.07	56,208.99	50,384.45	45,760.21	203,406.72
Monona	82,908.99	20,051.92	33,182.90	35,726.09	171,869.90
Monroe	62,854.86	68,091.33	31,347.15	35,557.57	197,850.93
Montgomery	230,192.79	178,783.78	28,231.70	45,110.19	482,318.46
Muscataine	45,814.40	46,945.19	33,387.70	36,089.06	162,336.35
O'Brien	164,550.98	66,619.87	69,313.16	51,754.47	352,238.48
Osceola	95,910.75	24,213.74	47,094.86	30,329.34	197,548.69
Page	134,408.53	15,738.25	28,346.92	46,614.59	225,108.29
Palo Alto	50,632.57	175,680.03	97,944.48	19,450.28	343,707.36
Plymouth	93,539.31	20,557.62	74,836.89	43,118.96	232,052.69
Pocahontas	59,813.64	63,478.35	165,351.79	75,283.05	363,926.83
Polk	216,078.37	529,608.22	194,820.26	36,580.12	977,086.97
Pottawattamie	289,278.58	89,919.95	69,637.73	62,009.50	510,845.76
Poweshiek	163,050.14	22,074.60	43,399.72	41,609.47	270,133.93
Ringgold	61,652.20	79,967.06	25,919.41	24,486.75	192,025.42
Sac	142,075.33	112,138.18	43,918.75	72,173.51	370,305.77
Scott	124,866.44	447,622.71	69,541.27	56,988.11	698,988.53
Shelby	150,680.89	71,030.49	21,019.98	61,636.53	304,367.89
Sioux	115,501.92	152,381.80	53,180.76	75,477.62	396,542.10
Story	104,668.18	57,771.01	187,690.01	59,093.96	409,223.16
Tama	61,327.87	9,647.31	43,731.21	75,491.00	190,197.39
Taylor	95,880.68	7,658.28	26,894.20	51,774.52	182,207.68
Union	46,200.23	14,591.35	30,912.91	25,024.55	116,729.04
Van Buren	67,144.61	60,224.14	15,711.15	33,461.39	176,541.29
Wapello	95,510.39	82,126.85	39,068.46	34,368.90	251,044.60
Warren	71,091.01	15,237.59	18,244.20	40,092.61	144,665.41
Washington	67,830.25	27,863.57	31,803.55	48,555.57	176,052.94
Wayne	52,526.16	14,090.83	36,060.67	27,135.15	130,412.81
Webster	50,687.01	185,547.43	45,107.28	90,598.26	378,939.98
Winnebago	13,761.54	77,330.48	57,700.30	47,460.86	189,253.18
Winneshiak	73,319.47	22,071.24	42,517.82	38,546.89	178,455.42
Woodbury	186,253.65	85,308.10	117,726.27	85,176.17	474,464.19
Worth	22,219.08	6,646.40	40,115.49	34,138.84	103,119.81
Wright	63,344.25	55,997.83	129,546.23	61,723.66	310,611.97
Total	\$9,804,213.40	\$7,483,973.54	\$5,759,553.54	\$4,977,204.77	\$28,024,945.25

SUMMARY TABLE

Expenditures for Bridges, Culverts, Road Construction and by Funds—Annual Reports

County	Bridges and Culverts				
	Bridge Fund	Motor Vehicle Fund	Road Fund	All Other Sources	Total
Adair	\$ 92,830.33	\$ 403.43	\$ 9,618.50	\$ 6,090.35	\$ 108,942.61
Adams	94,345.99	2,481.58	3,438.38		100,265.95
Allamakee	52,154.87				52,154.87
Appanoose	61,191.70	19,248.29	3,891.45		84,331.44
Audubon	64,703.10	2,790.00			67,493.10
Benton	169,328.56		7,234.93		176,563.49
Black Hawk	211,145.69		1,940.73		213,086.42
Boone	183,425.78		2,502.21		185,927.99
Bremer	63,727.67		407.74		64,135.41
Buchanan	87,307.30				87,307.30
Buena Vista	24,516.43				24,516.43
Butler	53,847.38	2,528.16	411.55		56,787.09
Calhoun	35,561.53				35,561.53
Carroll	94,119.48		425.80		94,545.28
Cass	182,999.51	3,568.82	13,957.95		200,526.28
Cedar	153,956.05				153,956.05
Cerro Gordo	68,915.89				68,915.89
Cherokee	143,786.70		22,117.53		165,904.23
Chickasaw	54,835.28				54,835.28
Clarke	79,499.66	8,138.96	7,051.66		94,690.28
Clay	33,698.82		241.67		33,940.49
Clayton	83,175.82	3,626.00	4,228.23	25.00	91,055.05
Clinton	59,326.11	5,486.90	2,479.28		67,292.29
Crawford	176,373.53		4,905.35		180,278.88
Dallas	69,758.25				69,758.25
Davis	95,248.25	3,724.38	6,841.18		105,813.81
Decatur	92,600.01	11,949.71	9,313.11		113,862.83
Delaware	58,999.04		70.00		59,069.04
Des Moines	26,040.96	13,801.48			39,842.47
Dickinson	17,159.48		1,364.56		18,524.04
Dubuque	94,467.07				94,467.07
Emmet	29,740.63		574.99		30,315.62
Fayette	131,825.19		3,410.47	3,789.75	139,025.42
Floyd	69,966.82		1,165.84		71,132.66
Franklin	69,881.98	28.43	556.75		70,467.16
Fremont	110,865.08	6,902.59		3,500.00	121,267.67
Greene	240,090.70		24,529.49		264,620.19
Grundy	195,335.85		6,251.29	19,269.54	220,856.68
Guthrie	133,777.96	52.50	240.69		134,071.15
Hamilton	92,989.80		1,508.60		94,498.40
Hancock	21,441.13				21,441.13
Hardin	64,266.03		8,975.68		73,241.71
Harrison	104,271.16	10,494.24	1,119.93	9,835.33	125,720.66
Henry	61,662.06				61,662.06
Howard	38,232.65	8,502.09			46,734.74
Humboldt	41,333.42		779.50		42,112.92
Ida	131,453.51				131,453.51
Iowa	137,098.14				137,098.14
Jackson	42,146.79	311.50			42,458.29
Jasper	152,146.77		14,960.31		167,107.08
Jefferson	47,624.73	869.23	275.85		48,769.81
Johnson	59,101.61		7,501.00		66,602.61
Jones	81,746.93	1,104.00	424.21		83,275.14
Keokuk	73,781.25		11,634.79		84,416.04
Kossuth	100,244.40				100,244.40
Lee	73,410.74	7,668.16	10,154.95		91,233.85
Linn	95,015.42		7,555.10	21,492.36	124,062.88
Louisa	79,041.40				79,041.40
Lucas	105,806.63		8,207.60		114,014.23
Lyon	86,012.97	4,374.01	7,374.84		97,761.82
Madison	72,825.52		2,502.70		75,328.22
Mahaska	53,312.26	200.00	1,412.91		54,925.17
Marion	66,809.27		9,373.10		76,182.37

NO. 2

Maintenance County and Township Road Systems Shown of County Engineers.

County and Township Roads						
County Road Cash	Motor Vehicle Fund	Bridge Fund	Secondary Road District Special Assessments	All Other Sources	Total	Grand Total
\$ 22,559.94				\$ 1,534.98	\$ 24,094.92	\$ 133,007.53
31,855.89					31,855.89	132,121.84
42,617.95					42,617.95	94,772.82
41,886.84					41,886.84	126,218.28
15,445.79					15,445.79	82,944.89
44,855.59			2,375.00		47,230.59	223,794.08
96,252.63					96,252.63	306,339.05
150,328.73			13,663.66		163,992.39	349,920.38
17,766.30	2,848.12			4,027.98	24,642.40	83,777.81
50,352.29					50,352.29	137,659.59
116,304.86	108.95				116,413.81	140,930.24
82,951.05	15,906.21				98,857.26	105,644.35
180,242.60	1,846.36		13,102.66	600.50	145,792.12	181,353.65
33,466.60					33,466.60	128,011.88
27,822.34					27,822.34	228,348.92
28,103.21					28,103.21	182,059.26
31,811.23					31,811.23	100,727.12
22,590.44		13.75			22,604.19	188,508.42
25,926.41				996.92	26,923.33	81,758.61
17,319.34	4,244.69				21,564.03	116,634.28
87,998.55		380.00			88,478.20	122,413.69
25,024.02		564.65			25,588.67	116,079.07
12,145.07	18,242.23				30,387.30	97,679.59
127,964.54					127,964.54	308,843.42
65,214.62	3,728.00		2,578.94	3,273.10	74,794.66	144,552.91
35,493.33					35,493.33	141,307.14
26,406.94	7,821.71				34,228.65	148,151.48
49,985.48	7,693.66				57,679.14	116,748.18
11,323.72	6,942.65				18,266.37	58,108.84
51,657.25					51,657.25	70,181.29
18,524.04					18,524.04	120,521.03
68,405.32				639.88	69,045.20	96,390.82
30,315.02		154.38		163.58	54,001.34	193,026.76
58,680.38					58,680.38	193,026.76
102,254.11					102,254.11	173,386.77
182,004.38	15,022.30				197,026.68	267,493.84
29,598.24					29,598.24	150,895.01
35,014.66					35,014.66	299,604.85
61,600.52				5,531.10	67,131.63	287,997.31
42,609.00	123.50	336.15			43,068.65	177,139.80
192,203.07					192,203.07	286,701.47
35,454.55	3,989.25				39,443.80	60,885.03
62,290.10	14,523.42				76,813.52	150,055.23
12,491.19	1,625.54			86.40	14,203.13	139,923.79
18,638.27	4,545.33				23,183.60	84,845.66
25,547.17	1,202.87				26,750.04	73,484.78
52,567.53					52,567.53	94,680.45
55,404.30		367.95			55,772.25	187,225.76
67,563.20					67,563.20	204,661.34
9,658.32	10,056.12	165.05			19,880.49	62,338.78
84,617.21					84,617.21	251,724.29
22,228.98	11,765.29				33,994.27	82,764.08
53,782.34	803.94	4,461.96			59,048.24	125,650.85
27,945.10	296.50				28,241.60	111,516.74
27,861.62					27,861.62	112,277.66
173,127.44	21,179.18				194,306.62	294,551.02
23,265.50	40.50				23,306.00	114,539.85
4,855.90	4,236.00			40,358.52	49,450.42	173,513.30
84,002.89					84,002.89	113,044.29
32,879.98					32,879.98	146,894.21
65,300.82	3,941.03	412.19		121.57	69,775.61	167,537.43
32,389.87					32,389.87	107,718.09
37,858.54	3,733.62	1,911.57			43,503.73	98,428.90
44,891.72					44,891.72	121,074.09

SUMMARY TABLE

County	Bridges and Culverts				Total
	Bridge Fund	Motor Vehicle Fund	Road Fund	All Other Sources	
Marshall	179,704.84	2,193.46	22,194.40	216.59	204,309.29
Mills	105,588.16		22,787.24		128,375.40
Mitchell	51,053.07				51,053.07
Monona	75,954.46	4,744.67	2,209.86		82,908.99
Monroe	35,922.00	9,748.27		17,184.59	62,854.86
Montgomery	214,172.60		16,020.19		230,192.79
Muscatine	45,726.98		87.42		45,814.40
O'Brien	164,550.98				164,550.98
Osceola	90,965.52	25.00	4,920.23		95,910.75
Page	115,429.48		18,771.55	207.50	134,408.53
Palo Alto	50,476.69		155.88		50,632.57
Plymouth	84,089.56		9,449.75		93,539.31
Pocahontas	59,813.64				59,813.64
Polk	176,097.25	16,160.42	23,820.70		216,078.37
Pottawattamie	289,278.58				289,278.58
Poweshiek	157,348.41	2,444.62	3,257.11		163,050.14
Ringgold	56,820.41	3,751.63	1,080.16		61,652.20
Sac	216,451.27		15,624.06		232,075.33
Scott	124,866.44				124,866.44
Shelby	134,589.28	13,571.11	2,520.50		150,680.89
Sioux	85,523.89	28,938.25	1,089.78		115,551.92
Story	103,630.68		1,037.50		104,668.18
Tama	59,977.44		1,350.43		61,327.87
Taylor	82,761.89		13,118.79		95,880.68
Union	46,200.23				46,200.23
Van Buren	58,613.48	8,531.13			67,144.61
Wapello	65,510.39				65,510.39
Warren	64,184.95		6,906.06		71,091.01
Washington	67,830.25				67,830.25
Wayne	48,769.99		3,756.17		52,526.16
Webster	59,445.91		241.10		59,687.01
Winnebago	13,761.54				13,761.54
Winneshiek	73,057.38	262.00			73,319.38
Woodbury	172,132.87	13,120.68	1,000.10		186,253.65
Worth	22,219.08				22,219.08
Wright	63,344.25				63,344.25
Total	\$9,097,199.21	\$ 221,751.79	\$403,681.38	\$ 81,581.02	\$9,804,213.40

NO. 2—Continued

County and Township Roads						
County Road Cash	Motor Vehicle Fund	Bridge Fund	Secondary Road District Special Assessments	All Other Sources	Total	Grand Total
140,012.75	7,166.42	1,278.21		1,077.86	149,535.24	353,844.53
41,696.54					41,696.54	170,071.94
50,191.09	193.36				50,384.45	101,437.52
33,039.30		152.60			33,191.90	116,091.89
16,094.75				15,252.40	31,347.15	94,202.01
21,299.53	6,049.17			883.00	28,231.70	258,424.49
29,992.70	3,495.00				33,487.70	79,392.10
65,536.44	3,776.72				69,313.16	233,864.14
41,265.20	5,829.66				47,094.86	143,005.61
27,619.24		722.68		5.00	28,346.92	162,755.45
79,511.75	18,432.73				97,944.48	148,577.05
74,159.90		676.90			74,836.80	168,376.11
165,351.79					165,351.79	225,165.43
185,527.96	9,292.30				194,820.26	410,898.63
69,637.73					69,637.73	358,916.31
40,879.43	2,520.29				43,399.72	206,449.86
23,921.62	1,997.79				25,919.41	87,571.61
39,971.34	923.23		3,024.18		43,918.75	185,904.08
65,534.25	4,007.02				69,541.27	194,407.71
21,019.98					21,019.98	171,700.87
47,217.38	5,848.05	115.33			53,180.76	168,682.68
187,690.01					187,690.01	292,358.19
33,147.54	8,239.06			2,344.61	43,731.21	105,059.08
20,337.29	6,556.91				26,894.20	122,774.88
30,912.91					30,912.91	77,113.14
67,144.61					67,144.61	82,855.76
95,510.39					95,510.39	134,548.85
35,641.78				3,396.68	39,038.46	134,548.85
18,244.20					18,244.20	89,335.21
31,803.55					31,803.55	99,633.80
36,660.67					36,660.67	89,186.81
43,107.28					43,107.28	102,794.29
50,700.30					50,700.30	64,461.84
42,517.82					42,517.82	115,837.29
108,913.88	7,471.58	1,340.81			117,726.27	303,979.92
40,115.49					40,115.49	62,334.57
129,546.23					129,546.23	192,890.48
\$5,373,160.51	\$ 258,266.33	\$ 13,055.18	\$ 34,744.44	\$ 80,327.08	\$5,759,533.54	\$15,563,766.94

SUMMARY TABLE NO. 3

Expenditures for Road Construction and Maintenance on Primary Road System Shown by Funds

County	County road cash fund	Motor vehicle fund	Bridge fund (Rd. work)	Primary road fund	Spl. Assess. and Rd. Cert.	Road bond fund	All other sources	Total
Adair.....	\$ 4,106.44			\$ 42,178.48				\$ 46,284.92
Adams.....	1,060.16			90,513.82				91,573.98
Allamakee.....	4,622.85			24,361.61				28,984.46
Appanoose.....	3,215.00			70,506.84				73,721.84
Audubon.....	1,076.70			4,672.07				5,748.77
Benton.....	9,532.00			38,631.55				48,163.55
Black Hawk.....	20,791.79			71,835.55				92,627.34
Boone.....	10,313.48			121,005.21				131,318.69
Bremer.....	9,588.98			17,033.17				26,622.15
Buchanan.....	4,331.95			6,850.84				11,182.79
Buena Vista.....	4,518.11			136,218.84				140,736.95
Butler.....	6,698.88	\$ 940.17		27,131.70				34,776.75
Calhoun.....	6,902.94	8.50		151,587.26				158,498.70
Carroll.....	9,458.00			10,716.53				20,174.53
Cass.....	10,158.49			17,243.50				27,401.99
Cedar.....	5,045.64			7,522.23				12,567.87
Cerro Gordo.....	1,937.77			270,762.84	\$ 128,068.14	\$ 334,543.89		735,312.64
Cherokee.....	3,789.91			17,872.19				21,662.10
Chickasaw.....	3,236.06			66,273.57				69,509.63
Clarke.....	2,193.82			60,089.01				62,282.83
Clay.....	4,702.77			11,661.38				16,364.15
Clayton.....	4,815.55			7,359.34				12,174.89
Clinton.....	4,776.10			36,450.56				41,226.66
Crawford.....	5,887.21			8,975.95				14,863.16
Dallas.....	5,221.38			81,776.68				86,998.06
Davis.....	2,541.34			10,034.50				12,575.84
Decatur.....	2,441.78	1,688.78		132,009.94				136,140.51
Delaware.....	195.00	2,007.60		46,047.18				48,339.78
Des Moines.....	2,707.65	713.26		16,918.42				20,339.33
Dickinson.....	3,582.04			16,928.90				20,511.94

Dubuque.....	5,673.94			84,313.88				89,987.82
Emmet.....	11,829.30			58,563.31				70,392.61
Fayette.....	3,968.40			14,130.64				18,099.04
Floyd.....	1,043.55			254,963.89	97,315.62	234,645.67		587,928.73
Franklin.....	1,605.36	204.80		15,885.02				17,795.18
Fremont.....	2,989.00			71,973.08				74,962.08
Greene.....	13,421.35			99,474.47				112,895.82
Grundy.....	720.50			17,028.88				17,749.38
Guthrie.....	4,892.55			11,343.74				16,236.29
Hamilton.....	10,260.83			24,509.70				34,770.53
Hancock.....	2,362.41			10,569.59				12,932.00
Hardin.....	24,157.77	12,434.98		17,997.80				54,590.55
Harrison.....	47,636.23	2,119.03		82,908.77				132,664.03
Henry.....	3,172.09	6.80		35,065.36				38,244.25
Howard.....	1,586.94	724.89		40,619.37				42,931.20
Humboldt.....	3,084.85			72,567.58				75,652.43
Ida.....	3,675.44			51,278.28				54,953.72
Iowa.....	7,658.34			24,464.20				32,122.54
Jackson.....	1,234.95			10,205.84				11,440.79
Jasper.....	14,075.71			14,928.55				29,004.26
Jefferson.....	1,528.84	910.64		48,876.71				51,316.19
Johnson.....	14,465.26	26,271.44		20,528.91				61,265.61
Jones.....	1,043.24			5,335.70				6,378.94
Keokuk.....	3,580.72		\$ 201.25	67,490.94				71,272.91
Kossuth.....	16,727.88	5,383.50		26,149.28				48,260.66
Lee.....	6,558.23	119.30		13,273.38				19,950.91
Linn.....	15,299.97			164,419.66	10,284.47			190,004.10
Louisa.....	1,706.98			8,072.88				9,779.86
Lucas.....	2,454.53			26,268.12				28,722.65
Lyon.....	3,632.85			8,090.78				11,723.63
Madison.....	2,202.71			9,001.37				11,204.08
Mahaska.....	7,172.36	415.80		14,532.55				22,120.71
Marion.....	14,256.00			18,587.37				32,843.37
Marshall.....	59,812.14	2,419.17	3.83	74,187.39			\$ 261.24	136,683.77
Mills.....	5,411.44			39,500.31				44,911.75
Mitchell.....	20,409.31	12,973.78		22,825.90				56,208.99
Monona.....	5,963.03		30.30	14,049.59				20,051.92
Monroe.....	1,644.03			66,447.32				68,091.35
Montgomery.....	1,980.25	1,372.28		175,431.25				178,785.78
Muscatine.....	5,475.70			41,469.49				46,945.19
O'Brien.....	1,803.78	1,337.61		63,478.48				66,619.87
Osceola.....	512.83	308.30		23,392.61				24,213.74
Page.....	5,457.60			10,280.65				15,738.25
Palo Alto.....	3,159.75			172,520.28				175,680.03
Plymouth.....	7,888.25			12,869.37				20,757.62
Pocahontas.....	7,068.60			56,409.75				63,478.35
Polk.....	62,971.64	9,072.13		171,709.59				520,608.22
Pottawattamie.....	17,346.45			72,573.50		285,854.86		80,910.95

SUMMARY TABLE NO. 3—Continued

County	County road cash fund	Motor vehicle fund	Bridge fund (Rd. work)	Primary road fund	Spl. Asses. and Rd. Cert.	Road bond fund	All other sources	Total
Poweshiek	6,513.53	61.75		15,499.32				22,074.60
Ringgold	713.72			79,253.34				79,967.06
Sac	9,573.25			102,564.93				112,138.18
Scott	9,515.52			103,481.45		334,625.74		447,622.71
Shelby	4,772.36			66,258.13				71,030.49
Sioux	2,020.17	564.20		149,797.43				152,381.80
Story	8,403.71			49,367.30				57,771.01
Tama	3,254.85			6,392.43				9,647.31
Taylor	941.05	1,355.96		5,361.27				7,658.28
Union	2,424.97			12,166.38				14,591.35
Van Buren	1,197.12			59,027.02				60,224.14
Wapello	2,991.72			79,136.13				82,126.85
Warren	5,365.05			9,872.54				15,237.59
Washington	7,888.47			19,975.10				27,863.57
Wayne	1,687.01			12,403.82				14,090.83
Webster	33,058.26			152,489.17				185,547.43
Winnebago	28,621.45			48,709.03				77,330.48
Winneshiek	3,069.37			19,001.87				22,071.24
Woodbury	16,819.22	1,170.38		67,318.50				85,308.10
Worth	1,603.13			5,043.27				6,646.40
Wright	2,043.90			53,953.93				55,997.83
Total	\$774,518.53	\$ 84,771.03	\$ 244.38	\$5,108,839.94	\$ 235,668.23	\$1,189,670.16	\$ 261.24	\$ 7,483,973.54

SUMMARY TABLE NO. 4

Expenditures for Road Construction and Maintenance on Township Road System Shown by Funds—Annual Reports of County Engineers

County	No. Twp. in County	No. Twp. Reporting	Township Road Fund	Township Drag Fund	Township Drainage Fund	County Funds 25% on Secn. Road Districts	Secondary Road District Special Assessment Funds	All Other Sources	Total
Adair	16	16	\$ 25,946.56	\$ 7,058.56	\$ 3,359.88	\$ 2,314.05		\$ 2,544.87	\$ 41,223.92
Adams	12	12	26,540.33	5,848.46					32,388.79
Allamakee	18	9	34,089.03	3,888.03					37,977.06
Appanoose	17	16	27,916.22	6,675.49	3,310.29				37,902.00
Audubon	12	10	29,254.83	7,585.74					36,840.57
Benton	20	15	48,254.84	11,451.03	754.83				60,460.70
Black Hawk	18	15	40,370.07	8,481.97	700.69				49,552.70
Boone	17	12	44,781.98	12,440.18	21,088.67	7,597.23			85,908.06
Bremer	14	11	27,155.15	7,364.43	2,276.01				36,795.59
Buchanan	16	11	31,058.58	7,824.18	2,232.94	2,538.36			43,654.06
Buena Vista	17	13	34,140.11	11,746.05	19,026.34				64,912.50
Butler	16	16	40,875.73	10,077.55				1,949.18	52,902.46
Calhoun	16	16	28,535.50	14,253.38	16,851.45				59,640.33
Carroll	16	14	36,410.87	10,566.87	3,924.82				50,902.56
Cass	16	15	39,595.04	12,598.96	31.50				52,225.50
Cedar	17	15	52,117.48	11,050.02					63,167.50
Cerro Gordo	16	16	35,968.08	12,099.07	24,087.94				72,155.09
Cherokee	18	16	53,033.69	12,292.14	2,454.89				67,780.72
Chickasaw	12	12	32,496.98	7,197.92					39,694.90
Clarke	12	12	24,836.05	5,565.40					30,401.45
Clay	16	11	30,929.09	6,491.74	9,307.19	31,756.15			78,484.17
Clayton	22	19	41,538.08	10,384.39	1,083.42				53,005.89
Clinton	20	17	52,324.92	10,585.95	730.28				63,641.15
Crawford	20	20	54,377.02	14,873.55	7,065.01				76,315.58
Dallas	16	16	58,780.75	13,498.84	17,117.99	1,235.22	\$ 1,235.22		91,868.02
Davis	15	15	38,109.59	6,382.32					44,491.91
Decatur	16	7	9,796.79	2,324.96					12,121.75
Delaware	16	13	37,365.25	6,865.62		4,691.95			48,922.82
Des Moines	13	13	29,394.63	10,706.92					40,101.55

SUMMARY TABLE NO. 4—Continued

County	No. Twp. in County	No. Twp. Reporting	Township Road Fund	Township Drag Fund	Township Drainage Fund	County Funds 25% on Secun. Road Districts	Secondary Road District Special Assessment Funds	All Other Sources	Total
Dickinson	12	12	25,843.65	6,259.11	11,149.44				44,252.20
Dubuque	17	7	14,356.04	3,220.58					17,576.62
Emmet	12	12	26,674.41	6,149.10	15,523.00				48,346.51
Fayette	20	20	46,260.29	14,020.44					60,280.73
Floyd	12	12	39,213.53	7,980.53	6,013.48				53,216.54
Franklin	16	11	28,440.54	7,867.16	8,175.88				44,483.58
Fremont	13	10	29,296.77	7,811.93	1,285.84				38,394.54
Greene	15	15	51,037.00	10,206.85	17,068.83				78,312.68
Grundy	14	14	39,489.98	8,657.97	1,084.81				49,232.76
Guthrie	17	8	27,137.55	5,858.57					32,996.12
Hamilton	14	14	29,316.00	12,508.55	14,994.70				56,818.65
Hancock	16	13	32,279.94	9,913.76	14,576.45				56,769.26
Hardin	16	14	33,607.26	10,980.73	5,179.14				49,773.13
Harrison	20	17	36,504.61	9,900.13	4,729.65				51,134.39
Henry	12	10	32,019.11	7,788.29					39,807.40
Howard	12	12	26,909.44	5,876.76	1,897.21				34,683.41
Humboldt	12	10	16,180.49	9,986.68	14,510.90				40,678.07
Ida	12	8	30,879.55	7,498.85					38,378.40
Iowa	16	16	50,976.92	12,815.98	58.25			766.10	64,617.25
Jackson	18	18	38,636.66	7,746.60					46,383.26
Jasper	19	16	64,597.24	9,629.34	4,838.68				79,065.26
Jefferson	12	10	41,213.43	8,516.63					49,730.06
Johnson	21	14	43,228.91	9,133.95	2,691.02				55,053.88
Jones	16	11	31,734.94	6,676.91	653.73			310.00	39,378.58
Keokuk	17	16	37,729.94	10,373.46					48,100.40
Kossuth	28	8	41,696.10	17,157.64	26,687.87				95,541.61
Lee	15	15	27,442.34	10,756.04					38,198.38
Linn	20	20	55,614.58	12,374.64	2,041.51				70,030.73
Louisa	12	9	30,233.94	7,994.47	280.83				38,509.24
Lucas	12	11	25,590.55	4,949.02					30,539.57
Lyon	18	17	37,636.68	8,621.34					46,258.02
Madison	16	15	36,298.83	9,175.92		2,174.21			47,648.96
Mahaska	18	18	45,409.75	12,356.71	1,183.81				58,950.27

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Marion	15	8	41,841.20	9,182.08				1,367.06	52,390.34
Marshall	18	18	43,236.27	14,417.60	883.93			2,949.05	61,489.85
Mills	13	11	33,518.53	6,667.97	1,270.33			4,893.84	46,350.67
Mitchell	16	16	40,923.02	3,773.28	1,063.91				45,760.21
Monona	19	12	24,436.51	9,264.07	2,025.51				35,726.09
Monroe	12	12	26,135.08	5,763.80	3,658.69				35,557.57
Montgomery	12	12	36,573.72	8,460.60				75.87	45,110.16
Muscatine	14	14	28,304.65	7,784.41					36,089.06
O'Brien	16	14	37,984.80	11,790.67	51.10	1,927.90			51,754.47
Osceola	11	7	18,796.73	5,180.26	6,352.35				30,329.34
Page	16	16	35,133.97	10,543.68	936.94				46,614.59
Palo Alto	16	5	12,137.24	3,054.96	4,258.08				19,450.28
Plymouth	24	12	34,387.22	8,731.74					43,118.96
Pocahontas	18	17	39,288.31	14,146.55	21,847.87				75,283.05
Polk	19	12	28,060.45	7,637.60	882.07				36,580.12
Pottawattamie	28	18	54,136.58	7,344.85	527.97				62,009.50
Poweshiek	16	11	29,838.30	7,504.14	4,267.03				41,609.47
Ringgold	13	12	19,788.27	4,698.48					24,486.75
Sac	16	16	47,905.05	15,824.21	7,963.90	230.35	250.00		72,173.51
Scott	15	15	47,110.23	9,847.88					56,958.11
Shelby	16	16	45,532.03	14,562.44	9.88			1,532.18	61,636.53
Sioux	23	22	55,875.37	18,548.41	1,053.34				75,477.92
Story	16	12	37,155.56	6,224.89	15,713.51				59,093.96
Tama	21	21	58,914.67	14,063.71	2,512.62				75,491.00
Taylor	17	17	42,491.49	9,283.03					51,774.52
Union	12	10	20,802.18	4,222.37					25,024.55
Van Buren	14	13	21,643.98	4,449.79				7,367.62	33,461.39
Wapello	14	13	22,089.18	5,498.15	2,052.76			4,728.81	34,368.90
Warren	16	13	31,919.09	8,082.86	90.66				40,092.61
Washington	15	10	40,552.41	8,003.16					48,555.57
Wayne	13	13	21,856.85	5,192.61	85.69				27,135.15
Webster	23	23	50,413.63	18,550.86	21,633.74				90,598.26
Winnebago	12	12	29,615.10	9,133.77	8,711.99				47,460.86
Winneshiek	20	13	32,101.18	6,445.71					38,546.89
Woodbury	23	20	59,597.24	15,995.53	9,583.40				85,176.17
Worth	12	12	21,495.50	6,477.43	6,164.91				34,138.84
Wright	16	14	24,823.86	11,298.96	23,968.67			1,632.17	61,723.66
Total	1,606	1,348	\$3,536,920.11	\$ 905,611.87	\$ 447,605.40	\$ 54,465.42	\$ 1,455.22	\$ 30,116.75	\$ 4,977,204.77

SUMMARY TABLE NO. 5

Expenditures for Bridges and Culverts—Primary, County and Township Roads, Classified—
Annual Reports of County Engineers

County	Permanent Bridges and Culverts	Temporary Bridges and Culverts	Repairs	Culvert Material Purchased for Township	Equipment and Unused Material	Filling Bridges and Culverts	Special Cases	Total
Adair.....	\$ 61,300.81	\$ 6,310.48	\$ 10,928.67	\$ 15,337.88	\$ 5,407.27	\$ 8,861.00	\$ 757.50	\$ 108,912.61
Adams.....	54,154.78	12,886.45	15,286.37	4,125.53	8,097.32	4,638.78	1,059.72	100,265.95
Allamakee.....	19,249.12	7,779.48	13,218.24	7,726.83	1,649.83	249.52	2,281.85	52,154.87
Appanoose.....	40,997.66	6,026.33	12,148.26	18,437.41	2,407.25	845.90	3,468.63	84,331.44
Audubon.....	22,129.37	14,708.93	7,239.88	6,007.32	13,928.20	705.30	2,600.10	67,490.10
Benton.....	124,452.85	3,917.66	21,479.19	4,302.33	13,039.52	7,234.93	2,137.01	176,593.49
Black Hawk.....	160,887.71	6,231.86	6,397.83	4,576.20	14,285.58	4,828.46	15,878.78	213,086.42
Boone.....	152,768.62	2,143.23	14,142.81	2,331.07	2,942.09	7,428.54	4,171.63	185,927.99
Bremer.....	14,864.65	9,244.15	23,775.95	5,977.72	9,315.59	407.74	549.61	64,135.41
Buchanan.....	57,638.32	7,006.96	15,795.22	6,769.51	70.79	26.50		87,307.30
Buena Vista.....	7,950.59	464.97	1,119.62	190.80	3,808.73	970.72	10,005.00	24,516.43
Butler.....	10,981.40	9,799.29	20,581.32	1,558.55	11,350.05	2,516.48		50,787.09
Calhoun.....	14,784.82	2,591.46	2,552.73	1,002.68	13,026.88	544.10	1,058.86	35,531.53
Carroll.....	44,958.78	156.00	12,246.08	605.31	12,270.56	9,923.80	14,384.15	94,545.28
Cass.....	128,213.37	29,306.05	16,928.80	6,014.72	5,972.99	11,335.30	2,755.85	200,526.58
Cedar.....	109,596.64	518.43	36,462.47	4,497.48		1,194.20	1,686.83	153,955.05
Cerro Gordo.....	52,728.05	2,130.10	5,604.23	2,181.30	5,231.48	429.85	610.88	68,915.89
Cherokee.....	85,815.56	16,507.81	18,550.73	7,508.78	12,313.72	13,189.97	12,026.66	165,904.23
Chickasaw.....	23,733.98	10,961.74	13,239.54	2,006.00	3,852.20	1,041.82		54,835.28
Clarke.....	63,535.51	6,229.37	10,572.11	6,404.99	3,880.21	4,068.09		94,800.28
Clay.....	10,198.13		11,070.99	3,799.00	8,658.37	214.00		33,940.49
Clayton.....	71,658.94	2,061.75	4,968.77	2,532.49	3,868.84	1,801.94	4,162.32	91,055.05
Clinton.....	24,485.57	3,380.59	10,908.19	6,893.82	15,103.86	3,046.29	3,508.97	67,292.29
Crawford.....	75,909.29	3,838.40	61,979.89	17,208.85	880.00	4,305.35	16,883.19	180,678.88
Dallas.....	36,804.23	3,051.96	20,730.02	4,844.43	836.72	3,400.00		69,758.25
Davis.....	64,094.18	3,572.03	24,439.50	1,785.46	1,848.05	6,841.18	3,233.41	105,813.81
Deatur.....	27,837.73	7,231.34	30,596.50	6,372.97	30,779.71	9,313.11	1,791.47	113,922.83
Delaware.....	39,197.35	3,459.96	12,215.33	8,255.32	129.53	631.55		59,069.04
Des Moines.....	19,207.30		5,950.82	6,185.01	5,404.86		3,004.78	39,842.47

Dickinson.....	10,241.56	3,164.53	3,081.39	1,156.53	821.98	58.05		18,524.04
Dubuque.....	77,580.96	706.38	3,035.66	2,800.58		282.50		94,467.07
Emmet.....	15,457.67	7,038.74	6,207.33	1,104.01	67.69	350.40	80.78	30,315.62
Fayette.....	100,737.65	163.90	25,798.77	2,581.10	5,875.21	2,949.30	919.49	139,025.42
Floyd.....	39,313.67	12,358.13	9,321.35	2,236.24	6,658.43	1,165.84	70.00	71,132.66
Franklin.....	40,062.61	1,886.92	15,182.52	2,534.40	10,145.91		54.80	70,467.16
Freemont.....	48,700.17	8,102.62	27,231.56	4,880.00	15,744.25	378.70	6,220.28	121,267.67
Greene.....	183,285.39	202.41	43,940.46	2,125.74	3,788.08	27,016.92	4,231.19	264,509.19
Grundy.....	176,520.70	6,255.99	4,830.98	3,023.64		6,489.84	23,735.53	220,856.68
Guthrie.....	62,975.06	4,582.91	31,189.04	6,047.91	23,109.49	3,812.40	2,354.25	134,071.15
Hamilton.....	76,624.62	525.10	11,305.46	407.90		1,508.60	4,126.72	94,498.40
Hancock.....	10,367.32	2,747.72	3,178.30	5,005.04	64.50	78.25		21,441.13
Hardin.....	55,202.92	1,947.16	3,645.43	969.00	920.02	8,975.68	1,581.50	73,241.71
Harrison.....	76,002.01	3,136.77	32,073.55	1,110.28	7,568.45	3,692.90	2,076.70	125,720.69
Henry.....	40,910.89	1,035.72	10,233.30	5,412.92	3,620.55		448.68	61,662.06
Howard.....	18,582.72	10,223.71	5,536.53	649.23	8,071.55	614.27	56.73	46,734.74
Humboldt.....	35,375.72	733.77	1,065.47	1,929.20	2,913.66		95.10	42,112.92
Ida.....	42,060.45	35,430.06	30,906.57	2,540.27	14,294.09	2,526.10	3,686.97	131,453.51
Iowa.....	90,943.51	13,477.16	11,034.88	7,906.95	9,529.09	3,734.45	472.10	137,098.14
Jackson.....	1,331.25	7,627.05	25,550.20	914.73	6,305.88	4.78	724.40	42,458.29
Jasper.....	117,292.04	865.00	32,793.96		1,189.77	14,993.31		167,107.08
Jefferson.....	20,466.61	2,174.81	9,062.08	9,333.61	6,903.05	352.35	477.30	48,769.81
Johnson.....	14,617.48	4,022.07	22,955.81	13,792.99	3,304.07	7,890.19	50.00	66,662.61
Jones.....	45,756.96	4,679.72	25,931.56	5,429.70	106.32	1,308.88	62.00	83,275.14
Keokuk.....	52,322.22	3,922.75	13,960.46	6,773.18	1,835.43	5,167.02	434.98	84,416.04
Kossuth.....	8,550.00	33,626.95	46,635.68	5,801.82	274.50	730.45	4,625.00	100,244.40
Lee.....	57,172.18	232.90	9,467.24	2,339.34	11,867.24	9,856.25	298.70	91,233.85
Linn.....	48,569.37	24,470.10	22,194.81	4,476.90	16,487.70	48.59	7,815.41	124,062.88
Louisa.....	33,557.59	3,689.58	23,589.41	3,702.60	8,620.23	4,995.06	886.93	79,041.40
Lucas.....	77,813.31	3,483.16	11,256.52	9,175.10	2,144.30	8,207.60	1,934.24	114,014.23
Lyon.....	43,464.96	5,029.55	22,196.74	7,331.64	6,664.23	5,379.50	7,695.20	97,761.82
Madison.....	10,919.96	9,921.73	26,942.38	12,587.30	11,419.22	1,179.55	2,358.08	75,328.22
Mahaska.....	31,270.23	2,069.30	8,242.13	4,325.50	4,924.07	2,302.31	1,761.63	54,925.17
Marion.....	22,060.52	2,114.00	7,145.25	8,585.74	26,350.62	9,373.10	553.14	76,182.37
Marshall.....	162,223.46	10,125.64	6,467.93	6,508.37	1,811.36	12,372.45	4,800.08	204,309.29
Mills.....	54,119.88	23,481.83	14,883.92	4,250.68	11,721.00	16,488.52	3,430.07	128,375.40
Mitchell.....	30,449.49	2,293.38	9,256.04	1,565.34	7,213.62		275.20	51,653.07
Monona.....	29,011.83	4,225.84	12,341.01	5,970.61	6,486.09	14,299.53	10,604.08	82,908.99
Monroe.....	28,434.74	3,019.58	21,640.37	6,119.07		719.55	2,921.55	62,854.89
Montgomery.....	115,546.63	39,558.41	16,969.55	9,880.30	31,908.87	8,958.77	7,345.26	230,192.79
Muscatine.....	24,735.90	1,985.77	11,888.76	1,779.01	2,442.50	283.30	3,198.26	45,814.40
O'Brien.....	123,846.44	4,216.32	18,102.64	4,373.59	9,224.14	3,200.10	1,587.75	164,550.98
Oseola.....	66,142.01	15,097.26	3,763.00	1,564.80	2,930.81	3,322.43	3,060.44	95,919.75
Page.....	57,538.42	3,904.54	28,028.13	8,342.74	8,287.12	18,709.68	9,597.85	134,408.53
Palo Alto.....	26,248.87	2,922.29	4,880.50	9,251.60	4,126.73	1,596.30	2,116.22	50,632.57
Plymouth.....	9,801.96	19,485.18	31,785.69	4,840.57	15,351.42	8,043.46	4,231.03	93,539.31
Pocahontas.....	28,149.92	11,025.27	13,185.75	3,745.03	186.02	1,156.08	2,365.57	59,813.64
Polk.....	148,723.65	8,577.05	15,335.62	10,196.67	6,467.31	23,820.70	2,957.37	216,078.37

SUMMARY TABLE NO. 5—Continued

County	Permanent Bridges and Culverts	Temporary Bridges and Culverts	Repairs	Culvert Material Purchased for Township	Equipment and Unused Material	Filling Bridges and Culverts	Special Cases	Total
Pottawattamie.....	116,596.37	83,079.66	25,066.80	12,300.76	41,772.66	1,180.55	9,331.78	289,278.58
Poweshiek.....	103,450.24	8,558.40	31,314.34	9,947.98	2,956.94	3,203.11	3,619.13	163,050.14
Ringgold.....	5,405.54	3,922.70	37,805.43	5,935.43	5,795.84	1,080.16	1,707.10	61,652.20
Sac.....	106,729.27	1,246.02	4,516.21	4,726.23	5,186.00	9,255.46	10,416.14	142,075.33
Scott.....	105,173.16	3,339.38	6,305.05	1,268.82	6,002.22	1,403.37	1,374.44	124,866.44
Shelby.....	100,065.48	19,901.38	18,276.03	6,489.00	354.32	3,539.93	2,054.75	150,680.89
Sioux.....	69,810.94	27,092.68	10,621.59	3,837.59	3,069.54	408.45	661.13	115,501.92
Story.....	79,562.90		17,511.09	5,136.43	600.00	1,622.50	235.26	104,668.18
Tama.....	16,383.91	8,305.03	36,146.16	4,990.66	1,027.13	2,545.33	1,929.65	61,327.87
Taylor.....	33,755.62	5,157.45	20,788.06	8,936.18	13,640.04	13,118.79	1,383.64	95,880.68
Union.....	17,888.02	8,642.04	2,402.16	11,122.55	4,172.37	525.80	1,447.20	46,200.23
Van Buren.....	21,226.68	403.00	21,013.78	2,535.00	9,432.25	206.40	12,327.50	67,144.61
Wapello.....	73,133.62	5,368.02	5,174.35	5,315.11	2,801.68	2,034.05	1,593.56	95,510.39
Warren.....	27,059.55	9,907.18	10,993.57	6,605.00	5,884.75	6,906.06	3,734.90	71,091.01
Washington.....	18,547.79	7,283.08	13,711.18	8,563.86	7,088.56	3,004.00	4,681.78	67,830.25
Wayne.....	1,195.91	20,751.77	15,504.31	8,036.56	3,097.58	3,096.44	3,753.17	52,526.16
Webster.....	32,834.91	2,587.50	10,950.80	6,071.40	4,213.50	2,837.90	191.00	59,687.01
Winnebago.....	3,908.88	740.50	259.22	3,092.38	4,431.91	592.47	912.12	13,761.54
Winneshiek.....	30,321.00	10,843.66	25,915.03	302.38	15,122.06	4,105.74	2,692.93	73,319.47
Woodbury.....	81,058.09	38,993.92	37,914.13	6,366.78	1,770.19		200.00	186,253.65
Worth.....	13,888.26	223.70	4,263.68	1,873.25	76.71	488.31		22,219.08
Wright.....	37,537.31	4,800.80	16,659.70	3,781.42				63,344.25
Total.....	\$3,407,243.64	\$ 824,261.37	\$1,646,527.13	\$ 514,146.30	\$ 684,392.24	\$ 420,188.15	\$ 307,454.57	\$ 9,804,213.44

SUMMARY TABLE NO. 7

Classification of Temporary Bridge and Culvert Construction for which warrants were issued in 1920—Primary, County and Township Roads—Annual Reports of County Engineers.

County	Concrete Pipe	Corrugated Pipe	T-Beam Spans Piling Abutments	Pony Trusses on Piling Wood Floor	Wood Trestle Bridges	Wood Truss Bridges	Miscellaneous Temporary Bridges and Culverts	Total
Adair.....	\$ 6,310.48							\$ 6,310.48
Adams.....	3,914.39				8,972.06			12,886.45
Allamakee.....	1,448.15				6,331.33			7,779.48
Appanoose.....		\$ 1,989.11			747.26		\$ 3,280.96	6,025.33
Audubon.....					14,708.93			14,708.93
Benton.....	3,667.72						249.94	3,917.66
Black Hawk.....	1,300.48	1,273.82			3,567.56			6,231.86
Boone.....		2,143.23						2,143.23
Bremer.....		1,331.80			3,890.68	\$ 4,051.07		9,244.15
Buchanan.....		1,325.21			5,136.30		545.45	7,006.96
Buena Vista.....		464.97						464.97
Butler.....				\$ 77.25		1,201.19	8,598.10	9,799.29
Calhoun.....	1,817.62				313.81		382.78	2,591.46
Carroll.....		156.00						156.00
Cass.....	11,104.18				15,554.50	1,272.02	1,375.35	29,306.05
Cedar.....		470.00						518.43
Cerro Gordo.....		2,130.10						2,130.10
Cherokee.....		1,377.45	\$ 2,322.64	12,803.42			4.30	16,507.81
Chickasaw.....		705.91				10,255.83		10,961.74
Clarke.....		1,009.60		2,415.75		1,169.40	1,634.62	6,229.37
Clay.....		122.54	1,269.96	345.50				2,061.75
Clayton.....		2,949.58			296.46		134.55	3,380.59
Clinton.....		1,380.92			286.00			3,838.40
Crawford.....	2,162.48							3,051.05
Dallas.....	2,221.95							3,572.03
Davis.....				3,572.03				7,231.34
Decatur.....		5,655.40		1,575.94				3,459.96
Delaware.....		1,224.00			1,275.69	990.27		

SUMMARY TABLE NO. 7—Continued

County	Concrete Pipe	Corrugated Pipe	I-Beam Spans Piling Abutments	Pony Trusses on Piling Wood Floor	Wood Trestle Bridges	Wood Truss Bridges	Miscellaneous Temporary Bridges and Culverts	Total
Des Moines								
Dickinson	584.53				2,580.00			3,164.53
Dubuque		706.38						706.38
Emmet		163.90			7,038.74			7,038.74
Fayette								163.90
Floyd					12,358.13			12,358.13
Franklin		1,886.92						1,886.92
Fremont	450.00				6,742.62		910.00	8,102.62
Greene	202.41							202.41
Grundy		1,520.00			3,844.51		891.48	6,255.99
Guthrie		3,006.25				1,576.66		4,582.91
Hamilton	525.10							525.10
Hancock		252.00			2,369.39		126.33	2,747.72
Hardin		999.81	198.94		550.00		198.41	1,947.16
Harrison		416.40			2,489.33		231.04	3,136.77
Henry		1,035.72						1,035.72
Howard		24.50			10,004.88			10,223.71
Humboldt		63.50					194.33	733.77
Ida	5,586.60	130.82	3,364.48	10,828.46	5,724.89	8,487.85	1,307.05	35,430.06
Iowa		3,832.45		4,369.34	5,275.37			13,477.16
Jackson		2,384.86	1,475.52	100.00	2,906.83		669.84	7,627.05
Jasper		850.00					15.00	865.00
Jefferson		518.70			1,653.11			2,174.81
Johnson		2,290.50					1,731.57	4,022.07
Jones	112.19	975.57				2,243.97	1,347.99	4,679.72
Keokuk		1,137.20					2,785.55	3,922.75
Kossuth		3,237.85			30,380.10			33,620.95
Lee					232.90			232.90
Linn		1,590.50			20,853.61		2,025.99	24,470.10
Louisa		659.50			3,030.08			3,689.58
Lucas		380.33						3,483.16
Lyon	3,102.83	1,195.00			3,617.10		217.45	5,029.55

Madison		2,761.06			7,160.67			9,921.73
Mahaska	14.00	2,085.30						2,099.30
Marion		158.40			1,262.85		692.75	2,114.00
Marshall	3,020.15				1,757.54		5,347.95	10,125.64
Mills	821.64	909.84		16,795.22	2,177.82		2,177.82	23,481.83
Mitchell		2,293.38						2,293.38
Monona	89.60	893.32	1,478.88		901.37		892.67	4,225.84
Monroe		1,388.98				1,630.69		3,019.58
Montgomery	964.68	232.00		7,131.58	31,230.15			39,558.41
Muscatine		438.53	372.48		1,153.66		21.10	1,985.77
O'Brien	4,015.79						200.53	4,216.32
Oseola					15,067.26			15,067.26
Page	820.60	499.72		778.27	1,895.95			3,994.54
Palo Alto		934.27		1,988.02				2,922.29
Plymouth	160.10	3,586.61			15,738.47			19,485.18
Pocahontas		2,029.56			4,111.60		4,884.11	11,025.27
Polk		7,210.20			1,396.85			8,577.05
Pottawattamie	1,659.35	544.80	7,049.24	12,951.89	57,167.12	2,081.00	1,623.26	83,079.66
Poweshiek	643.50				7,914.90			8,558.40
Ringgold	3,123.30	619.40					108.00	3,922.70
Sac		370.90	425.28		249.84			1,246.02
Scott		3,339.38						3,339.38
Shelby	55.00	522.60			19,323.78			19,901.38
Sioux	547.75	1,451.50			21,199.11	3,822.28	72.00	27,092.98
Story					7,855.08			8,305.03
Tama		449.95			5,137.45			5,157.45
Taylor					145.20		3,178.04	8,642.04
Union	5,318.80							468.00
Van Buren		403.00						403.00
Wapello		2,449.07			2,099.28		819.67	5,368.02
Warren	1,931.55	1,075.02			5,598.67		1,301.94	9,907.18
Washington		3,244.80		1,636.18	2,402.10			7,283.08
Wayne	6,182.25	610.80			13,958.72			20,751.77
Webster		2,085.50	390.50		96.50		15.00	2,587.50
Winnebago		447.00			293.50			740.50
Winneshiek		43.15	2,443.12		1,664.87	3,571.26	3,118.26	10,843.66
Woodbury	4,065.09		18,409.16	1,290.78		15,175.74	53.15	38,993.92
Worth							223.70	223.70
Wright		1,346.40			3,454.40			4,800.80
Total	\$ 78,472.79	\$ 100,240.69	\$ 39,027.72	\$ 78,659.63	\$ 415,148.79	\$ 57,499.74	\$ 55,212.01	\$ 824,261.37

SUMMARY TABLE NO. 10

Comparison of Bridge and Culvert Construction, 1915, 1916, 1917, 1918, 1919, 1920—Annual Reports of County Engineers

County	Nov. 1, 1914 to Jan. 1, 1916	Jan. 1, 1916 to Jan. 1, 1917	Jan. 1, 1917 to Jan. 1, 1918	Jan. 1, 1918 to Jan. 1, 1919	Jan. 1, 1919 to Jan. 1, 1920	Jan. 1, 1920 to Jan. 1, 1921	Total for Six Year Period
Adair	\$ 39,477.24	\$ 76,673.06	\$ 60,781.88	\$ 59,356.53	\$ 59,551.43	\$ 108,912.61	\$ 404,752.75
Adams	36,764.09	40,390.49	42,529.93	37,673.18	49,165.96	100,265.95	306,789.60
Allamakee	37,300.02	74,588.87	89,150.24	43,218.53	41,616.98	52,154.87	338,029.51
Appanoose	40,028.99	61,670.36	71,867.42	50,398.79	32,773.38	84,331.44	341,070.38
Audubon	50,441.85	52,066.07	55,581.09	59,231.63	67,584.30	67,499.10	382,404.04
Benton	62,481.69	100,511.72	106,838.92	106,331.64	110,775.58	176,563.49	663,503.04
Black Hawk	80,316.88	58,933.50	69,577.59	54,074.56	57,567.70	213,086.42	533,536.65
Boone	24,513.51	61,134.69	55,825.49	82,729.43	110,501.77	185,927.99	530,632.88
Bremer	48,238.48	50,105.27	46,545.79	41,018.54	70,242.30	64,135.41	320,285.79
Buchanan	48,102.40	69,505.00	69,400.21	37,468.87	58,820.80	87,307.30	370,004.07
Buena Vista	93,326.65	142,578.84	217,809.17	28,519.95	20,242.70	24,516.43	526,993.74
Butler	73,668.27	67,840.92	106,242.82	57,906.11	48,972.03	56,787.09	411,415.24
Calhoun	58,733.92	58,566.34	76,876.46	47,902.49	33,846.39	35,561.53	311,487.13
Carroll	49,707.51	61,392.73	83,106.61	69,203.79	64,890.89	94,545.29	422,816.81
Cass	58,290.17	75,523.98	80,786.02	83,701.40	107,988.51	200,526.58	606,736.66
Cedar	60,068.88	72,860.18	57,061.23	29,553.88	76,080.62	153,956.05	450,480.84
Cerro Gordo	48,311.84	47,046.57	67,178.47	69,178.07	61,742.92	68,915.89	362,374.36
Cherokee	56,329.15	117,548.31	201,310.69	96,271.36	175,827.59	165,904.23	813,191.33
Chickasaw	32,161.02	82,376.52	43,847.49	57,267.36	34,089.49	54,835.28	304,577.16
Clarke	18,268.99	57,956.35	36,519.47	43,963.56	35,399.41	94,690.28	258,798.06
Clay	121,815.17	92,383.02	103,412.90	60,842.70	43,229.12	33,940.49	455,623.49
Clayton	102,244.00	56,477.31	76,780.87	63,971.13	60,026.86	91,055.05	450,555.22
Clinton	73,480.93	74,632.96	76,694.79	51,858.65	89,334.24	67,292.29	433,296.86
Crawford	81,688.44	128,920.70	215,743.16	178,265.74	202,347.17	180,678.88	987,644.09
Dallas	72,561.29	129,460.95	67,065.19	76,646.06	51,628.87	69,758.25	467,130.61
Davis	38,498.71	49,649.72	55,573.12	31,767.58	49,520.91	105,813.81	330,823.85
Deaatur	32,109.88	44,802.68	37,011.45	50,141.05	111,194.16	113,922.83	388,182.05
Delaware	47,314.84	59,600.91	44,829.07	36,808.01	50,626.71	56,069.04	298,248.58
Des Moines	20,018.01	32,775.07	30,807.38	30,665.98	30,261.73	39,842.47	184,370.64
Dickinson	45,849.26	38,378.78	83,936.98	41,951.54	18,329.70	18,524.04	244,470.30
Dubuque	84,996.05	137,796.43	107,097.39	84,119.99	50,433.65	94,467.07	558,880.58
Emmet	48,221.32	41,828.66	23,815.98	19,900.75	20,966.81	30,315.62	184,539.14
Fayette	69,664.53	139,875.69	104,411.45	60,521.75	77,682.56	139,035.42	583,181.40
Floyd	51,676.90	86,477.17	56,071.78	42,671.61	57,551.92	71,132.69	365,592.04
Franklin	18,381.21	55,837.18	67,304.73	54,159.95	49,309.67	79,467.16	315,519.69
Fremont	36,639.46	64,525.75	76,873.15	90,520.32	64,925.12	121,267.67	454,751.47
Greene	25,558.43	39,777.44	42,758.36	66,793.86	157,335.08	204,590.19	598,813.06
Grundy	69,441.92	64,516.12	57,128.70	100,064.43	150,197.44	229,856.68	662,235.29
Guthrie	43,236.06	52,794.11	128,969.08	83,499.50	71,759.36	134,071.15	514,329.29
Hamilton	65,292.64	95,129.10	78,854.48	70,873.73	78,626.64	94,408.40	483,204.99
Hancock	22,463.45	28,004.86	43,639.91	59,212.60	20,703.83	21,441.13	195,465.78
Hardin	36,988.10	58,757.39	78,147.29	104,982.01	150,526.70	73,241.71	502,641.20
Harrison	36,035.81	176,500.65	105,411.99	72,698.35	73,017.36	125,720.66	589,384.82
Henry	27,139.92	29,749.62	45,066.71	53,314.63	42,920.64	61,662.06	259,853.58
Howard	45,873.93	60,071.08	46,576.56	40,465.87	35,789.01	46,734.74	275,511.19
Howard	34,642.53	46,235.32	44,609.73	50,518.54	19,993.78	42,112.92	238,112.82
Humboldt	30,989.23	56,768.72	57,039.63	50,292.49	97,582.02	131,453.51	433,125.00
Ida	53,668.58	77,285.37	77,496.16	161,465.13	117,105.20	137,098.14	624,118.58
Iowa	40,616.02	55,275.30	107,567.67	66,698.55	39,245.01	42,458.29	351,890.84
Jackson	82,555.36	96,550.58	95,678.48	156,044.64	138,701.91	167,107.08	736,728.05
Jasper	46,571.40	89,169.69	68,803.02	41,628.46	77,279.06	48,769.81	369,221.44
Jefferson	110,305.25	69,652.92	71,896.16	60,421.78	70,622.76	66,602.61	449,501.48
Johnson	23,049.50	56,297.35	67,549.99	50,219.76	45,558.45	83,275.14	325,950.19
Jones	33,132.44	65,599.62	55,296.55	82,607.09	71,494.03	84,416.04	392,515.77
Keokuk	47,886.59	98,454.83	65,580.68	67,620.42	54,422.43	100,244.40	434,209.35
Kossuth	32,240.11	51,755.08	37,575.30	46,342.75	49,962.96	91,233.85	309,110.05
Lee	68,005.73	72,092.79	82,844.37	79,864.48	110,738.07	124,062.88	537,608.32
Linn	32,735.22	59,278.15	39,686.07	30,347.89	44,441.18	79,041.40	285,529.91
Louisia	28,582.63	39,481.17	70,790.10	54,044.04	83,451.34	114,014.23	390,363.51
Lucas	47,639.81	56,011.62	109,339.63	60,386.19	53,985.80	97,761.82	424,194.87
Lyon	27,005.02	44,023.55	50,338.64	68,020.49	63,400.61	75,328.22	323,121.38
Madison	120,200.18	146,187.39	62,056.94	70,186.34	42,566.34	76,182.37	517,379.56
Mahaska	60,624.95	88,737.22	58,646.80	65,470.44	62,200.42	54,925.17	390,605.00
Marion	33,594.76	132,324.80	162,188.16	165,334.99	132,649.41	204,309.29	830,401.41
Marshall	48,985.92	59,291.69	66,630.89	90,194.32	88,203.83	128,375.40	481,682.05
Mills	41,519.74	57,592.12	63,051.43	65,314.85	71,753.17	51,053.07	350,284.38
Mitchell	36,942.03	72,420.67	93,932.27	74,287.37	59,873.06	82,908.96	429,364.39
Monona	38,709.11	53,996.57	56,761.27	49,365.71	67,676.00	62,854.85	329,363.52
Monroe	42,800.95	53,552.96	75,064.77	76,080.51	188,635.16	230,192.79	696,327.14
Montgomery	29,161.39	46,374.19	31,845.24	37,536.23	42,577.49	45,814.40	233,398.91
Muscatine	63,553.20	60,553.47	59,545.58	74,198.00	73,659.40	164,550.98	498,413.77
O'Brien	15,785.12	54,750.33	74,198.00	47,033.42	68,075.73	95,910.75	529,973.44
Osceola	48,430.39	83,758.97	90,443.18	91,769.07	81,163.30	134,408.53	387,572.96
Page	35,471.57	81,510.25	84,484.99	48,349.83	87,123.75	50,632.57	328,269.45
Palo Alto	60,455.90	105,420.01	105,804.21	114,521.50	46,741.57	93,539.31	526,482.50
Plymouth	65,472.22	68,583.48	64,552.72	54,454.39	25,398.00	59,813.64	338,269.45
Pocahontas	87,372.09	86,652.12	103,157.02	199,628.33	112,857.93	216,078.37	805,745.86
Polk	108,140.35	159,848.19	173,267.31	219,262.81	156,323.67	289,278.58	1,106,110.91
Pottawattamie	56,981.36	112,683.34	135,171.69	103,484.48	51,927.59	163,050.14	623,298.00
Poweshiek	21,951.40	45,230.22	62,077.34	64,349.01	96,773.24	61,652.20	352,023.41
Ringgold	42,865.46	76,832.90	91,778.57	110,168.38	54,476.57	142,075.33	518,197.21

SUMMARY TABLE NO. 10—Continued

County	Nov. 1, 1914 to Jan. 1, 1916	Jan. 1, 1916 to Jan. 1, 1917	Jan. 1, 1917 to Jan. 1, 1918	Jan. 1, 1918 to Jan. 1, 1919	Jan. 1, 1919 to Jan. 1, 1920	Jan. 1, 1920 to Jan. 1, 1921	Total for Six Year Period
Scott	18,001.42	35,718.39	46,042.99	31,949.82	69,740.56	124,866.44	236,319.62
Shelby	50,945.35	88,479.76	55,159.39	78,351.22	79,758.01	150,680.80	565,574.52
Stonx	57,547.48	74,615.21	57,960.24	51,186.52	45,055.48	115,501.32	441,839.85
Story	49,198.23	60,800.12	30,473.08	66,551.78	59,950.48	104,668.18	380,641.87
Tama	55,251.98	164,843.50	113,882.54	118,488.29	100,461.11	61,227.87	614,255.29
Taylor	27,060.36	74,028.55	71,556.19	69,639.41	45,881.80	95,880.68	385,935.99
Union	45,938.38	40,373.73	69,681.53	39,324.46	82,644.82	46,200.23	274,112.83
Van Buren	82,562.78	70,265.06	71,151.45	65,003.20	35,860.82	67,144.61	342,026.92
Wapello	43,832.58	84,862.89	35,313.11	81,633.63	71,786.14	95,510.39	432,968.74
Warren	47,317.30	94,289.87	31,925.18	61,883.62	47,432.30	71,091.01	353,439.28
Washington	35,368.80	58,821.08	88,090.41	50,138.43	59,176.69	67,890.25	390,035.66
Wayne	27,887.08	66,134.70	60,636.18	50,252.91	47,715.97	52,526.16	310,143.00
Webster	52,119.26	37,674.89	44,469.97	54,266.86	47,673.19	59,687.01	395,890.18
Winnebago	21,201.68	27,013.69	29,363.72	29,600.41	15,724.32	13,761.54	137,510.86
Winneshiek	70,790.72	80,069.00	84,896.37	55,267.95	73,319.47	73,319.47	440,683.34
Woodbury	46,265.35	77,746.76	85,177.16	97,103.72	77,786.94	186,253.65	570,333.58
Worth	15,554.87	19,398.35	22,213.84	30,338.49	18,780.67	22,219.08	128,475.30
Wright	47,394.60	62,549.20	59,833.23	45,658.56	60,040.66	63,344.25	339,830.50
Total	\$ 4,886,788.82	\$ 7,172,246.02	\$ 7,466,796.60	\$ 6,308,818.16	\$ 6,854,722.43	\$ 9,804,213.40	\$ 42,963,555.52

SUMMARY TABLE NO. 11

Classification of Road Work—County Roads—Annual Reports of County Engineers

County	Construction	Maintenance	Special Cases	Total
Adair	\$ 833.81	\$ 23,261.11	\$	\$ 24,094.92
Adams		27,481.36	4,374.53	31,855.89
Allamakee		40,656.24	1,961.71	42,617.95
Appanoose		32,917.29	8,969.55	41,886.84
Audubon		14,318.38	1,055.21	15,445.19
Benton	72.20	43,298.24	1,248.01	47,239.59
Black Hawk	2,684.34	26,635.93	3,294.64	93,252.63
Boone	63,322.06	45,408.03	11,500.44	163,992.39
Bremer	107,083.92	18,136.61	535.69	24,642.40
Buchanan	5,970.10	4,892.83	1,997.93	50,352.22
Buena Vista	91,611.49	23,559.22	1,243.10	116,413.81
Butler	10,224.33	34,495.43	4,137.50	48,857.26
Calhoun	105,329.13	12,792.19	27,070.80	145,792.12
Carroll	3,906.96	29,331.89	227.75	33,466.60
Cass	1,151.78	25,308.22	1,392.34	27,822.34
Cedar	6,526.82	20,033.54	1,542.85	28,103.21
Cerro Gordo	9,547.84	19,402.48	2,830.91	31,811.23
Cherokee	18,579.98	1,123.00	1,123.00	22,604.19
Chickasaw	13,664.68	11,236.91	2,021.74	26,923.33
Clarke	16,338.15	5,905.85	5,905.85	21,944.00
Clay	74,237.18	8,641.02	5,595.00	88,473.20
Clayton		25,024.02		25,024.02
Clinton	7,568.54	19,217.48	3,601.28	30,387.30
Crawford	108,036.91	16,942.46	2,985.17	127,964.54
Dallas	44,080.43	20,758.35	9,046.88	74,794.66
Davis	295.24	34,728.29	400.80	35,498.33
Decatur		30,108.38	4,120.27	34,228.65
Delaware	40,792.07	16,911.37	65.70	57,679.14
Des Moines		17,980.62	285.75	18,266.37
Dickinson	27,861.65	17,835.60	5,960.00	51,657.25
Dubuque		18,881.27	7,172.69	26,053.96
Emmet	50,878.72	12,263.63	5,932.85	69,075.20
Fayette	396.25	47,966.68	5,668.41	54,001.34
Floyd	58,231.15	37,937.42	6,086.54	102,255.11
Franklin	149,207.25	28,588.63	19,230.80	197,026.68
Fremont	5,662.18	20,479.89	3,456.17	29,598.24
Greene	16,481.23	14,135.14	4,398.29	35,014.66
Grundy	33,138.96	22,776.67	11,225.00	67,140.63
Guthrie	11,345.43	30,484.67	1,235.55	43,068.65
Hamilton	151,605.01	35,383.66	4,214.40	192,203.07
Hancock	20,295.53	18,098.37	1,050.00	39,443.60
Hardin	38,589.43	32,156.73	6,076.36	76,813.52
Harrison	891.06	12,376.72	935.35	14,203.13
Henry		21,377.53	1,806.07	23,183.60
Howard	4,231.42	19,940.15	2,578.47	26,750.04
Humboldt	34,608.99	16,458.54	2,587.60	52,567.53
Ida	1,019.41	51,476.32	3,276.52	55,772.25
Iowa	4,050.00	62,769.26	743.94	67,563.20
Jackson		18,845.40	1,035.00	19,880.49
Jasper	41,395.26	36,770.10	6,451.85	85,617.21
Jefferson		35,519.27	475.00	33,994.27
Johnson	28,197.07	24,392.53	6,458.64	59,048.24
Jones	2,547.70	25,424.80	269.10	28,241.60
Keokuk	743.53	25,208.26	1,909.83	27,861.62
Kossuth	140,346.56	46,077.57	7,882.49	194,306.62
Lee		23,306.00		23,306.00
Linn	1,918.52	34,216.08	13,315.82	49,450.42
Louisa	10,644.83	20,520.45	2,897.60	34,062.89
Lucas		23,115.88	9,784.10	32,879.98
Lyon	48,467.04	20,802.47	506.10	69,775.61
Madison		30,499.51	1,890.36	32,389.87
Mahaska	9,755.29	28,170.20	5,678.24	43,503.73
Marion	955.80	37,179.57	6,756.35	44,891.72
Marshall	99,370.09	46,967.60	3,197.55	149,535.24
Mills		39,727.79	1,968.75	41,696.54
Mitchell	21,308.24	28,276.21	800.00	50,384.45

SUMMARY TABLE NO. 12—Continued

County	Finished Grade Standard Section		Gravel, Macadam & Sand Clay Surface		Hard Surfacing		Tiling and drainage assessments	Equipment and tools	Total expenditures
	Miles built	Total warrants issued	Miles built	Total warrants issued	Miles built	Total warrants issued			
Des Moines									
Dickinson			8.50	22,251.44			5,610.21		27,861.65
Dubuque									
Emmet	2.00	9,487.47	32.00	36,498.73			4,892.52		50,878.72
Fayette							396.25		396.25
Floyd	7.70	14,729.01	2.80	5,168.88			23,920.91	14,412.35	58,231.15
Franklin	31.75	85,071.12	21.50	46,600.62			13,821.53	3,713.98	149,207.25
Fremont	2.00	5,662.18							5,662.18
Greene	5.00	10,536.17	7.00	3,497.68			2,447.38		16,481.23
Grundy	12.25	31,508.12					1,630.84		33,138.96
Guthrie	1.00	2,448.45	2.00	8,330.35			566.63		11,345.43
Hamilton	14.25	29,174.96	40.93	104,600.45			17,829.60		151,605.01
Hancock	4.10	16,438.98					3,856.55		20,295.53
Hardin	9.50	28,031.94	6.50	5,220.72			5,327.77		38,580.43
Harrison							891.06		891.06
Henry									
Howard				69.94			3,748.06	413.42	4,231.42
Humboldt			6.50	14,748.21			15,252.06	4,608.72	34,608.99
Ida							1,019.41		1,019.41
Iowa	.75	4,060.00							4,060.00
Jackson									
Jasper	8.00	41,025.37					369.89		41,395.26
Jefferson									
Johnson									
Jones	1.94	24,231.81					1,083.76	2,881.50	28,197.07
Keokuk	1.0	2,112.20					435.50		2,547.70
Keokuk							743.53		743.53
Kossuth	26.50	101,246.06	3.00	7,906.94			31,193.50		140,346.56
Lee									
Linn							1,918.52		1,918.52
Louisia	1.00	10,644.83							10,644.83

Lucas									
Lyon	7.65	25,159.72	8.0	22,779.07			528.25		48,467.04
Madison									
Mahaska	1.00	7,007.96					477.55	2,269.78	9,755.29
Marion		506.37	.03	199.00			250.43		955.80
Marshall	12.00	91,894.08	6.25	5,433.14			1,161.25	881.02	99,370.06
Mills									
Mitchell	1.25	684.96	1.25	4,282.35			11,235.90	5,105.03	21,308.24
Monona	1.55	6,115.83					600.00		6,715.83
Monroe									
Montgomery	2.00	11,630.70					51.22	150.00	11,831.92
Muscatine	2.16	11,696.67	.02	408.45			2,687.02		14,792.14
O'Brien	13.60	26,567.29					7,744.93	7,630.18	41,942.31
Osceola							12,871.99		12,871.99
Page							63.27		63.27
Palo Alto	12.10	30,527.40	11.30	35,063.73			11,672.48		77,263.61
Plymouth	5.75	21,964.09					19,611.08		41,575.17
Pocahontas	18.65	62,155.03	12.50	40,107.67			4,903.51	22.08	107,188.29
Polk	18.70	97,603.10		9,685.57			3,614.53	6,564.49	117,467.69
Pottawattamie					.02	\$ 1,503.92			1,503.92
Poweshiek	1.00	3,643.76					227.43		3,871.19
Ringgold									
Sac			17.43	25,167.01			2,695.84	520.00	28,292.85
Scott	2.42	12,593.52	3.00	26,001.32					38,594.84
Shelby									
Sioux	6.75	12,993.33					3,903.48	451.90	17,348.71
Story			26.00	90,973.81			44,712.75	10,329.76	146,016.32
Tama							1,512.81		1,512.81
Taylor									
Union									
Van Buren									
Wapello							3,396.68		3,396.68
Warren									
Washington									
Wayne	1.25	7,349.20					800.30	340.00	8,579.50
Webster			.5	712.77			7,478.35		8,191.12
Winnebago	4.50	15,618.10					11,386.38		27,004.48
Winneshiek								2,077.33	2,077.33
Woodbury	10.52	61,471.80					64.05		61,535.85
Worth	2.25	10,407.65	3.75	4,090.70			6,588.01	1,354.11	22,410.48
Wright	15.25	44,269.85	9.75	30,975.98			22,706.78		97,952.61
Grand Total	325.45	\$ 1,200,764.01	373.03	\$ 896,141.62	.02	\$ 1,503.92	\$ 413,332.94	\$ 107,075.89	\$ 2,618,848.38

SUMMARY TABLE NO. 13

Showing Cost of Maintenance County Roads—Annual Reports of County Engineers.

County	Miles county road system	Patrol		Gang		Equipment Tools		Total cost maintenance	Average cost per mile
		Earth	Gravel	Earth	Gravel	Earth	Gravel		
Adair	109.40			\$ 12,727.57		\$ 10,533.54		\$ 23,261.11	\$ 212.00
Adams	106.25	\$ 6,426.25		18,192.90		2,802.20		27,421.35	259.00
Allamakee	92.50	8,820.87		27,675.84		4,169.53		40,656.24	440.00
Appanoose	114.50	7,314.63		14,886.34		10,716.32		32,917.29	287.00
Audubon	96.90	7,721.12		4,066.63		2,530.63		14,318.38	147.00
Benton	150.50	18,776.73		11,468.70		13,052.81		43,298.24	288.00
Black Hawk	110.00	11,170.28	\$ 326.35	6,905.09		8,234.21		26,635.93	240.00
Boone	92.50	13,418.59	9,288.50	11,223.03	\$ 5,171.75	3,459.49	\$ 2,848.67	45,408.03	491.00
Bremer	60.50	11,979.28	146.28	1,211.90		4,652.43	146.72	18,136.61	300.00
Buchanan	135.00	9,666.60		23,427.43		10,377.50		43,461.53	322.00
Buena Vista	105.05	3,271.47	5,716.90	2,771.59	2,705.68	3,708.58	5,300.00	23,559.22	224.00
Butler	131.50	18,397.33	396.75	12,549.82		3,151.53		34,495.43	262.00
Calhoun	100.40	4,920.95	1,930.25	5,925.99	15.00			12,792.19	127.00
Carroll	110.75	7,370.03		18,918.81		3,043.05		29,331.89	265.00
Cass	73.50	6,780.58		12,074.90		6,452.74		25,308.22	344.00
Cedar	87.60	7,250.15		4,689.01		8,094.38		20,033.54	229.00
Cerro Gordo	110.54	10,519.28		5,329.85	*89.25	2,771.30	*692.80	19,402.48	176.00
Cherokee	100.00	9,900.64		5,615.50		3,063.84		18,579.98	186.00
Chickasaw	114.00	2,945.70	109.55	5,106.58	1,831.50	786.58	427.00	11,236.91	99.00
Clarke	76.10	4,948.80		7,206.42		4,182.93		16,338.15	215.00
Clay	101.00	3,453.67	921.55	2,969.07	447.25	450.92	368.56	8,641.02	83.00
Clayton	128.30	14,373.62		4,047.57		6,602.83		25,024.02	195.00
Clinton	128.00	8,636.71		6,434.22	216.00	3,857.14	73.41	19,217.48	150.00
Crawford	75.60	13,835.92		1,063.95		2,042.59		16,942.46	224.00
Dallas	90.07	5,543.98	3,527.27	7,390.37	651.70	2,688.97	947.06	20,758.35	230.00
Davis	127.67	8,399.41		10,382.95		15,945.93		34,728.29	272.00
Decatur	113.23	29,090.27		5,504.37		4,523.74		39,108.38	266.00
Delaware	132.00	10,007.07	346.75	2,152.90	916.28	3,482.27	6.10	16,911.37	128.00
Des Moines	47.75	14,830.54		937.48		2,312.60		17,980.62	376.00

GL

Dickinson	70.00	4,557.24	2,794.21	3,835.24	762.89	3,768.68	2,097.34	17,815.00	253.00
Dubuque	91.65	4,519.97	202.08	7,193.92		6,965.30		18,891.27	206.00
Emmet	63.25	1,723.11	6,247.12			469.36	3,824.04	12,263.63	194.00
Fayette	108.10	9,705.79		32,014.38		6,216.51		47,936.68	443.00
Floyd	88.78	12,648.11	1,900.61	13,806.16	684.70	3,009.38	5,708.46	37,937.42	427.00
Franklin	158.75	5,529.50	6,415.10	12,469.30	541.80	3,252.93	440.00	28,588.93	180.00
Fremont	110.00	11,311.50		7,961.12		1,207.27		30,479.89	186.00
Greene	71.00	2,749.61	2,305.42	5,373.00	1,934.55	1,738.98	33.58	14,135.14	196.00
Grundy	119.50	11,179.20		4,411.64		7,185.83		22,776.67	191.00
Guthrie	126.45	10,195.79	67.20	14,542.69		5,678.99		30,484.67	241.00
Hamilton	147.50	4,613.45	11,798.00	7,204.49	2,203.84	6,048.88	4,515.00	36,383.66	247.00
Hancock	123.00	12,737.91	366.00	2,636.12		2,292.34	126.00	18,098.37	147.00
Hardin	122.00	14,668.26	6,803.81	3,842.53		4,094.15	2,747.98	32,156.73	264.00
Harrison	92.50	5,043.98		5,067.21		2,275.53		12,376.72	134.00
Henry	96.00	12,480.51		7,176.13		1,739.89		21,377.53	223.00
Howard	76.68	2,772.82	149.89	7,835.95		9,110.79	70.70	19,940.15	260.00
Humboldt	94.60	4,911.63	2,240.08	3,569.53	1,952.09	1,387.42	2,397.79	16,458.54	174.00
Ida	80.00	15,829.06		10,268.76		25,378.50		51,476.32	643.00
Iowa	108.80	26,476.88		24,296.50		11,995.88		62,769.26	577.00
Jackson	115.00	5,076.41	29.50	9,968.63	1,453.42	1,924.03	363.50	18,845.49	164.00
Jasper	119.00	18,889.39		4,966.00		12,914.71		36,770.10	306.00
Jefferson	93.00	18,914.78		4,089.78		10,514.71		33,519.27	362.00
Johnson	108.20	12,486.71		9,720.72		2,185.10		24,392.53	225.00
Jones	142.60	14,116.29		10,156.18		1,152.33		25,424.80	178.00
Keokuk	125.60	14,610.63		8,056.46		2,541.17		25,208.26	201.00
Kossuth	191.00			28,830.75	2,066.39	12,530.14	2,710.29	46,077.57	241.00
Lee	91.50	5,744.00	2,622.95	8,675.64	3,476.26	2,733.32	50.23	23,306.00	249.00
Linn	112.00	14,538.96	2,423.18	6,857.05	8,686.40	1,700.51		34,216.08	305.00
Louisa	70.50	9,078.27		9,022.79		2,419.40		20,520.46	291.00
Lucas	96.00	6,266.97		15,153.37		1,665.54		23,115.88	241.00
Lyons	125.24	6,410.14	285.15	11,374.47		2,732.41		20,892.47	166.00
Madison	119.25	10,340.92		11,668.24		8,490.35		28,179.20	371.00
Mahaska	76.00	7,787.38		3,837.07		16,545.75		37,179.57	370.00
Marion	98.00	12,071.02		16,596.81		8,511.74		45,957.60	328.00
Marshall	143.15	15,750.87		7,448.57		23,768.16		39,727.79	593.00
Mills	67.00	18,987.60		14,343.56		6,396.63		28,276.21	342.00
Mitchell	82.70	4,434.01		18,356.64		4,485.56		25,181.07	281.00
Monona	89.50	8,078.33		6,811.65		10,291.09		24,345.26	211.00
Monroe	115.25	21,241.81				3,103.45		14,406.22	186.00
Montgomery	77.50	9,865.71		1,477.70		3,062.81		17,184.03	234.00
Muscatine	73.55	8,550.34	647.26	4,790.83	422.20	2,193.23	580.17	15,926.99	129.00
O'Brien	123.00	7,937.99		5,170.28		2,818.72		25,214.04	245.00
Oseola	103.00	5,412.90		13,477.36		6,323.60		24,593.20	197.00
Page	123.71	6,579.77		15,589.67		2,423.85		17,567.71	154.00
Palo Alto	114.29	12,896.89	244.40			2,711.42	1,715.00	32,413.83	279.00
Plymouth	116.00	10,311.90		11,782.60		10,319.33		36,935.79	319.00
Pocahontas	115.75	4,548.03	14,194.76	172.65	11,208.34	2,216.87	4,595.14	47,227.31	389.00
Polk	121.50	26,099.46	2,704.60	10,401.20	2,022.05	5,000.00	1,000.00		

SUMMARY TABLE NO. 13—Continued

County	Miles county road system	Patrol		Gang		Equipment Tools		Total cost maintenance	Average cost per mile
		Earth	Gravel	Earth	Gravel	Earth	Gravel		
Pottawattamie	146.74	13,335.79		43,060.23		9,080.64		65,476.66	446.00
Poweshiek	91.00	11,354.85		15,379.16		12,599.30		39,333.31	432.00
Ringgold	132.85	7,048.81		16,231.30		1,922.70		25,202.81	190.00
Sac	58.72	4,554.99	3,840.12	1,737.05	52.15	1,349.89	1,758.27	13,292.47	226.00
Scott	80.83	6,270.35	3,080.00	4,597.96	1,977.83	1,542.95	1,994.29	19,433.39	240.00
Shelby	107.15	7,478.90		10,126.57		732.61		18,338.38	171.00
Sioux	175.00	14,587.48		10,032.14		4,079.90		28,689.52	164.00
Story	129.50	7,900.72	10,491.58	7,144.49		9,917.00	2,142.52	37,596.31	290.00
Tama	140.00	19,390.05		11,528.36		3,055.48		33,973.87	243.00
Taylor	137.00	10,376.02		10,770.79		5,682.39		26,829.20	195.00
Union	104.00	4,338.95		21,973.78		1,956.00		28,268.73	297.00
Van Buren	98.75	3,670.54		4,927.09		3,653.38		12,251.01	124.00
Wapello	100.25	10,985.19		5,987.90		9,207.32		26,180.41	261.00
Warren	92.25	6,343.46		7,131.41		4,352.71		17,827.58	193.00
Washington	110.00	17,955.79		7,436.62		4,341.79		29,734.20	270.00
Wayne	116.50	10,425.66		15,610.69		1,901.32		27,937.67	240.00
Webster	102.25	18,194.92		4,477.38	319.65	9,092.83	2,526.41	34,581.19	338.00
Winnebago	97.75	9,422.60		10,827.26		2,229.10		22,478.96	230.00
Winneshiek	119.73	7,960.61		22,656.21		7,974.87		38,591.69	323.00
Woodbury	90.50	13,009.15		7,028.91		12,961.35		32,999.41	365.00
Worth	79.24	2,278.33	1,424.65	7,631.85	995.24	2,357.20	587.40	15,274.76	193.00
Wright	120.00	24,213.63				2,685.03		20,898.69	234.00
Total	10,551.97	\$392,530.06	\$166,075.80	\$342,584.57	\$ 52,784.21	\$397,797.99	\$ 52,764.52	\$2,684,537.15	\$ 254.41

*On paved road.

SUMMARY TABLE NO. 15

Progress and Condition Report—County Road System—Annual Reports of County Engineers

County	Construction Completed 1920			Condition of County Road System, Jan. 1, 1921				Total miles in county system
	Built to permanent grade	Gravel macadam on sand clay	Paved	Not built	Permanent grade	Gravel macadam on sand clay	Paved	
Adair				108.40	1.00			109.40
Adams				106.25				106.25
Allamakee				81.50	11.00			92.50
Appanoose				114.50				114.50
Audubon				93.40	3.50			96.90
Benton				150.50				150.50
Black Hawk	6.00	4.00		100.90	4.00	6.00		110.90
Boone		24.00		66.00		26.50		92.50
Bremer		1.00		57.00	1.00	2.50		60.50
Buchanan				128.00	7.00			135.00
Buena Vista		51.70			30.10	74.95		105.05
Butler	3.00	1.00		123.50	1.50	6.50		131.50
Calhoun	7.83	15.78		30.31	43.31	26.78		100.46
Carroll				94.25	16.50			110.75
Cass				70.00	3.00		.50	73.50
Cedar	.37	1.41		84.04	1.90	1.66		87.60
Cerro Gordo				69.80	40.00		.74	110.54
Cherokee				66.50	33.50			100.00
Chickasaw	3.00	1.00		90.00	5.00	19.00		114.00
Clarke				76.10				76.10
Clay		32.84			45.00	56.00		101.00
Clayton				128.30				128.30
Clinton	2.50			94.42	27.81	5.77		128.00
Crawford	14.73			12.70	62.90			75.60
Dallas	8.37	7.88		48.17	13.37	28.28	.25	90.67
Davis				127.67				127.67
Decatur				113.23				113.23

SUMMARY TABLE NO. 15 Continued

County	Construction Completed 1920			Condition of County Road System, Jan. 1, 1921				
	Built to permanent grade	Gravel macadam on sand clay	Paved	Not built	Permanent grade	Gravel macadam on sand clay	Paved	Total miles in county system
Delaware	10.50	2.38		106.75	11.00	14.25		132.00
Des Moines				42.00	5.75			47.75
Dickinson		8.50		54.10	8.00	8.50		70.60
Dubuque				87.65		4.00		91.65
Emmet	2.00	32.00		.25	8.00	55.00		63.25
Fayette				108.10				108.10
Floyd	7.70	2.80		65.06	14.36	9.36		88.78
Franklin	14.00	20.50		113.25	25.00	20.50		158.75
Fremont	1.00			109.00	1.00			110.00
Greene	3.25	2.50		40.75	10.00	20.25		71.00
Grundy	12.25			98.25	21.25			119.50
Guthrie	3.00	3.00		123.45		3.00		126.45
Hamilton	14.25	39.73		56.00	1.50	90.00		147.50
Hancock	1.50			103.50	11.50	8.00		123.00
Hardin	9.47	6.50		70.00	23.00	29.00		123.00
Harrison				92.50				92.50
Henry				95.00				95.00
Howard				64.68	7.00	5.00		76.68
Humboldt		.60		41.05	15.70	37.85		94.60
Ida				80.00				80.00
Iowa	.75			103.55	5.25			108.80
Jackson				113.00		2.00		115.00
Jasper	8.00			105.25	13.75			119.00
Jefferson				93.00				93.00
Johnson	1.94			106.26	1.94			108.20
Jones	.50			140.60		2.00		142.60
Keokuk				121.51	4.09			125.60
Kossuth	22.50	3.00		132.20	45.30	13.50		191.00
Lee				83.50		10.00		93.50

Linn				97.00		15.00		112.00
Louisa	1.00			61.75	7.25	1.50		70.50
Lucas				96.00				96.00
Lyon	7.65	8.00		108.59	8.65	8.00		125.24
Madison				117.75	1.50			119.25
Mahaska	1.00			71.25	4.75			76.00
Marion	.05	.08		93.91	4.03	.06		98.00
Marshall	12.00	6.25		111.04	23.75	8.36		143.15
Mills				67.00				67.00
Mitchell	1.25	1.25		81.45		1.25		82.70
Monona	1.19			88.31	1.19			89.50
Monroe				112.25	3.00			115.25
Montgomery	1.00			76.50	1.00			77.50
Muscatine	2.16	.04		42.67	22.80	8.08		73.55
O'Brien	13.60			56.00	67.00			123.00
Oseola				83.00	19.00	1.00		103.00
Page				123.71				123.71
Palo Alto	12.10	11.30		9.00	93.29	12.00		114.29
Plymouth	5.25			110.75	5.25			116.00
Pocahontas	18.65	12.50		31.20	21.85	62.70		115.75
Polk	19.70	5.00		87.67	16.75	16.58	.50	121.50
Pottawattamie			.02	146.72			.02	146.74
Poweshiek	1.00			90.00	1.00			91.00
Ringgold				132.85				132.85
Sac		17.43		4.50	22.92	31.30		58.72
Scott	2.42	3.17		57.10	8.33	15.40		83.83
Shelby				107.15				107.15
Sioux	6.75			158.25	16.75			175.00
Story		26.00		44.25	26.50	58.75		129.50
Tama				131.25	8.75			140.00
Taylor				136.63	.37			137.00
Union				104.00				104.00
Van Buren				98.75				98.75
Wapello				99.25	1.00			100.25
Warren				92.25				92.25
Washington				109.50	.50			110.00
Wayne	1.25			114.75	1.75			116.50
Webster		.5		93.25	8.50	.50		102.25
Winnebago	3.50			80.25	11.50			97.75
Winneshiek				119.73				119.73
Woodbury	10.50			80.00	10.50			90.50
Worth	2.25	3.75		67.24	2.00	10.00		79.24
Wright	15.25	9.75		93.50	16.75	9.75		120.00
Totals	297.99	367.12	.02	8,680.62	1,022.96	846.38	2.01	10,551.97

SUMMARY TABLE NO. 16

Showing Number and Value of Gravel Pits owned by Counties January 1, 1921—Annual Reports of County Engineers

County	Number	Value
Adair		
Adams		
Alamakee	1	2,000.00
Appanoose		
Audubon		
Benton	1	350.00
Black Hawk	11	4,000.00
Boone		
Bremer	5	1,500.00
Buchanan	11	2,627.49
Buena Vista	13	10,300.00
Butler	18	2,500.00
Calhoun	22	15,744.00
Carroll		
Cass		
Cedar		
Cerro Gordo	8	2,000.00
Cherokee	1	364.50
Chickasaw	18	10,000.00
Clarke		
Clay	34	17,000.00
Clayton		
Clinton	2	1,400.00
Crawford		
Dallas	15	4,000.00
Davis		
Decatur		
Delaware	8	1,800.00
Des Moines		
Dickinson	9	3,500.00
Dubuque		
Emmet	5	4,100.00
Fayette	1	800.00
Floyd	8	2,500.00
Franklin	15	10,000.00
Fremont		
Greene	2	500.00
Grundy	1	2,000.00
Guthrie		
Hamilton	1	100.00
Hancock	7	1,500.00
Hardin	7	1,250.00
Harrison		
Henry		
Howard	9	4,079.25
Humboldt	4	2,000.00
Ida		
Iowa		
Jackson	1	300.00
Jasper		
Jefferson		
Johnson		
Jones		
Kookuk		
Kossuth	16	2,000.00
Lee		
Linn	7	2,000.00
Louisa		
Lucas		
Lyon	4	1,000.00
Madison		
Mahaska		
Marion	1	1,000.00
Marshall	2	2,500.00
Mills		
Mitchell	4	2,000.00
Monona		
Monroe		

SUMMARY TABLE NO. 16—Continued

County	Number	Value
Montgomery		
Muscatine	2	1,800.00
O'Brien	1	1,617.80
Osceola	4	7,191.50
Page		
Palo Alto	3	2,000.00
Plymouth		
Poeshontas	17	12,100.00
Polk	1	5,000.00
Pottawattamie		
Poweshiek		
Ringgold		
Sac	2	900.00
Scott	1	2,000.00
Shelby		
Sioux		
Story		
Tama	7	3,800.00
Taylor		
Union		
Van Buren		
Wapello		
Warren		
Washington		
Wayne		
Webster		
Winnebago		
Winnebuck	7	1,700.00
Woodbury		
Worth	2	10,000.00
Wright	7	7,000.00
Wright	11	3,587.50
Totals	332	\$ 181,811.96

SUMMARY TABLE NO. 17.

Classification of Road Work on Primary System Annual Reports of County Engineers.

County	Construction	Maintenance	Special Cases (R. R. Cross- ings, etc.)	Total
Adair	\$ 32,415.98	\$ 13,868.94		\$ 46,284.92
Adams	83,385.81	8,188.17		91,573.98
Allamakee		28,984.46		28,984.46
Appanoose	60,526.84	13,195.00		73,721.84
Audubon		5,748.77		5,748.77
Benton	24,541.46	23,622.10		48,163.56
Black Hawk	71,253.83	21,373.51		92,627.34
Boone	97,946.30	33,972.39		131,918.69
Bremer	1,431.26	25,190.89		26,622.15
Buchanan		11,182.59		11,182.59
Buena Vista	113,725.32	27,011.63		140,736.95
Butler	20,304.52	14,472.23		34,776.75
Calhoun	143,711.93	14,786.77		158,498.70
Carroll	406.49	19,768.04		20,174.53
Cass		25,431.69	\$ 1,970.30	\$ 27,401.99
Cedar	744.02	11,823.85		12,567.87
Cerro Gordo	725,998.25	9,319.39		735,317.64
Cherokee	8,126.08	13,536.02		21,662.10
Chickasaw	60,056.61	9,453.02		69,509.63
Clarke	47,061.21	15,221.62		62,282.83
Clay	76.63	15,738.88	548.64	16,364.15
Clayton		12,174.89		12,174.89
Clinton	23,462.97	17,763.69		41,226.66
Crawford		14,863.16		14,863.16
Dallas	68,948.71	18,049.35		86,998.06
Davis	583.93	11,991.91		12,575.84
Decatur	120,397.51	15,627.50	115.50	136,140.51
Delaware	41,075.06	7,264.72		48,339.78
Des Moines	10,954.65	9,384.68		20,339.33
Dickinson	12,187.68	8,384.26		20,571.94
Dubuque	70,489.99	19,497.83		89,987.82
Emmet	56,674.18	13,718.43		70,392.61
Fayette		18,069.04		18,069.04
Floyd	581,644.80	6,313.93		587,958.73
Franklin	8,401.66	9,383.52		17,785.18
Fremont	63,652.83	11,309.25		74,962.08
Greene	93,180.46	19,715.36		112,895.82
Grundy	13,050.40	4,698.98		17,749.38
Guthrie	434.64	15,801.65		16,236.29
Hamilton	17,865.26	16,905.27		34,770.53
Hancock	2,265.20	10,666.80		12,932.00
Hardin	30,421.91	24,168.64		54,590.55
Harrison	77,300.76	14,759.32	40,603.95	132,664.03
Henry	26,180.44	12,063.81		38,244.25
Howard	35,371.51	7,559.69		42,931.20
Humboldt	65,262.01	10,380.42		75,642.43
Ia	38,431.87	16,521.85		54,953.72
Iowa		32,122.54		32,122.54
Jackson		11,440.79		11,440.79
Jasper	7,353.71	21,650.55		29,004.26
Jefferson	44,250.43	7,065.76		51,316.19
Johnson	41,130.17	20,135.44		61,265.61
Jones		6,378.94		6,378.94
Keokuk	58,667.76	12,605.15		71,272.91
Kossuth	37,621.87	10,638.79		48,260.66
Lee		19,604.91	46.00	19,650.91
Linn	157,835.55	32,168.55		190,004.10
Louisa		9,779.86		9,779.86
Lucas	20,287.53	8,435.12		28,722.65
Lyon	172.17	10,843.58	707.88	11,723.63
Madison		11,204.08		11,204.08
Mahaska	374.55	21,746.16		22,120.71
Marion	7,521.11	25,322.26		32,843.37
Marshall	113,415.51	12,861.90	10,406.36	136,683.77
Mills	22,453.01	22,458.74		44,911.75
Mitchell	37,839.29	18,369.70		56,208.99

SUMMARY TABLE NO. 17—Continued

County	Construction	Maintenance	Special Cases (R. R. Cross- ings, etc.)	Total
Monona		19,262.62	780.30	20,051.92
Monroe	55,962.09	12,129.29		68,091.38
Montgomery	161,604.19	17,137.59	42.00	178,783.78
Muscatine	30,396.19	16,369.98	179.02	46,945.19
O'Brien	59,279.73	7,340.14		66,619.87
Osceola	19,688.87	4,478.73	46.14	24,213.74
Page		15,431.35		15,431.35
Palo Alto	169,390.03	6,290.00		175,680.03
Plymouth		20,757.62		20,757.62
Pocahontas	42,026.23	21,452.12		63,478.35
Polk	484,113.39	32,914.18	12,580.65	529,608.22
Pottawattamie	42,782.77	47,137.18		89,919.95
Poweshiek		21,076.51		21,076.51
Ringgold	67,233.85	12,733.21		79,967.06
Sac	78,625.11	33,513.07		112,138.18
Scott	423,918.55	18,717.86	4,986.30	447,622.71
Shelby	58,646.45	12,384.04		71,030.49
Sioux	149,533.21	2,848.59		152,381.80
Story	31,280.06	26,490.95		57,771.01
Tama		9,647.31		9,647.31
Taylor		7,658.28		7,658.28
Union		14,591.35		14,591.35
Van Buren	50,780.71	9,443.43		60,224.14
Wapello	73,680.53	8,446.32		82,126.85
Warren		254.92		254.92
Washington		27,863.57		27,863.57
Wayne		14,090.83		14,090.83
Webster	155,725.55	29,821.88		185,547.43
Winnebago	69,841.30	7,489.18		77,330.48
Winnesiek		22,071.24		22,071.24
Woodbury	46,091.25	39,216.85		85,308.10
Worth		6,646.40		6,646.40
Wright	47,768.77	8,229.06		55,997.83
Totals	\$ 5,817,297.37	\$ 1,593,654.13	\$ 73,022.04	\$ 7,483,973.54

SUMMARY TABLE NO. 18
Classified Road Expenditures—Construction Primary System

County	Finished grade standard grade	Gravel, macadam and sand clay	Hard surfacing	Things and drainage assessments	Equipment and tools	Total expenditures
Adair	26,896.87			3,579.71		32,476.58
Adams	89,886.81					89,886.81
Adair	60,699.84		8,693.28	38,491.88		109,885.00
Adair	15,818.10		30,140.69	10,431.26	15.75	56,405.80
Adair	29,139.26	47,375.85				76,515.11
Adair	17,198.22	89,084.00		20,182.97		133,225.22
Adair	1,096.65	385.54		30,816.69		32,298.88
Adair	1,096.65	131,878.84		406.46		143,771.95
Adair	83,507.23		620,535.14	21,000.30		725,042.67
Adair	8,139.08	30,733.05		1,690.00	1,691.50	32,653.63
Adair	16,021.15			76.43		16,097.58
Adair	47,091.21		10,120.62	1,447.90	7.18	58,667.91
Adair	57,583.03			31,118.80		88,701.83
Adair	130,397.51			4,500.44		134,897.95
Adair	36,464.62		6,226.61	6,900.71		49,591.94
Adair	5,438.29			3,826.28		9,264.57
Adair	67,159.60	6,789.54		46,764.98		120,714.12
Adair	60,718.10		590,034.13	7,101.05		657,853.28
Adair	1,900.94			2,101.05		4,001.99
Adair	58,514.14	1,236C.12	51,986C.29	7,881.87	16.99	112,586.46
Adair	5,714.14			2,881.87		8,596.01
Adair						13,650.40

Adair	387.21	7,970.04		0,080.33		8,437.58
Adair	6,624.51	16,701.00		2,595.29		25,920.80
Adair	14,328.26			3,973.48		18,301.74
Adair	17,368.62	15,267.27		8,817.61		41,453.50
Adair	12,861.52	389,885	49,500.37	3,288.27	10.00	65,292.01
Adair	38,431.87			7.15		38,439.02
Adair	40,319.30			4,032.24	7.39	44,358.93
Adair	26,770.20		3,267.88	44.00	948.09	31,000.17
Adair	8,082.21	8,797.70	80,806.29	21,821.96		113,508.16
Adair	5,051.73			18,477.53		23,529.26
Adair	20,297.83			3,288.27		23,586.10
Adair	146.03			4,032.24		4,178.27
Adair	6,822.15		3,267.88	44.00		10,154.03
Adair	48,429.61			698.90		49,128.51
Adair	6,994.19	18,432.59		99.13	41,407.33	65,833.24
Adair	16,644.51		80,806.29			97,450.80
Adair	24,201.54			6,094.65		30,296.19
Adair	4,725.67	48,688.42		6,515.64		59,929.73
Adair	19,664.43			24.44		19,688.87
Adair	24,970.01	101,553.02		9,725.68	23,511.02	169,760.33
Adair	25,716.03	4,654.62		13,655.28		44,026.23
Adair	10,789.27	15,769.17	346,162.72	10,302.91	16.00	484,133.87
Adair	67,238.85			98.60		67,337.45
Adair	101,116.42	66,764.94		10,528.97		178,610.33
Adair	58,425.52		301,707.26	21,022.67	32.00	481,187.55
Adair	89,271.29		77,998.84	2,244.11		169,514.24
Adair	42,890.00			7,890.71		50,780.71
Adair	75,690.53			682.16		76,372.69
Adair	60,367.19	82,227.33		34,121.94		176,716.46
Adair	56,218.11	12,050.76		7,692.48		75,961.35
Adair	45,816.15			375.19		46,191.34
Adair	32,644.84	4,943.04		10,170.69		47,768.57
Adair	2,437,340.30	567,458.04	2,269,516.35	462,074.00	80,307.20	5,817,297.27

SUMMARY TABLE NO. 19

Showing Cost of Maintenance Primary Road System

County	No. miles primary system	Patrol		Gang		Materials		Equip. and Tools		Total cost primary road maintenance	Average cost per mile
		Total cost	Average per mile	Total cost	Average per mile	Total cost	Average per mile	Total cost	Average per mile		
Adair	56.6	3,081.33	54.44	9,549.66	168.72	11.70	.21	1,226.25	21.66	13,868.94	245.03
Adams	35.2	2,527.98	71.82	5,594.00	158.92			66.19	1.88	8,188.17	232.62
Allamakee	84.3	4,030.59	47.81	17,545.51	208.13	327.50	3.88	7,080.85	84.00	28,984.46	343.82
Appanoose	58.1	4,611.88	79.38	7,764.13	133.63	130.19	2.24	688.80	11.86	13,106.00	227.11
Audubon	46.1	2,593.82	56.26	2,629.87	57.05	300.15	6.51	235.13	4.88	5,748.77	124.70
Benton	84.4	11,290.97	132.19	9,507.17	106.34	472.33	5.28	2,361.63	26.42	23,622.10	264.23
Black Hawk	78.0	16,592.26	212.72	2,502.80	32.09	527.95	6.77	1,750.50	22.44	21,373.51	274.02
Boone	78.8	13,671.55	173.50	7,741.01	98.24	1,228.85	15.59	11,330.98	143.79	33,972.39	431.12
Bremer	71.2	13,081.18	183.72	10,579.32	148.59	279.46	3.93	1,250.93	17.57	25,190.89	353.81
Buchanan	46.0	5,800.14	126.09	4,236.07	92.09	161.10	3.50	985.28	21.42	11,182.59	243.10
Buena Vista	66.7	7,574.58	113.56	13,183.22	197.65	5,528.73	82.80	725.10	10.87	27,011.63	404.97
Butler	70.7	5,030.23	71.15	8,948.45	126.57	123.80	1.75	369.75	5.23	14,472.23	204.70
Calhoun	72.6	11,949.00	164.59	2,249.48	30.98			588.29	8.10	14,786.77	203.67
Carroll	68.5	5,211.06	76.07	12,567.41	183.47	1,839.26	26.85	150.31	2.19	19,768.04	288.58
Cass	81.0	11,575.43	142.91	13,252.66	163.61			603.60	7.45	25,431.69	313.97
Cedar	76.1	4,685.96	61.31	6,510.21	85.55			647.68	8.51	11,823.85	155.37
Cerro Gordo	54.4	3,754.90	69.02	3,949.53	72.60	1,609.16	29.58	5.80	.11	9,319.39	171.31
Cherokee	77.9	6,664.50	85.56	5,922.83	76.03	744.99	9.56	203.70	2.61	13,536.02	173.76
Chickasaw	44.8	2,995.86	66.87	6,282.83	139.80	143.92	3.21	50.41	1.13	9,453.02	211.00
Clarke	51.5	5,403.40	104.92	7,267.30	141.11	1,025.20	19.91	1,525.72	29.63	15,221.62	295.57
Clay	54.0	7,128.54	131.97	5,645.09	104.54	233.25	4.32	2,734.00	50.63	15,738.88	291.46
Clayton	103.2	9,754.62	94.52	1,696.63	16.44			723.64	7.01	12,174.89	117.97
Clinton	86.0	8,068.25	93.47	8,339.63	96.97	117.11	1.36	1,268.69	14.75	17,768.69	206.55
Crawford	82.1	11,997.16	146.13	2,665.00	32.47			200.40	2.44	14,831.16	181.04
Dallas	87.2	8,024.68	92.03	2,010.70	23.05			8,013.88	91.91	18,049.35	206.99
Davis	46.6	5,447.56	116.90	5,917.35	126.98			627.00	13.46	11,991.91	257.34
Decatur	52.1	11,111.69	213.28	3,544.08	68.02	171.33	3.29	800.40	15.36	15,627.50	299.95
Delaware	45.5	5,191.35	114.10	1,438.00	31.60	225.62	4.96	409.75	9.01	7,264.72	159.67

Des Moines	38.8	5,832.13	150.31	1,417.14	36.52	171.16	4.41	1,964.25	50.63	9,384.68	241.87
Dickinson	42.1	7,242.53	172.03	515.26	12.24	111.31	2.64	515.16	12.24	8,384.25	199.15
Dubuque	79.6	10,802.42	135.71	3,284.78	41.26	2,183.96	27.44	3,226.67	40.54	19,497.83	244.96
Emmet	41.6	7,063.34	184.22	5,203.94	125.09	708.40	17.03	142.75	3.43	13,718.43	329.77
Fayette	95.0	7,600.77	80.01	5,135.63	54.06	135.02	1.42	5,227.62	55.03	18,069.04	190.52
Floyd	69.0	2,659.97	38.55	2,899.72	42.03	160.89	2.33	593.35	8.60	6,313.93	91.51
Franklin	41.2	4,801.95	116.55	1,745.07	42.36	118.26	2.87	2,718.24	65.98	9,383.52	227.76
Fremont	50.0	5,245.88	104.92	5,718.83	114.37			344.54	6.90	11,309.25	226.19
Greene	68.0	12,102.47	177.98	6,944.17	102.12	623.96	9.17	44.76	.66	19,715.36	289.93
Grundy	60.2	1,240.50	20.61	3,354.48	55.72			104.00	1.73	4,688.98	78.06
Guthrie	73.0	12,238.56	167.65	2,585.09	35.42			978.00	13.40	15,801.65	216.47
Hamilton	66.4	4,290.95	63.27	8,609.26	129.66	3,331.92	50.18	763.14	11.49	16,965.27	254.60
Hancock	47.3	6,358.98	134.44	1,528.87	32.32			2,778.95	58.75	10,666.80	225.51
Hardin	62.3	16,806.58	269.77	4,155.91	66.71	585.46	9.40	2,029.60	42.06	24,168.64	387.94
Harrison	80.5	7,483.64	92.96	6,909.23	85.83	72.85	.91	2,929.60	3.65	14,759.32	183.35
Henry	46.2	10,579.53	228.99	1,099.38	23.80			884.00	8.33	12,063.81	261.12
Howard	50.8	3,601.97	70.90	2,737.97	53.90	719.50	14.16	500.25	9.85	7,559.69	148.81
Humboldt	40.9	3,479.77	84.89	5,145.33	125.80	557.47	13.63	1,206.85	29.51	10,389.42	253.80
Ida	51.5	8,457.41	164.22	5,240.61	101.70	359.30	6.97	2,464.93	47.86	16,521.85	320.81
Iowa	69.2	14,619.27	211.26	15,808.69	228.45	7.25	.11	1,687.33	24.38	32,122.54	464.29
Jackson	47.2	6,612.14	140.09	3,835.50	81.28	559.25	11.66	442.00	9.38	11,440.79	242.39
Jasper	80.6	15,022.95	167.67	3,253.60	36.31			3,374.00	37.63	21,650.55	241.64
Jefferson	47.7	5,780.78	121.19					1,284.98	26.94	7,065.76	148.13
Johnson	71.5	15,235.81	213.69	4,009.28	56.07	155.70	2.18	734.65	10.27	20,135.44	281.61
Jones	58.9	2,844.07	48.29	2,865.96	48.69	655.83	11.13	13.08	.22	6,378.94	108.30
Keokuk	79.5	6,516.86	85.75	4,848.02	60.98	632.17	7.95	308.10	3.88	12,605.15	158.58
Kossuth	88.0	4,972.52	56.51	5,551.42	63.08			114.85	1.31	10,638.79	120.90
Lee	89.1	9,253.80	103.86	6,962.36	78.14	2,452.87	27.53	1,235.88	13.87	19,904.91	223.40
Linn	101.0	15,352.97	152.01	11,778.04	116.61	5,023.24	49.74	14.30	.14	32,168.55	318.50
Louis	50.8	4,144.24	81.58	5,038.62	99.19			597.00	11.75	9,779.86	192.52
Lucas	59.0	2,763.67	46.84	5,490.13	92.55			211.32	3.58	8,435.12	142.97
Lyon	68.0	4,089.80	60.01	5,147.14	75.69	410.54	6.04	1,205.10	17.72	10,843.58	159.46
Madison	56.3	6,590.71	117.06	3,196.14	56.77	18.33	.33	1,398.90	24.85	11,204.08	199.01
Mahaska	86.0	11,197.85	130.21	7,193.81	83.65			3,354.50	39.00	21,746.16	252.86
Marion	92.5	12,362.68	133.65	10,544.95	114.00			2,414.63	26.10	25,322.26	273.75
Marshall	50.7	7,741.19	152.69	2,928.77	57.77	488.85	9.64	1,703.09	33.59	12,861.00	253.69
Mills	48.1	8,275.87	172.06	12,862.05	267.40	103.87	2.16	1,216.95	25.30	22,458.74	466.92
Mitchell	61.0	9,859.75	161.64	6,229.78	102.13	1,250.74	20.50	1,029.43	16.87	18,399.70	301.14
Monona	77.1	10,425.53	135.23	6,491.64	84.20	702.25	9.11	1,642.20	21.30	19,292.62	249.84
Monroe	56.3	5,713.25	101.48	5,694.55	101.15	191.49	3.40	580.00	9.41	12,129.29	215.44
Montgomery	51.8	13,267.34	256.12	3,136.80	60.56			733.45	14.16	17,137.59	330.84
Muscataine	81.3	9,566.58	117.67	6,275.94	77.19	47.78	.59	479.68	5.90	16,369.98	201.35
O'Brien	74.3	4,942.19	66.52	2,084.65	28.06			313.30	4.21	7,340.14	98.79
Osceola	41.5	3,928.33	94.66	391.50	9.43	87.00	.89	121.90	2.94	4,478.73	107.92
Page	59.6	7,149.95	119.97	8,119.50	136.23			161.90	2.72	15,431.35	258.92
Palo Alto	49.9	5,837.27	116.98	348.16	6.98	32.64	.65	71.92	1.44	6,290.00	126.05
Plymouth	120.2	10,157.81	84.51	8,546.49	71.10	865.97	7.20	1,187.35	9.88	20,767.62	172.69
Pocahontas	63.1	9,389.40	148.80	8,599.82	136.29	2,544.35	40.32	915.55	14.56	21,452.12	339.97

SUMMARY TABLE NO. 19—Continued

County	No. miles primary system	Patrol		Gang		Materials		Equip. and Tools		Total cost primary road maintenance	Average cost per mile
		Total cost	Average per mile	Total cost	Average per mile	Total cost	Average per mile	Total cost	Average per mile		
Polk.....	88.8	26,447.68	304.70	5,828.86	67.15	169.54	1.95	468.00	5.39	32,914.18	379.19
Pottawattamie.....	146.9	19,497.49	132.73	24,422.91	166.25	1,436.83	9.78	1,779.95	12.12	47,137.18	320.88
Poweshiek.....	67.0	6,848.88	102.22	13,827.57	206.38	152.63	2.28	1,147.43	17.13	21,976.51	328.01
Ringgold.....	51.4	1,325.84	25.79	11,109.12	216.14	.....	.....	298.25	5.80	12,733.21	247.75
Sac.....	92.1	17,694.91	192.13	9,851.97	106.97	1,349.18	14.65	4,617.01	50.13	33,513.07	363.88
Scott.....	72.1	7,796.49	107.72	1,542.51	21.39	3,967.76	55.03	5,441.10	75.47	18,717.86	259.61
Shelby.....	50.6	7,987.77	157.86	4,220.42	83.41	.....	.....	175.85	3.47	12,384.04	244.74
Sioux.....	69.4	2,073.45	29.88	589.39	8.49	.....	.....	185.75	2.68	2,848.59	41.05
Story.....	64.4	11,906.20	184.88	4,097.54	72.94	1,657.23	25.73	8,229.98	127.79	26,490.95	411.34
Tama.....	70.0	6,914.65	98.78	2,422.61	34.61	90.85	1.30	219.20	3.13	9,647.31	137.82
Taylor.....	49.6	4,813.67	97.05	2,098.83	42.32	.....	.....	745.78	15.03	7,658.28	154.40
Union.....	52.9	7,810.33	147.64	6,502.77	122.93	.....	.....	278.25	5.26	14,591.35	275.83
Van Buren.....	43.9	4,909.98	111.84	3,521.95	80.23	.....	.....	1,011.50	23.04	9,443.43	215.11
Wapello.....	44.1	7,884.52	178.79	293.20	6.65	.....	.....	268.60	6.09	8,446.32	191.53
Warren.....	85.3	9,193.71	107.78	3,562.89	41.77	660.87	7.75	1,565.20	18.35	14,982.67	175.65
Washington.....	90.0	16,854.07	187.27	8,183.19	90.92	12.21	.14	2,814.10	31.27	27,833.57	309.60
Wayne.....	63.0	6,727.32	106.78	5,297.81	82.66	.....	.....	2,155.70	34.22	14,090.83	223.66
Webster.....	84.5	19,153.22	226.66	5,379.90	63.67	174.00	2.06	5,114.76	60.53	29,821.88	352.92
Winnebago.....	48.8	6,053.59	124.05	815.87	16.72	204.20	4.19	415.52	8.51	7,489.18	153.47
Winnesiek.....	83.4	6,340.70	76.03	10,413.70	124.86	59.08	.71	5,257.76	62.04	22,071.24	264.64
Woodbury.....	125.1	12,241.64	97.85	23,264.30	185.97	220.13	1.76	3,490.78	27.90	39,216.85	313.48
Worth.....	60.3	3,605.54	59.79	2,215.19	36.74	646.67	10.72	179.00	2.97	6,646.40	110.22
Wright.....	50.3	6,696.83	112.93	1,226.00	20.67	.....	.....	306.20	5.17	8,229.06	138.77
Totals.....	6,619.1	\$811,933.72	\$122.67	\$581,653.11	\$ 87.87	\$ 52,013.36	\$ 7.89	\$148,053.94	\$ 22.37	\$1,593,654.13	\$ 240.77

SUMMARY TABLE NO. 20—PART I

Showing Total and Relative Cost of Maintenance of Earth, Gravel and Paved Roads by Counties—Primary System

County	Earth								Total cost earth road maintenance
	Patrol	Gang	Materials	Equipment and tools	Marking primary roads	Number miles	Average cost per mile		
Adair.....	\$ 3,061.33	\$ 9,370.49	\$ 11.70	\$ 1,226.25	\$ 179.17	56.6	\$ 245.03	\$ 13,868.94	
Adams.....	2,527.98	5,392.68	.....	66.19	201.32	35.2	232.62	8,188.17
Allamakee.....	4,030.59	17,152.74	327.50	7,080.86	392.77	84.3	343.83	28,984.46	
Appanoose.....	4,611.88	7,611.52	130.19	688.80	152.61	58.1	227.11	13,195.00	
Audubon.....	2,593.62	2,629.87	300.15	225.13	.....	48.1	124.70	5,748.77
Benton.....	11,280.97	8,634.14	472.33	2,333.15	538.05	88.4	263.11	23,259.24	
Black Hawk.....	13,550.73	2,376.00	.....	1,332.50	115.29	70.9	245.06	17,374.52
Boone.....	5,759.70	443.49	.....	6,289.14	359.72	45.8	280.61	12,852.05
Bremer.....	12,954.68	6,329.87	.....	1,208.93	643.28	69.2	305.44	21,136.76
Buchanan.....	5,800.14	4,236.07	125.50	985.23	.....	46.0	242.33	11,146.99
Buena Vista.....	2,087.06	520.58	.....	190.35	19.60	8.5	327.95	2,787.59
Butler.....	5,030.23	8,641.75	123.90	369.75	306.70	70.7	204.70	14,472.23	
Calhoun.....	6,438.59	1,513.40	.....	188.00	159.10	23.6	351.66	8,299.09
Carroll.....	4,536.47	5,810.95	3.75	150.31	.....	65.5	160.33	10,501.48
Cass.....	11,575.43	13,001.07	.....	603.60	250.04	80.5	315.00	25,430.14
Cedar.....	4,665.96	6,294.70	.....	647.68	212.67	75.1	157.40	11,821.01
Cerro Gordo.....	3,529.90	2,753.08	624.15	.....	144.60	32.0	220.37	7,051.73
Cherokee.....	6,664.50	5,700.48	744.99	203.70	222.35	77.9	173.75	13,536.02	
Chickasaw.....	1,747.87	3,149.43	.....	.....	161.85	27.5	183.97	5,059.15
Clarke.....	5,403.40	6,988.85	1,025.20	1,525.72	278.45	51.5	295.57	15,221.62	
Clay.....	52.50	1,333.55	.....	.....	8.70	5.0	278.95	1,304.75
Clayton.....	9,709.34	1,564.79	.....	723.64	130.56	102.2	118.67	12,128.33
Clinton.....	7,217.28	7,844.65	117.11	1,268.69	66.02	80.0	296.42	16,513.75	
Crawford.....	11,997.16	2,527.50	.....	200.40	138.10	82.1	181.04	14,863.16
Dallas.....	6,903.77	1,588.55	.....	5,111.70	373.84	77.2	181.06	13,977.86
Davis.....	5,447.56	5,777.27	.....	627.00	140.08	46.6	257.34	11,991.91
Decatur.....	11,111.69	3,180.82	171.33	800.40	393.26	52.1	299.95	15,627.50	
Delaware.....	4,969.85	1,438.00	225.62	409.75	.....	41.5	169.72	7,043.22

Des Moines	5,832.13	1,287.14	159.91	1,964.25	126.65	37.8	247.89	9,370.08
Dickinson	162.00				12.45	1.5	116.30	174.45
Dubuque	3,371.93	458.58		854.90	402.00	50.6	100.54	5,087.41
Emmet					6.00	1.0	6.00	6.00
Fayette	7,600.77	4,640.38	135.02	5,227.62	405.25	95.0	190.52	18,009.04
Floyd	1,901.38	772.05		442.85		47.2	66.02	3,116.28
Franklin	3,609.72	170.00	109.26	2,680.74	344.54	31.2	218.59	6,519.92
Fremont	5,245.88	5,588.87				50.0	226.18	11,309.25
Greene	2,954.18	5,851.35			4.22		275.68	9,014.75
Grundy	1,240.50	3,354.48			104.00	32.7	60.2	4,698.98
Guthrie	12,048.26	1,959.70		970.40		71.0	219.53	15,588.05
Hamilton	1,390.80	2,040.74	832.16	292.40	608.29	43.4	107.40	4,631.15
Hancock	4,540.32	1,335.42		1,779.70	105.05	32.8	236.11	7,744.49
Hardin	9,785.99	1,009.29	269.11	1,889.99	177.47	35.6	368.87	13,131.85
Harrison	7,483.64	6,850.96	72.85	293.00		80.5	183.35	14,759.32
Henry	10,579.53	1,069.38		384.90	58.27	46.2	261.12	12,063.81
Howard	2,794.38	2,266.50	719.20	477.75		39.8	166.52	6,627.60
Humboldt	1,430.34	761.26	84.51	571.65	369.47	21.4	133.07	2,847.76
Ida	8,457.41	4,782.61	359.29	2,464.63	458.00	51.5	320.81	16,521.85
Iowa	14,619.27	15,808.69	7.25	1,687.33		69.2	461.20	32,122.54
Jackson	5,354.99	1,989.43	16.00	442.90	146.63	42.7	300.23	8,549.98
Jasper	14,887.25	2,886.00		3,374.00	353.20	86.1	249.71	21,500.45
Jefferson	5,780.78			1,284.98		47.7	148.13	7,035.76
Johnson	15,235.81	3,808.32	155.70	734.65	200.96	71.5	281.61	20,135.44
Jones	2,844.07	2,720.25	655.83	13.08	138.29	55.9	113.98	6,371.52
Keokuk	6,816.83	4,177.95	632.17	308.10	670.07	79.5	158.59	12,605.12
Kossuth	3,891.90	4,010.35		92.80	61.07	59.0	136.54	8,056.12
Lee	8,712.90	3,928.45		1,135.88	94.12	85.6	162.05	13,871.35
Linn	10,892.66	8,690.01	4.00	14.30	811.50	85.0	240.15	20,412.47
Louisa	4,144.24	4,544.08		597.00	481.92	49.5	197.32	9,767.24
Lucas	2,763.67	5,250.50		211.32	209.63	50.0	142.97	8,435.12
Lyon	4,080.80	4,941.68	410.54	1,205.10	205.46	68.0	159.46	10,843.58
Madison	6,590.71	2,786.06	18.33	1,398.90	410.08	56.3	199.01	11,204.08
Mahaska	11,197.85	7,193.81		3,354.50		88.0	252.86	21,746.16
Marion	12,362.68	9,940.10		2,414.63	604.85	92.5	273.75	25,322.26
Marshall	7,741.19	1,346.97	488.85	1,703.09	364.81	50.7	229.68	11,644.91
Mills	8,275.87	12,696.61	103.87	1,216.95	165.44	48.1	463.92	22,453.74
Mitchell	6,356.50	2,892.86	467.29	804.68	132.00	44.5	241.42	10,743.33
Monroe	10,426.53	6,155.43	702.25	1,642.20	336.21	77.1	249.84	19,262.62
Montgomery	5,713.25	5,641.10	191.49	530.00	53.45	56.3	215.44	12,129.29
Muscatine	13,267.34	2,585.83		733.45	550.97	51.8	330.84	17,137.59
Muscatine	9,383.24	5,672.91	46.17	462.38	540.56	78.9	204.12	16,105.26
O'Brien	4,942.19	1,382.06		313.30	472.12	73.3	95.99	7,109.69
Osceola	3,928.33	391.50	37.00	121.90		41.5	107.92	4,478.73
Page	7,149.95	8,119.50		161.90		59.6	238.92	15,431.35
Palo Alto	5,662.27	184.50		71.93	153.84	46.9	199.48	6,073.54
Plymouth	10,157.81	8,061.50	865.97	1,187.35	484.90	120.2	172.69	20,737.62
Pocahontas	3,803.91	241.61	296.50	529.24		38.6	126.20	4,871.26

SUMMARY TABLE NO. 20—PART I—Continued

County	Earth							
	Patrol	Gang	Materials	Equipment and tools	Marking primary roads	Number miles	Average cost per mile	Total cost maintenance earth road
Polk	15,709.19	3,796.54	9.75	308.00		39.8	498.08	19,823.48
Pottawattamie	19,497.49	24,153.56	1,436.83	1,779.95	282.80	144.3	326.62	47,130.63
Poweshiek	6,848.88	13,456.02	152.63	1,147.43	371.55	67.0	328.01	21,976.51
Ringgold	1,325.84	10,872.25		298.25	236.87	51.4	247.73	12,733.21
Sac	9,060.00	3,516.48	317.13	1,811.37	356.79	49.1	306.76	15,051.77
Scott	5,065.78	225.00	2,573.84	5,277.10	76.59	47.1	281.28	13,248.31
Shelby	7,987.77	4,165.47		175.85	54.95	59.6	244.74	12,384.04
Sioux	2,073.45	517.55		185.75	69.98	67.9	42.11	2,846.73
Story	5,568.68	2,850.31	1,193.60	2,477.48	194.62	33.4	367.98	12,290.69
Tama	6,914.65	1,730.94	90.85	219.20	601.67	70.0	137.82	9,647.31
Taylor	4,813.67	1,877.96		745.78	229.87	49.6	154.40	7,658.28
Union	7,810.33	6,189.55		278.25	313.22	52.9	275.83	14,501.35
Van Buren	4,909.98	3,297.66		1,011.50	224.29	43.9	215.11	9,443.43
Wapello	7,884.52	293.20		268.60		44.1	191.53	8,446.32
Warren	9,193.71	3,311.14	660.87	1,565.20	251.75	85.3	175.65	14,982.67
Washington	16,854.07	7,001.94	12.21	2,814.10	581.25	90.0	309.60	27,893.57
Wayne	6,727.32	4,740.22		2,155.70	467.50	63.0	223.66	14,090.83
Webster	12,214.18	732.77	174.00	2,666.33	428.22	56.5	287.00	16,215.59
Winnebago	6,053.59	626.01	204.20	415.52	174.33	44.8	169.82	7,473.65
Winneshiek	6,340.70	9,149.71	59.08	5,257.76	1,261.99	83.4	264.64	22,071.24
Woodbury	12,241.64	23,264.39	220.13	3,490.78		125.1	313.48	39,216.85
Worth	1,445.09	1,830.60	759.17	119.00	76.09	35.8	117.90	4,220.85
Wright	6,306.86	1,226.00		306.20		54.8	150.17	8,229.06
Totals	\$ 678,561.55	\$ 455,512.25	\$ 20,009.34	\$ 117,788.00	\$ 23,013.37	5,760.0	\$ 224.47	\$ 1,292,074.51

SUMMARY TABLE NO. 20—PART II

Showing Total and Relative Cost of Maintenance of Earth, Gravel and Paved Roads by Counties—Primary System

County	Gravel							Total cost gravel road maintenance
	Patrol	Gang	Materials	Equipment and tools	Marking primary roads	Number miles	Average cost per mile	
Black Hawk								
Boone	\$ 100.45				\$ 4.85	3.0	35.10	\$ 105.30
Bremer	7,911.85	\$ 6,678.80	\$ 1,228.85	\$ 5,041.84	250.00	33.0	640.01	21,120.34
Buchanan	126.50	3,587.58	279.46	42.00	18.59	2.0	2,027.07	4,054.13
Buena Vista			35.60					35.60
Calhoun	5,487.52	12,508.75	5,528.73	564.75	134.29	58.2	416.22	24,224.04
Carroll	5,510.41	245.13		400.29	331.85	49.0	132.40	6,487.68
Cedar	674.59	6,756.46	1,835.51			3.0	3,088.85	9,266.56
Chickasaw					2.84	1.0	2.84	2.84
Clay	1,247.99	2,850.05	143.92	50.41	101.50	17.3	253.98	4,393.87
Clayton	7,074.04	4,217.54	233.25	2,734.00	85.30	49.0	292.74	14,344.13
Clinton	45.28				1.28	1.0	46.56	46.56
Dallas	820.98	424.00			4.96	6.0	208.32	1,249.94
Delaware	1,120.91			2,902.18	48.40	10.0	407.15	4,071.49
Des Moines	221.50					4.0	55.38	221.50
Dickinson			11.25					11.25
Dubuque	7,080.53	282.41		515.16	331.71	40.6	202.21	8,209.81
Dubuque	7,430.49	594.36	268.87	2,250.00	206.00	26.0	413.45	10,749.72
Emmet	7,633.34	5,064.34	598.80	142.75	243.20	40.6	337.74	13,712.43
Floyd	758.59	2,069.67	64.00	150.50		10.8	281.74	3,042.76
Franklin	1,192.23	1,244.77	9.00	37.50		80.10	256.36	2,563.60
Guthrie	9,148.29	687.00	623.96	40.54	214.56	34.3	311.79	10,694.35
Hamilton	190.30			7.60	17.10	2.0	107.50	215.00
Hancock	2,810.15	6,407.77	2,499.76	470.74	55.70	23.0	532.35	12,244.12
Hardin	1,818.66	154.25		910.00	39.40	14.5	201.54	2,923.31
Howard	7,020.50	2,835.85	316.35	730.70	133.30	26.7	413.36	11,036.79
	807.50			22.50	102.00	11.0	84.74	932.00
Humboldt	2,040.43	4,384.07	472.96	635.20		19.5	386.29	7,532.86
Jackson	657.15	1,083.91	534.25		15.50	4.5	642.40	2,800.81
Jasper	135.70				14.40	3.5	42.88	150.10
Jones					7.42	3.0	2.47	7.42
Kossuth	1,080.62	1,450.00		22.05	30.00	29.0	89.06	2,582.67
Lee	640.90	2,985.94	2,452.87		3.85	3.5	1,723.87	6,033.56
Linn	4,413.30	2,123.83	5,019.24		114.50	12.0	972.57	11,670.87
Marshall		1,218.99						1,218.99
Mitchell	3,503.25	3,156.12	783.45	134.75	48.80	16.5	462.20	7,626.37
Muscatine	165.34	45.54	1.61	17.30	14.10	2.0	121.94	243.89
O'Brien		224.00						224.00
Palo Alto					3.27	1.0	3.27	3.27
Pocahontas	5,585.49	8,358.21	2,247.85	389.31		24.5	676.77	16,589.86
Polk	9,457.79	2,032.32	10.80	160.00		37.0	315.16	11,680.91
Pottawattamie					5.79	2.3	2.52	5.79
Sac	8,634.91	5,636.70	1,032.05	2,805.64	312.00	43.0	429.10	18,451.30
Scott	2,670.71	1,200.26	1,398.92	164.00	37.40	23.0	237.66	5,466.29
Story	6,337.52	1,465.61	463.63	5,752.50	181.00	31.0	458.07	14,200.26
Webster	6,939.04	4,005.11		2,448.43	213.80	28.0	485.94	13,606.38
Winnebago					15.53	4.0	3.88	15.53
Worth	2,160.45	61.75	91.35	60.00	52.00	24.5	99.00	2,425.55
Wright						4.5		
Totals	\$ 130,655.38	\$ 96,599.09	\$ 28,181.29	\$ 29,002.64	\$ 3,485.29	792.3	364.20	\$ 288,553.69

SUMMARY TABLE NO. 20—PART III

Showing Total and Relative Cost of Maintenance of Earth, Gravel and Paved Roads by Counties—Primary System

County	Paved							Total cost paved road maintenance
	Patrol	Gang	Materials	Equipment and tools	Marking primary roads	Number miles	Average cost per mile	
Benton		\$ 328.31		\$ 28.48	\$ 6.07	1.0	\$ 362.96	\$ 362.88
Black Hawk	\$ 2,941.08		\$ 527.05	\$ 418.00	6.65	4.1	949.68	\$3,893.69
Cass					1.55	.5	3.10	1.55
Cerro Gordo	225.00	950.85	985.01	5.80	101.00	29.4	101.23	2,267.63
Des Moines						1.0	3.35	3.35
Dubuque		1,600.04	1,915.09	121.77	23.80	3.0	1,220.23	**3,660.70
Floyd		58.00	98.89			11.0	14.08	154.89
Greene						1.0	6.26	6.26
Linn	47.01					4.0	21.30	85.21
Louisa						1.3	9.71	12.62
Muscatine	18.00					.4	52.07	20.83
O'Brien			32.64			1.0	6.45	6.45
Palo Alto	175.00					2.0	107.10	214.19
Polk	1,280.70		149.09			10.0	142.98	1,429.79
Pottawattamie						.3	2.53	.76
Scott						2.0	1.63	3.26
Sioux						1.8	1.03	1.86
Totals	\$ 4,686.79	\$ 2,937.20	\$ 3,706.67	\$ 574.05	\$ 221.22	66.8	\$ 181.53	\$ ***12,125.93

*Includes \$3,200.00 guard rail and construction of gravel shoulders.
 **Includes \$3,619.63 for reconstruction of defective pavement, rejected under original construction contract.
 ***Includes \$6,819.63 not chargeable to maintenance—net cost of maintenance \$5,306.30 or \$79.44 per mile.

SUMMARY TABLE NO. 21

Showing Construction Work Completed in 1920 and Condition—Primary Road System—January 1, 1921

County	Number Miles Constructed 1920			Condition Primary Road System, January 1, 1921				Total miles primary system
	Built to permanent grade	Surfaced with gravel, macadam or sand clay	Hard surfaced	Earth road not built	Earth road built to permanent grade	Surfaced gravel, macadam or sand clay	Hard surfaced	
Adair	3.88			55.6				56.6
Adams	6.67			28.2	7.0			35.2
Allamakee				84.3				84.3
Appanoose	10.46			47.1	11.0			58.1
Audubon				46.1				46.1
Benton				83.4	5.0		1.0	89.4
Black Hawk			.75	70.9		3.0	4.1	78.0
Boone		12.19		36.3	9.5	33.0		78.8
Bremer				66.2	3.0	2.0		71.2
Buchanan				36.0	10.0			46.0
Buena Vista		16.00		1.5	7.0	58.2		66.7
Butler		.08		66.4	4.3			70.7
Calhoun		30.20		5.6	18.0	49.0		72.6
Carroll				43.0	22.5	3.0		68.5
Cass				80.0	.5		.5	81.0
Cedar				65.1	9.0	1.0		76.1
Cerro Gordo			14.98	27.0	5.0		22.4	54.4
Cherokee	3.03			44.9	33.0			77.9
Chickasaw		10.21		26.5	1.0	17.3		44.8
Clarke	5.32			45.0	6.5			51.5
Clay					5.0	49.0		54.0
Clayton				102.2		1.0		103.2
Clinton				66.3	13.7	6.0		83.0
Crawford				15.0	67.1			82.1
Dallas	14.60			52.2	25.0	10.0		87.2
Davis				46.6				46.6
Decatur	8.95			42.3	9.8			52.1
Delaware	12.27			29.0	12.5	4.0		45.5
Des Moines	1.77			38.8	1.0		1.0	38.8

SUMMARY TABLE NO. 21—Continued

County	Number Miles Constructed 1920			Condition Primary Road System, January 1, 1921				
	Built to permanent grade	Surfaced with gravel, macadam or sand clay	Hard surfaced	Earth road not built	Earth road built to permanent grade	Surfaced gravel, macadam or sand clay	Hard surfaced	Total miles primary system
Dickinson								
Dubuque	1.40							
Emmet	12.15			50.6	1.5	40.6		42.1
Fayette						26.0	3.0	79.6
Floyd					1.0	40.6		41.6
Franklin			11.42	78.7	16.3			95.0
Fremont	.54			47.2		10.8	11.0	69.0
Greene	7.41			30.2	1.0	10.0		41.2
Grundy	.50	.50		43.5	6.5			50.0
Guthrie	2.47		1.05	30.2	2.5	34.3	1.0	68.0
Hamilton				58.7	1.5			60.2
Hancock		.81		68.7	2.3	2.0		73.0
Hardin				37.2	6.2	23.0		66.4
Harrison				32.8		14.5		47.3
Henry	14.15			6.1	29.5	26.7		62.3
Howard	6.05			66.5	14.0			80.5
Humboldt		4.37		45.2	1.0			46.2
Ida				36.8	3.0	11.0		50.8
Iowa	8.54			7.9	13.5	19.5		40.9
Jackson				47.0	4.5			51.5
Jasper				69.2				69.2
Jefferson				35.7	7.0	4.5		47.2
Johnson	4.28			72.1	14.0	3.5		89.6
Jones	2.95			24.2	23.5			47.7
Keokuk				51.0	20.5			71.5
Kossuth	5.52			55.0		3.0		58.9
Lee				68.0	11.5			79.5
Linn				40.5	18.5	29.0		88.0
Louisa	5.65		1.60	85.6		3.5		89.1
Lucas				84.0	1.0	12.0	4.0	101.0
Lyon	1.33			46.5	3.0		1.3	50.8
	.94			66.5	1.8			69.0

Madison				55.5	.8			56.3
Mahaska				80.5	5.5			86.0
Marion				75.5	17.0			92.5
Marshall				29.2	21.5			50.7
Mills	2.55			48.1				48.1
Mitchell				45.5		16.5		61.0
Monona				70.1	7.0			77.1
Monroe	5.19			47.8	8.5			56.3
Montgomery	10.64			36.8	15.0			51.8
Muscatine	7.18			68.9	10.0	2.0	.4	81.3
O'Brien			1.00	52.8	20.5		1.0	74.3
Osceola	9.04			32.0	9.5			41.5
Page				57.1	2.5			59.6
Palo Alto			2.04	7.6	39.3	1.0	2.0	49.9
Plymouth				120.2				120.2
Pocahontas	5.00	1.24		11.1	27.5	24.5		63.1
Polk	18.60		6.00	6.8	33.0	37.0	10.0	86.8
Pottawattamie	2.47			135.3	9.0	2.3	.3	146.9
Poweshiek				67.0				67.0
Ringgold	9.35			40.4	11.0			51.4
Sac		17.88			49.1	43.0		92.1
Scott	12.08		1.94	24.1	23.0	23.0	2.0	72.1
Shelby	5.46			50.6				50.6
Sioux	18.50		1.91	48.6	19.0		1.8	69.4
Story				8.2	25.2	31.0		64.4
Tama				56.2	13.8			70.0
Taylor				49.6				49.6
Union				52.9				52.9
Van Buren	10.06			35.9	10.0			43.9
Wapello	8.65			38.1	6.0			44.1
Warren				82.3	3.0			85.3
Washington				82.0	8.0			90.0
Wayne				63.0				63.0
Webster	6.68	6.00		39.0	17.5	28.0		84.5
Winnebago	12.10	4.81		3.8	41.0	4.0		48.8
Winneshiek				83.4				83.4
Woodbury	1.61			61.6	63.5			125.1
Worth				35.8		24.5		60.3
Wright	13.16	.92		41.3	13.5	4.5		59.3
Total	299.45	105.19	43.35	4,738.6	1,021.4	792.3	66.8	6,619.1

Note—The condition of the Primary Road System, January 1, 1921, covers mileage under maintenance by the counties on that date. The figures showing 1920 construction includes in many instances mileage of road constructed, but not yet taken over by the counties for maintenance. The figures showing pavement constructed in 1920 in some instances include pavement laid on the streets of incorporated towns which are not a part of the Primary Road System.

SUMMARY TABLE NO. 23

Showing Cost of County Engineer—Annual Reports of County Engineers

County	Roads					Bridges					Total Cost of Engineering
	County Engineer		Assistant Engineer		Total	County Engineer		Assistant Engineer		Total	
	Salary	Expenses	Salary	Expenses		Salary	Expenses	Salary	Expenses		
Adair	\$ 400.00	\$ 190.00	\$ 140.00		\$ 730.00	\$ 1,800.00	\$ 822.25	\$ 760.00		\$ 3,422.25	\$ 4,172.25
Adams	945.82	583.09	110.00		1,638.91	945.83	583.10	110.00		1,638.93	3,277.84
Allamakee	1,000.00	500.00	400.00	174.52	2,074.52	800.00	415.80	544.99	\$ 200.00	1,960.79	4,035.31
Appanoose	1,233.75	348.70	1,836.40		3,448.85	1,016.25	367.31	369.58		1,753.14	5,201.99
Audubon	900.00	165.15	228.72		1,293.87	1,500.00	330.32	90.41		1,929.73	3,223.60
Benton	1,000.00	504.55	251.10		1,755.65	1,439.79	600.44	388.99		2,519.22	4,274.87
Black Hawk	787.50	430.10	4,455.30	1,559.11	7,232.01	1,912.50	890.06	720.00	304.04	3,766.60	10,908.61
Boone	1,124.00	539.00	2,397.00	526.00	4,586.00	1,576.00	959.75	1,091.06	219.65	3,846.46	8,432.46
Bremer	885.20	481.94	1,284.00	49.01	2,680.15	1,297.80	722.94	850.00	32.68	2,909.42	5,589.57
Buchanan	900.00	300.00	1,769.45	339.50	3,308.95	1,383.26	493.55			1,876.81	5,185.76
Buena Vista	1,976.89	961.63	2,067.24	792.55	5,798.31	411.11	145.71	385.03		1,004.09	6,802.40
Butler	1,499.43	719.40	1,200.37	64.31	3,483.51	499.81	359.70	301.23	62.24	1,167.74	4,644.25
Calhoun	2,064.55	523.00	2,053.00	389.03	5,029.58	144.50	40.38	317.68	20.00	522.56	5,552.14
Carroll	1,133.84	867.30	1,508.91	6.00	3,516.05	1,232.82	838.60	1,646.09		3,717.51	7,233.56
Cass	500.00	123.46			623.46	2,500.04	617.34	841.48		3,958.86	4,582.32
Cedar	767.28	285.63	543.14	101.99	1,698.04	1,784.90	531.64	1,859.81	558.97	4,735.32	6,433.36
Cerro Gordo	1,000.00	740.36	1,530.00	828.00	3,808.36	400.00	200.00	1,310.00	238.25	2,148.25	6,046.61
Cherokee	1,055.19	348.25	1,726.32	369.50	3,499.26	1,344.81	444.98	1,074.74	423.74	4,188.27	7,687.53
Chickasaw	477.02	332.25	1,173.93	146.34	2,129.54	477.02	332.25			855.63	3,085.16
Clarke	900.00	481.62			1,381.62	900.00	481.62	344.75		1,726.37	3,107.99
Clay	1,910.90	657.76	2,113.89		4,682.35	384.00	158.07	181.96		724.03	5,406.38
Clayton	350.96	35.42			386.38	1,800.00	572.77			2,372.77	2,759.15
Clinton	1,493.50	571.75	1,474.07	3.66	3,542.98	1,081.49	414.04	1,067.40	2.66	2,565.59	6,108.57
Crawford	1,800.00		2,015.04	510.48	4,325.52	600.00		714.41	227.56	1,541.97	5,867.49
Dallas	1,793.00	677.50	3,382.08	881.31	6,673.89	867.00	338.74	283.00	39.00	1,488.74	8,162.63
Davis	900.00		155.50		1,055.50	900.00		39.00		939.00	1,994.50
Decatur	1,500.00	289.45	902.22		2,781.67	1,500.00	289.43	990.70		2,780.13	5,561.80
Delaware	1,500.00	484.08	1,441.50		3,426.18	500.00	250.00	400.00		1,150.00	4,576.18
Des Moines	910.00		405.00		1,315.00	1,067.10		439.00		1,506.10	3,821.10
Dickinson	1,103.50	300.49	823.76	93.39	2,321.14	1,163.50	300.49	823.76	93.39	2,381.14	4,702.28
Dubuque	1,581.25	300.00	868.75		2,650.00	1,581.25	211.99	868.75	32.03	2,664.04	5,314.04
Emmet	2,034.37	364.52	3,636.79	569.44	6,605.12	444.36	135.09	737.31	176.76	1,403.52	8,008.64
Fayette	900.00	186.75	600.00	22.00	1,708.75	1,400.00	353.00	580.50	18.92	2,352.42	4,061.17
Floyd	1,425.00	857.88	1,211.15	857.89	4,351.92	975.00	193.31	200.20	100.00	1,468.51	5,820.43
Franklin	1,950.00	517.65	4,381.62	1,116.00	7,965.27	670.00	174.26	1,460.57	372.03	2,675.80	10,642.13
Frederick	700.00	200.00	300.00		1,200.00	2,000.00	409.53	668.50		3,078.13	4,278.13
Greene	800.00	527.53	2,245.80	935.94	4,508.77	1,600.00	1,089.48	1,765.00	626.80	5,081.28	9,590.05
Grundy	800.00	123.30	1,454.25	246.00	2,623.55	1,400.00	246.67	2,908.00	492.00	5,046.67	7,670.22
Guthrie	964.42	231.05	381.14	105.20	1,682.81	1,490.50	465.63	1,524.16	398.20	3,486.40	5,529.21
Hamilton	1,523.02	529.11	1,639.48	682.20	4,373.81	800.25	335.57	505.83	100.30	1,741.95	6,115.76
Hancock	1,387.70	423.92	1,608.00	212.38	3,632.00	1,012.30	308.23	391.50	19.04	1,731.07	5,363.07
Hardin	1,638.30	67.81	4,189.16	674.77	6,540.04	810.15		1,480.88	132.32	2,417.35	8,957.39
Harrison	900.00	350.00	40.00		1,290.00	900.00	447.40	80.86		1,428.00	2,718.00
Henry	485.43	126.47			611.90	1,453.31	379.42			1,835.73	2,447.63
Howard	985.36	269.84	635.16	182.09	2,072.45	765.42	184.81	414.63	60.49	1,425.35	3,497.80
Humboldt	2,000.00	600.00	1,200.00	125.00	3,925.00	800.00	113.82	206.00	27.25	1,147.07	5,072.07
Ida	800.00	200.00	350.00		1,350.00	1,700.00	427.35	144.89		2,272.15	3,622.15
Iowa	1,290.00	1,378.92	1,143.50	18.52	3,830.94	1,010.00	852.55	1,004.00	21.49	2,977.95	6,808.89
Jackson	540.00	293.85	29.40		863.23	1,080.00	587.70			1,667.70	2,530.95
Jasper	1,650.00	450.19	768.00	142.88	3,011.07	1,100.00	300.00	512.00	95.25	2,007.25	5,018.32
Jefferson	1,074.58	105.33	533.11		1,713.02	1,074.59	210.83	533.12		1,818.37	3,531.39
Johnson	1,170.00	1,210.32	5,021.56	116.93	7,518.81	2,430.00	605.16	2,409.30	115.57	5,556.03	13,074.84
Jones	536.18	199.86	29.15		765.19	1,187.50	565.05	10.70		1,703.25	2,558.44
Keokuk	584.86	51.17	171.18	11.62	819.87	1,169.78	32.28	345.41		1,547.47	2,366.84
Kossuth	2,400.00	2,520.30	6,718.33	400.08	12,068.71	600.00	639.00	1,679.00	98.00	3,007.00	15,045.71
Lee	775.00	250.00	450.00		1,475.00	1,675.00	540.64	990.00		3,205.64	4,680.64
Linn	1,350.00	747.18	5,000.00	300.00	7,397.18	1,350.00	747.17	294.02	27.17	2,418.36	9,815.54
Louisia	750.00	349.10	389.93		1,469.03	750.00	638.00	240.65		1,629.65	3,089.68
Lucas	525.00	150.00	50.00		725.00	1,575.00	450.00	150.00		2,175.00	2,900.00
Lyon	1,000.00	244.00	1,176.00	128.49	2,548.49	1,400.00	370.00	1,177.38	129.00	3,076.36	5,624.85
Madison	972.69	130.05	436.50		1,539.24	972.68	130.06	456.50		1,559.24	3,078.48
Mahaska	1,420.00	351.00	212.15	70.00	2,063.15	1,380.00	320.79	147.00	24.85	1,872.64	3,925.79
Marion	1,476.00	139.09	347.01	9.40	1,971.50	1,476.32	99.59	1,092.37	75.20	2,743.58	4,715.08
Marshall	1,771.34	14.80	3,328.74	35.54	5,150.42	1,578.68	11.54	2,980.00		4,570.22	9,730.64
Mills	1,200.00	472.10	350.00		2,022.10	1,200.00	472.15	350.00		2,022.15	4,044.25
Mitchell	1,200.00	510.65	1,307.44		3,018.09	1,200.00	510.65			1,710.65	4,728.74
Monona	1,459.97	841.48	430.42		2,731.87	1,374.34	760.99	645.62		2,780.95	5,512.82
Monroe	1,725.00	11.01	866.68		2,602.69	575.00	39.40	288.89		903.29	3,505.98
Montgomery	1,000.00	125.00	1,242.30	16.95	2,384.15	2,300.00	232.81	1,500.00		4,032.86	6,417.01
Muscatine	1,400.00	33.00	1,518.90	133.66	3,065.56	1,690.00	32.01	2,863.39	130.00	4,625.40	7,710.96
O'Brien	1,527.32	820.17	2,541.25		4,898.74	1,000.00	830.17	2,000.00		3,830.17	8,728.91
Osceola	1,050.00	350.00	2,000.00	394.12	3,794.12	1,700.00	621.45	1,519.30	200.00	4,340.75	8,134.87
Pago	1,000.00	175.00	500.00		1,675.00	1,400.00	243.66	724.35		2,368.01	4,043.01
Palo Alto	2,247.70	385.74	813.65	93.40	3,540.49	568.80	97.56	105.50	10.90	782.76	4,323.25
Plymouth	1,506.67	461.31	2,687.11	294.87	4,949.96	900.00	500.00	607.63		2,007.63	6,957.59
Pocahontas	1,928.00	523.93	4,839.18	1,028.10	8,319.21	1,026.70	194.55	1,948.57	650.80	3,820.62	12,139.83
Polk	1,872.72	580.11	15,434.36	955.99	18,843.18	1,427.28	436.44	4,891.57	434.05	7,189.34	26,032.52
Pottawattamie	1,000.00				1,000.00	2,000.00				2,000.00	3,000.00
Poweshiek	900.00	200.00			1,100.00	1,455.00	497.44	184.00		2,136.44	3,236.44

SUMMARY TABLE NO. 23—Continued

County	Roads					Bridges					Total Cost of Engineering
	County Engineer		Assistant Engineer		Total	County Engineer		Assistant Engineer		Total	
	Salary	Expenses	Salary	Expenses		Salary	Expenses	Salary	Expenses		
Ringgold	1,523.94	1,173.76	370.14		3,067.84	761.96	588.87	157.50		1,506.33	4,574.17
Sac	1,015.66	329.88	1,218.36	177.50	2,741.40	1,553.21	551.82	654.06	38.00	2,797.09	5,538.49
Scott	1,837.46		1,864.40		3,701.86	1,762.54		5,245.78		7,008.32	10,710.18
Shelby	466.89	265.97	25.73		758.59	1,933.11	804.75	816.35		3,554.21	4,312.80
Sioux	1,000.00	250.00	1,737.53	262.86	3,250.39	1,670.00	400.00	650.00	100.00	2,820.00	6,070.39
Story	3,000.00	1,141.02	1,547.70	190.23	5,878.95	500.00		839.32	1,067.87	11.45	2,418.64
Tama	1,018.72	664.46	263.00		1,949.18	1,018.73	664.45	266.00		1,949.18	3,898.36
Taylor	816.00	254.93	246.30		1,317.23	1,225.00		369.45		1,975.85	3,293.08
Union	963.68	48.23	545.00	17.15	1,577.06	1,000.00	48.20			1,048.20	2,625.26
Van Buren	935.85	510.33			1,466.18	1,000.00	510.33	25.00		1,535.33	2,981.51
Wapello	570.00	686.00	268.00		1,524.00	1,120.00	1,370.41	536.25		3,026.66	4,550.66
Warren	500.00	70.00	300.00		870.00	1,900.00	302.80	1,200.00		3,402.80	4,272.80
Washington	1,725.82	768.74	472.54		2,967.10	892.90		384.37		1,483.53	4,450.63
Wayne	962.64	627.79	113.03	30.37	1,733.83	962.65	627.80	113.02	30.37	1,733.84	3,467.67
Webster	1,920.00	574.25	4,391.50	764.52	7,650.27	480.00	409.04	986.00	163.38	2,088.42	9,688.09
Winnebago	1,506.25	300.00	1,715.65	474.34	3,996.24	300.00	140.66	300.00	45.00	785.66	4,781.90
Winneshiek	600.00	400.00			1,000.00	1,200.00	700.00	2,000.00	169.33	4,069.33	5,069.33
Woodbury	1,500.00	531.20	5,912.92	1,749.01	9,693.13	1,500.00	557.80	1,477.16	235.69	3,770.65	13,463.78
Worth	1,440.00	496.10	204.12		2,139.22	900.00	330.04	136.08		1,426.12	3,565.34
Wright	1,808.40	602.00	4,316.60		6,727.00	303.04	134.33	1,678.40		2,115.77	8,842.77
Total	\$120,054.52	\$41,097.17	\$148,070.81	\$20,181.14	\$330,303.64	\$116,607.88	\$40,406.62	\$8,742.07	\$7,855.80	\$247,612.37	\$577,916.01

SUMMARY TABLE NO. 24

Financial Statement—Annual Reports of County Engineers

County	County Bridge Fund				County Motor Vehicle Fund					
	Balance or overdraft Jan. 1, 1920	Receipts 1920	Total	Disbursements 1920	Balance or overdraft Jan. 1, 1921	Balance or overdraft Jan. 1, 1920	Receipts 1920	Total	Disbursements 1920	Balance or overdraft Jan. 1, 1921
Adair	\$ 717.02	\$ 73,358.00	\$ 74,075.02	\$ 77,429.29	\$ *3,354.27	\$ 1,573.11	\$ 4,660.00	\$ 6,233.11	\$ 5,396.65	\$ 836.46
Adams	3,843.85	31,064.98	34,908.83	25,745.90	9,162.93	2,796.00		2,796.00	2,796.00	2,481.58
Allamakee	2,565.73	49,356.61	51,922.34	51,465.69	456.65	426.37	4,014.71	4,441.08	4,441.08	314.42
Appanoose	11,085.88	53,398.86	64,484.74	56,806.57	7,678.17	19,248.29		19,248.29	19,248.29	
Audubon	1,758.96	56,063.86	57,822.82	57,326.32	496.50			2,796.00	2,796.00	
Benton	892.74	92,391.34	92,784.08	94,225.01	*1,440.93	6,590.89	18,411.31	25,002.20	17,560.67	7,441.53
Black Hawk	4,782.46	141,733.43	146,515.89	140,148.53	6,367.36		4,194.00	4,194.00	4,194.00	
Boone	*3,005.02	126,530.77	123,525.75	127,657.36	*4,131.61					
Bremer	2,831.18	96,496.56	99,327.74	93,078.82	6,248.92	2,819.81	3,262.00	6,081.81	3,218.96	2,862.85
Buchanan	*1,827.08	65,815.71	63,988.63	86,716.30	*22,727.67	20.25	3,429.50	3,449.75	16.75	3,433.00
Buena Vista	1,379.79	45,123.21	46,503.00	31,607.83	14,895.17	*58.49	27,941.33	27,882.84	24,521.75	3,361.09
Butler	8,465.41	65,176.44	73,641.85	52,723.35	20,918.50	18,365.84	10,076.48	28,442.32	27,824.72	617.60
Calhoun	21,333.20	54,111.42	75,444.62	35,773.80	39,670.82	7,347.46	12,944.48	20,291.94	16,964.40	3,327.54
Carroll	*1,256.37	73,720.14	72,463.77	80,423.88	*16,960.11			3,455.61	3,455.61	
Cass	1,048.27	100,026.40	161,074.67	156,965.47	4,079.20	294.72	3,568.82	3,863.54	3,863.54	
Cedar	22,456.80	62,279.95	84,736.75	85,217.68	*480.93	*3.43	4,194.00	4,190.57	4,190.57	
Cerro Gordo	6,874.36	111,126.60	118,000.96	115,204.69	2,796.27					
Cherokee	4,728.69	163,553.33	168,282.02	165,219.81	3,067.18	3,645.79	3,728.00	7,373.79		7,373.79
Chickasaw	*387.80	50,651.69	50,263.89	51,284.35	*1,020.46					
Clarke	763.20	34,164.35	34,927.55	30,354.06	4,563.47	10,351.92	12,504.55	22,856.47	16,912.17	5,944.30
Clay	*9,257.32	47,314.46	38,056.94	44,511.39	*6,454.45			3,728.00	3,728.00	
Clayton	9,853.23	83,807.83	93,751.06	83,233.10	10,517.96	7,942.88	5,126.00	13,068.88	2,794.73	10,274.15
Clinton	*10,228.98	64,466.16	54,237.18	59,326.11	*5,088.93	22,817.52	4,194.00	27,011.52	23,729.13	3,282.39
Crawford	3,102.54	280,132.46	263,235.00	253,235.18	9,999.82		4,808.00	4,808.00		
Dallas	9,688.21	58,327.26	68,025.47	61,944.82	6,080.65					
Davis	*1,066.56	35,310.53	34,243.97	31,531.35	2,712.62	874.59	3,498.70	4,373.29	3,731.31	641.98
Decatur	5,624.39	77,206.94	82,831.33	88,806.61	*5,975.28	10,350.92	21,518.73	31,869.65	31,720.95	148.70

SUMMARY TABLE NO. 24—Continued

County Bridge Fund

County Motor Vehicle Fund

County	County Bridge Fund				County Motor Vehicle Fund					
	Balance or overdraft Jan. 1, 1920	Receipts 1920	Total	Disbursements 1920	Balance or overdraft Jan. 1, 1921	Balance or overdraft Jan. 1, 1920	Receipts 1920	Total	Disbursements 1920	Balance or overdraft Jan. 1, 1921
Delaware	163.82	45,973.73	46,137.55	46,007.50	130.05	10,555.19	3,560.56	14,115.75	9,318.36	4,797.39
Des Moines	*7,163.77	39,050.60	31,886.83	25,859.47	6,027.36	17,941.81	9,753.00	27,694.81	20,639.63	7,055.18
Dickinson	8,795.14	33,873.05	42,668.19	20,575.17	22,063.02	1,970.73		1,970.73		1,970.73
Dubuque	*34,285.91	68,812.51	34,526.60	33,240.24	1,286.36					
Emmet	6,631.55	25,805.34	32,436.89	30,143.53	2,293.36		4,377.08	4,377.08	4,377.08	
Fayette	3,809.12	91,792.32	95,601.44	98,894.23	*3,292.79		4,600.00	20,497.20	20,497.20	
Floyd	*22,632.82	92,128.34	69,495.52	69,328.99	166.53		8,006.78	10,572.49	10,572.49	
Franklin	*1,305.55	68,433.33	67,127.78	70,181.62	*3,053.84		11,742.25	4,194.00	15,076.25	885.05
Fremont	*1,303.51	163,009.01	162,305.50	124,566.13	37,739.37	4,653.32	2,750.41	7,403.73	7,403.73	2.24
Greene	22,153.52	256,447.45	278,600.97	280,110.50	18,490.47					
Grundy	2,029.10	239,190.76	241,219.86	227,519.57	13,700.29		1,968.01	5,230.01	2,891.98	2,338.03
Guthrie	4,697.38	126,315.49	131,012.87	131,991.32	*978.45		1,427.09	16,297.19	11,966.98	4,300.21
Hamilton	3,650.34	106,987.58	110,637.92	107,331.04	3,306.88					
Hancock	6,727.81	43,512.73	50,240.54	30,727.60	19,512.94		261.35	3,728.00	3,989.35	
Hardin	7,420.09	179,697.85	187,117.94	159,756.12	27,361.82		14,020.98	3,568.00	17,588.98	
Harrison	*4,759.10	108,815.17	104,056.07	103,416.51	639.46		11,232.49	4,630.00	15,862.49	3,075.56
Henry	9,563.08	56,736.78	66,299.83	61,293.20	5,036.66		7,522.38	8,203.93	15,726.31	
Howard	*12,987.87	50,800.94	37,813.07	38,436.03	*622.96		8,092.59	5,433.60	13,436.19	5,634.66
Humboldt	24,734.07	56,306.45	81,040.52	43,683.42	37,357.10					
Ida	1,327.42	146,897.53	148,224.95	147,577.77	647.18		277.22	2,796.00	3,073.22	
Iowa	*4,123.35	175,492.10	171,368.75	163,730.05	7,638.70		4,145.41	4,194.60	8,337.41	
Jackson	190.98	68,284.56	68,475.54	47,975.67	20,499.87		11,372.98	5,582.26	16,955.24	
Jasper	1,147.22	150,387.22	151,534.44	149,312.91	2,221.53		4,432.98	19,204.85	6,561.85	12,643.00
Jefferson	*1,012.08	79,339.63	77,427.55	76,795.98	630.57		17,862.71	2,796.00	20,658.71	8,026.19
Johnson	*7,982.37	90,231.96	82,299.59	82,299.59	19,060.95		19,734.79	8,796.24	28,531.03	
Jones	667.10	66,401.05	67,068.15	65,921.43	1,146.72		2,123.15	3,761.30	5,884.45	
Keokuk	18,001.26	55,069.63	73,070.89	68,456.77	4,614.12					
Kossuth	120.48	87,500.00	87,620.48	99,167.49	*11,547.01		21,560.61	6,532.40	28,093.01	158.13
Lee	*1,306.10	59,881.09	49,374.99	46,414.75	2,960.24		4,539.18	3,572.14	8,111.32	379.70
Linn	4,028.10	113,447.97	117,476.17	106,218.71	12,257.46		4,236.00	4,236.00	4,236.00	
Louis	8,700.01	83,386.60	92,086.70	103,107.22	*11,021.22					
Lucas	*1,275.52	89,358.64	88,080.12	83,395.15	4,684.97					
Lyon	906.95	58,081.67	59,078.62	59,156.06	*77.44		4,121.04	4,298.00	8,419.04	8,315.04
Madison	*7,247.25	59,745.83	52,498.58	51,469.54	1,029.04					104.00
Mahaska	17,640.87	56,962.31	74,593.18	56,201.09	18,392.09		103.82	4,847.00	4,950.82	
Marion	16,731.78	91,224.81	107,956.59	97,980.01	9,970.58		18,591.37	18,591.37	16,291.45	2,299.92
Marshall	*1,334.36	137,480.72	136,146.36	137,967.09	*1,820.73		7,688.38	13,000.55	20,748.93	3,373.54
Mills	61,631.13	71,647.63	133,278.76	105,588.16	27,690.60		33.08	33.08	33.08	
Mitchell	516.23	105,665.78	106,182.01	101,387.39	4,794.62		10,321.87	18,887.42	29,209.29	1,443.40
Monona	13,776.32	73,534.17	87,310.49	77,636.73	9,673.76		142.67	4,371.93	4,514.60	*55.97
Monroe	5,006.92	32,635.51	38,242.43	35,922.00	2,320.43		6,463.39	3,284.88	9,748.27	
Montgomery	3,251.53	190,649.44	193,900.97	193,231.77	669.20		17,476.03	2,508.30	20,074.33	9,006.45
Muscatine	2,026.00	43,744.87	45,770.87	45,726.98	43.89			3,495.00	3,495.00	
O'Brien	4,630.70	119,900.02	124,530.72	118,730.02	5,800.70		1,280.77	4,104.56	5,385.33	
Oseola	*188.53	120,544.00	120,355.47	121,133.28	*777.81		15,227.16	2,796.00	18,023.16	12,111.70
Page	*12,548.88	79,457.66	66,908.78	81,883.07	*14,974.29			3,728.00	3,728.00	
Palo Alto	3,048.96	80,282.47	92,331.42	78,627.36	13,704.06		23,631.28	3,728.00	27,359.28	4,423.56
Plymouth	6,443.91	114,312.86	120,756.77	86,551.11	34,205.66		26,171.30	5,359.93	31,531.23	
Poehontas	3,255.42	52,401.24	55,656.66	59,059.50	*3,402.84					
Polk	441.71	177,063.04	177,504.75	185,912.50	*8,407.75		20,197.87	5,126.00	25,323.87	
Pottawattamie	3,465.47	102,453.06	105,918.53	103,505.13	2,413.40		*7,415.70	7,415.70	7,415.70	
Poweshiek	282.49	81,922.95	82,205.44	78,574.47	3,630.97		2,717.18	3,739.01	6,456.19	
Ringgold	*241.21	85,820.34	85,579.13	90,794.51	*5,215.38		1,803.96	4,194.00	5,997.96	*16.70
Sac	3,539.33	86,541.14	90,080.47	88,776.83	3,303.64		7,587.44	3,728.00	11,315.44	
Seott	8,444.47	47,908.58	56,353.05	73,041.62	*16,688.57		279.02	3,728.00	4,007.02	
Shelby	820.43	102,761.76	103,582.19	90,125.70	13,456.49		10,545.22	3,355.20	13,900.42	
Sioux	27,053.84	73,584.19	100,638.03	85,523.89	15,114.14		44,469.02	5,442.04	49,911.06	13,670.26
Story	4,811.79	73,797.73	78,609.52	77,592.88	1,016.64		1,254.40	14,495.33	15,749.73	1,103.07
Tama	*7,915.17	99,570.90	91,657.73	68,137.34	23,520.39		3,346.06	4,803.00	8,239.06	
Taylor	12,666.54	59,712.52	72,379.06	66,926.95	5,452.11		7,783.25	3,961.00	11,744.25	3,460.73
Union	3,928.22	35,725.35	39,653.57	42,243.63	*2,590.06		219.78	3,264.48	3,484.26	
Van Buren	6,698.16	42,963.66	49,661.82	47,770.64	1,891.18		5,625.99	3,262.00	8,887.99	
Wapello	*289.70	39,280.70	39,000.00	46,706.61	*7,706.61		*3,269.47	3,381.34	111.87	
Warren	7,466.61	68,734.76	76,230.37	64,341.52	11,888.85					
Washington	10,881.32	58,853.22	69,734.54	67,342.95	2,391.59					
Wayne	6,073.28	63,826.59	69,899.87	50,672.67	19,227.20		10,551.75	10,551.75	10,551.75	
Webster	*2,561.92	61,176.95	58,615.03	56,402.68	2,212.35		*166.12	5,032.80	4,896.68	
Winnebago	5,457.52	31,196.10	36,653.62	18,082.26	18,571.36		7,023.94	2,796.00	9,819.94	
Winneshiek	2,238.18	73,055.30	75,293.48	78,784.82	*3,491.34		*1,981.45	4,531.77	2,550.32	432.76
Woodbury	*1,358.39	90,828.81	89,470.42	126,125.78	*36,655.36		18,716.27	5,008.68	24,324.95	2,117.56
Worth	*4,418.29	30,301.00	25,782.71	22,219.08	3,563.63					2,578.61
Wright	5,853.04	71,457.76	77,310.80	64,653.42	12,657.38			3,774.60	3,774.60	
Total	\$41,159.60	\$8,499,597.29	\$8,840,756.89	\$8,350,864.86	\$489,892.03	\$73,258.61	\$ 464,927.74	\$1,038,186.35	\$ 877,222.90	\$ 100,933.36

*Overdrawn.

SUMMARY TABLE NO. 25
Financial Statement—Annual Reports of County Engineers

County Road Cash Fund

Township Road, Drag and Drainage Funds

County	County Road Cash Fund				Township Road, Drag and Drainage Funds					
	Balance or overdrft Jan. 1, 1920	Receipts 1920	Total	Disbursements 1920	Balance or overdrft Jan. 1, 1921	Balance or overdrft Jan. 1, 1920	Receipts 1920	Total	Disbursements 1920	Balance or overdrft Jan. 1, 1921
Adair.....	\$ 831.17	\$ 61,082.25	\$ 61,913.42	\$ 57,416.11	\$ 4,497.31	\$ 6,472.85	\$ 41,348.73	\$ 47,821.58	\$ 41,223.92	\$ 6,597.66
Adams.....	15,880.24	31,577.55	47,457.79	42,422.28	5,035.51	3,978.31	28,548.32	32,526.63	32,388.79	137.84
Allamakee.....	*581.46	61,694.38	61,112.92	79,698.47	*18,565.55	788.22	38,890.01	39,687.23	37,977.06	1,710.17
Appanoose.....	*572.79	53,012.08	52,439.29	52,541.63	*102.34	4,881.67	35,846.91	40,728.58	37,902.00	2,826.58
Audubon.....	15,945.65	36,479.35	52,425.00	24,493.17	27,931.83	6,781.96	33,484.29	40,266.25	36,840.57	3,425.68
Benton.....	108.93	67,821.77	67,930.70	66,553.72	1,376.98	4,298.53	58,978.19	63,276.72	60,985.84	2,290.88
Black Hawk.....	620.02	94,420.56	95,040.58	78,879.59	16,160.99	12,929.64	43,281.47	56,211.11	49,615.19	6,595.92
Boone.....	*16,109.33	182,678.34	166,569.01	121,637.05	44,931.96	13,117.76	76,330.78	89,448.54	79,983.53	9,465.01
Bremer.....	*42.39	49,490.89	49,448.50	45,750.24	3,698.26	1,937.47	40,372.39	42,309.86	37,043.80	5,266.06
Buchanan.....	*16,021.79	54,376.17	38,354.38	57,854.68	*19,500.30	3,918.09	40,566.28	44,484.97	42,927.11	1,557.86
Buena Vista.....	1,653.34	64,208.53	65,861.87	65,439.38	422.49	21,223.25	50,727.78	71,061.03	64,912.50	7,038.53
Butler.....	*145.36	44,618.17	44,472.81	43,417.13	1,055.68	8,502.47	50,275.90	58,777.77	52,771.73	6,006.04
Calhoun.....	4,062.39	50,686.05	54,748.35	51,678.97	3,071.38	32,718.05	65,240.53	97,968.58	62,223.51	35,735.07
Carroll.....	*30,177.35	50,832.34	20,654.99	55,784.63	*35,129.64	10,519.09	43,665.67	54,184.76	50,957.25	3,227.51
Cass.....	*3,626.70	74,859.19	71,232.40	62,693.78	8,538.71	10,016.59	51,654.38	61,670.97	50,897.28	10,773.69
Cedar.....	1,277.85	43,004.79	53,282.64	50,338.43	2,944.21	7,352.76	63,668.26	76,021.02	65,282.15	738.87
Cerro Gordo.....	1,899.35	67,668.34	69,567.69	56,525.59	13,042.10	18,333.90	77,356.97	95,690.87	76,311.62	19,379.25
Cherokee.....	*2,890.90	80,249.28	77,358.38	79,243.30	*1,884.92	14,977.36	52,803.36	67,780.72	64,243.15	3,537.57
Chickasaw.....	2,294.15	37,859.47	40,093.62	36,878.09	3,185.53	3,296.71	37,437.33	40,734.01	39,691.90	1,042.14
Clarke.....	319.94	30,301.54	40,621.48	32,560.08	8,061.45	2,896.48	30,681.13	33,567.61	30,666.45	2,901.16
Clay.....	26,392.86	53,305.85	79,698.71	108,936.65	*29,237.94	18,200.84	52,166.99	70,367.83	47,236.77	23,131.06
Clayton.....	1,706.85	47,033.69	48,740.54	40,554.84	8,185.70	7,149.79	51,554.16	58,703.95	53,005.89	5,698.06
Clinton.....	*26,564.17	61,588.28	35,024.11	31,132.65	3,891.46	7,264.61	44,065.98	51,330.59	63,641.15	*12,310.56
Crawford.....	19,697.71	175,928.80	195,226.61	157,716.13	7,510.38	1,680.10	74,514.14	76,300.24	76,351.59	*151.35
Dallas.....	*4,141.35	63,518.49	59,377.14	47,008.79	12,368.35	19,122.08	92,238.41	111,361.39	89,397.58	21,963.81
Davis.....	7,766.18	33,839.58	41,605.76	37,324.67	4,271.19	6,515.76	40,479.36	43,965.12	44,491.91	2,603.21
Decatur.....	*1,795.21	31,639.44	29,774.23	22,754.19	7,020.04	1,947.46	12,944.34	13,291.80	12,131.75	1,170.05
Delaware.....	153.01	88,239.68	88,391.69	88,110.24	281.45	2,973.94	43,679.01	45,732.95	44,692.40	1,000.55

Des Moines.....	2,047.65	29,108.18	31,155.23	19,423.64	11,731.59	4,071.13	41,463.68	45,534.81	40,101.55	5,433.26
Dickinson.....	1,971.31	66,525.92	68,497.23	81,627.78	*13,130.55	19,770.72	49,790.57	69,561.29	44,232.29	25,329.00
Dubuque.....	*36,657.73	49,794.53	13,136.80	52,179.26	*39,042.46	4,278.75	18,858.39	23,137.14	17,576.62	5,560.52
Emmet.....	47.17	94,062.32	94,109.49	94,753.67	*644.18	16,549.11	46,209.50	62,818.61	49,928.70	12,889.91
Fayette.....	900.58	79,273.90	80,174.48	77,064.70	3,109.78	8,541.66	59,916.91	65,458.57	60,435.78	5,022.79
Floyd.....	13,149.51	62,391.07	75,540.58	101,712.81	*26,172.23	2,716.92	56,450.59	59,167.51	53,216.54	5,950.97
Franklin.....	*6,685.92	99,397.81	92,711.89	92,444.98	296.91	10,317.37	46,596.98	56,914.35	44,483.58	12,430.77
Fremont.....	2,124.41	55,484.09	57,618.50	56,749.92	868.58	1,160.48	37,822.42	38,982.90	33,394.54	5,588.36
Greene.....	*9,922.08	67,035.61	57,113.50	57,205.03	*91.50	18,001.07	78,883.87	96,884.94	90,406.39	17,478.55
Grundy.....	7,653.98	68,946.90	76,600.88	72,419.57	4,181.31	7,281.79	46,061.11	53,942.90	49,232.76	4,710.14
Guthrie.....	*2,735.48	64,882.32	62,146.84	63,094.04	*947.20	6,344.13	31,615.33	37,959.46	34,391.36	3,568.10
Hamilton.....	11,933.29	191,286.42	203,219.71	188,948.26	14,271.45	33,375.86	53,692.79	67,038.65	59,818.65	30,229.00
Hancock.....	304.85	41,527.07	41,731.92	43,719.37	*1,987.45	10,890.98	55,941.35	67,832.33	56,769.26	10,963.07
Hardin.....	*1,084.84	58,846.72	57,761.88	54,154.34	3,607.54	11,128.47	62,811.42	73,939.89	61,608.60	12,331.29
Harrison.....	971.23	82,583.48	83,554.71	77,406.62	6,148.09	9,519.48	52,389.58	61,909.06	51,134.39	10,774.67
Henry.....	154.13	33,271.17	33,425.30	31,811.04	1,614.26	5,429.26	35,977.31	41,406.57	39,907.40	1,509.17
Howard.....	*12,777.32	53,543.56	40,766.24	55,263.02	*14,496.78	4,799.46	33,234.43	38,033.89	34,683.41	3,350.48
Humboldt.....	6,407.70	59,162.19	65,569.89	72,673.55	*7,103.66	10,781.19	43,759.26	54,540.45	40,678.07	13,862.38
Ida.....	3,490.12	49,960.19	53,459.31	50,868.80	2,590.51	11,298.58	27,560.05	38,558.63	35,378.40	480.23
Iowa.....	*4,222.09	84,342.37	80,130.28	96,964.40	*16,844.12	6,890.96	59,601.11	66,462.07	65,353.61	1,108.46
Jackson.....	115.56	35,018.37	35,133.93	26,422.01	8,711.92	2,752.76	48,249.37	51,002.13	46,383.26	4,618.87
Jasper.....	1,459.15	94,253.63	95,712.81	90,389.17	5,322.64	6,775.93	83,097.36	89,873.32	79,107.04	10,766.28
Jefferson.....	*1,959.32	30,108.45	28,149.13	27,302.20	783.93	3,620.31	52,264.75	55,885.06	50,501.94	5,383.12
Johnson.....	*19,239.29	101,615.76	82,385.47	92,073.30	*9,687.83	6,595.45	52,610.29	59,295.74	56,452.62	2,753.12
Jones.....	926.12	35,646.54	36,572.66	35,924.50	648.16	3,103.48	37,300.08	40,463.56	39,597.52	806.04
Keokuk.....	9,694.08	42,183.67	51,877.75	50,878.70	999.06	9,039.40	45,065.25	55,604.65	48,100.40	7,504.25
Kossuth.....	2,660.68	181,935.11	184,595.79	181,737.08	2,868.71	24,164.82	90,151.69	114,315.51	96,433.99	17,881.52
Lee.....	6,462.85	51,329.48	57,792.33	55,751.61	2,040.72	12,236.88	35,072.10	47,308.98	33,198.38	9,110.60
Linn.....	*463.99	148,168.82	147,704.83	132,981.05	14,723.78	6,635.08	66,952.26	73,587.34	70,174.08	3,413.26
Louisia.....	19,150.12	29,557.82	48,707.94	43,852.25	4,855.69	2,200.95	40,465.54	42,606.49	39,089.24	3,517.25
Lucas.....	6,222.93	39,793.36	45,989.29	45,514.05	475.24	856.81	29,053.25	29,910.06	31,020.86	*1,110.80
Lyon.....	*16,989.45	77,796.10	60,806.65	60,485.68	320.97	20,437.81	37,289.71	57,727.52	46,257.42	11,470.10
Madison.....	*8,484.99	38,585.58	30,100.59	40,003.31	*9,902.72	3,910.25	43,613.90	47,524.15	45,474.75	2,049.40
Mahaska.....	*3,605.07	42,391.58	38,896.51	35,578.70	3,117.81	4,812.61	58,422.16	63,234.77	58,950.27	4,284.50
Marion.....	*6,275.95	74,096.60	67,820.65	62,520.17	5,300.48	6,879.33	46,633.70	53,543.03	52,390.34	1,152.69
Marshall.....	*145.94	196,470.31	196,324.37	204,235.78	*7,911.41	9,970.22	59,561.48	69,531.80	61,489.85	8,041.95
Mills.....	30,499.51	59,905.14	90,404.95	64,483.78	25,921.17	7,588.62	39,205.26	46,793.88	46,350.67	443.21
Mitchell.....	*1,298.56	68,914.49	67,615.93	68,505.10	*979.17	6,400.44	46,430.10	52,830.54	45,769.21	7,070.33
Monona.....	*3,929.64	42,490.24	38,560.69	62,346.22	*23,785.62	15,622.11	34,716.20	50,338.31	35,726.09	14,612.22
Monroe.....	*2,593.09	22,091.73	19,498.78	18,022.43	1,476.39	2,928.89	34,449.97	37,378.86	35,557.57	1,821.29
Montgomery.....	525.17	43,058.27	43,583.44	42,356.47	6,229.97	4,457.21	33,565.70	38,022.91	45,034.32	*7,011.41
Muscatine.....	1,580.76	46,247.75	47,828.51	45,299.04	2,529.47	9,349.27	34,502.47	43,851.74	36,080.06	7,772.68
O'Brien.....	3,168.81	49,935.02	53,103.83	51,907.24	1,196.59	12,056.29	50,290.09	62,346.38	49,941.51	12,404.87
Osceola.....	12,871.76	25,579.27	38,451.03	47,235.88	*8,784.85	7,403.14	32,117.17	39,520.31	30,329.34	9,190.97
Page.....	*6,906.15	41,941.10	34,944.95	39,342.10	*4,397.15	14,409.28	47,211.08	61,620.36	47,868.38	13,751.98
Palo Alto.....	24,638.18	40,769.82	65,408.00	34,988.66	30,419.34	10,659.27	15,207.40	25,866.67	19,450.28	6,416.39
Plymouth.....	5,538.11	89,408.60	94,946.71	94,280.96	656.78	13,528.31	36,551.49	50,079.80	43,118.96	6,960.84
Pocahontas.....	*6,396.88	137,382.01	131,015.13	115,417.69	15,597.44	75,547.09	105,801.09	77,338.16	28,162.84	

SUMMARY TABLE NO. 25—Continued

County	County Road Cash Fund				Township Road, Drag and Drainage Funds					
	Balance or overdraft Jan. 1, 1920	Receipts 1920	Total	Disbursements 1920	Balance or overdraft Jan. 1, 1921	Balance or overdraft Jan. 1, 1920	Receipts 1920	Total	Disbursements 1920	Balance or overdraft Jan. 1, 1921
Polk	35,356.94	378,421.79	413,778.73	381,806.90	31,971.83	8,190.60	36,823.69	45,014.29	35,124.89	8,889.40
Pottawattamie	*1,791.50	61,532.89	59,741.39	57,925.89	1,815.50	13,314.57	57,951.63	71,266.20	62,009.50	9,256.70
Poweshiek	*335.14	50,669.86	50,334.72	42,893.51	7,441.21	1,834.58	41,928.73	43,793.31	41,609.47	2,183.84
Ringgold	256.39	38,997.94	39,254.33	40,325.94	*1,072.61	9,483.43	21,800.48	31,373.91	24,486.75	6,887.16
Sac	17,748.90	84,909.77	102,658.67	95,855.98	6,802.69	19,599.13	71,367.80	90,966.93	73,057.06	17,909.87
Scott	*12,863.13	71,057.07	58,193.94	57,458.34	735.60	15,316.97	52,938.42	68,255.39	56,958.11	11,297.28
Shelby	313.03	41,570.69	41,883.72	36,221.35	5,662.37	13,194.33	53,185.62	66,379.95	69,104.35	6,275.60
Sioux	*9,214.86	51,202.14	42,047.28	56,218.68	*14,171.40	25,263.14	60,322.32	85,585.46	75,477.62	10,107.84
Story	1,173.71	191,053.80	192,227.51	254,393.00	*62,165.49	16,817.12	53,584.69	70,701.81	59,993.96	11,007.85
Tama	*2,272.98	51,054.60	48,781.62	53,293.23	*4,514.61	4,641.30	73,789.88	78,422.18	76,761.65	1,660.53
Taylor	4,321.12	27,203.15	31,524.27	29,726.77	1,797.50	18,204.17	41,277.69	59,481.86	52,674.52	6,807.34
Union	1,964.76	36,271.40	38,236.16	42,721.29	*4,485.13	5,742.40	21,633.53	27,375.93	25,024.55	2,351.38
Van Buren	3,270.23	25,422.30	28,692.53	24,148.40	4,544.13	4,699.14	32,948.41	37,647.55	33,461.39	4,186.16
Wapello	*317.87	24,842.23	24,524.36	43,200.56	*18,676.20	2,896.84	33,909.61	36,896.45	34,368.90	2,437.55
Warren	39,989.19	39,332.73	79,321.92	36,186.49	43,135.43	8,788.71	35,041.84	44,830.55	40,092.61	4,737.94
Washington	5,140.75	57,411.74	62,552.49	61,902.83	649.63	3,893.21	45,031.50	48,954.71	48,555.57	399.14
Wayne	1,343.49	86,303.13	87,646.62	81,972.75	5,673.87	1,662.82	26,509.28	28,172.10	27,135.15	1,036.95
Webster	*3,782.24	88,414.73	84,632.49	94,246.52	9,614.03	24,880.53	92,585.14	117,474.67	90,598.26	26,876.41
Winnebago	*3,129.30	100,712.50	97,588.20	124,131.48	*26,548.28	18,029.20	50,033.36	68,062.56	47,469.86	20,601.70
Winneshiek	*2,326.72	58,165.50	55,838.78	60,824.20	*4,985.42	1,915.13	40,768.18	42,683.31	39,641.18	3,042.13
Woodbury	*8,521.29	114,248.60	105,727.40	126,098.99	*20,369.59	24,531.31	72,134.83	96,766.17	85,176.17	11,590.00
Worth	*20,703.89	51,894.06	31,190.17	41,718.62	*10,528.45	6,715.40	34,079.78	40,795.18	34,138.84	6,656.34
Wright	*6,569.16	69,886.64	63,317.48	72,883.23	*9,565.75	22,135.42	60,414.58	82,550.00	61,723.66	20,826.34
Total	\$ 70,064.91	\$6,835,156.67	\$6,905,221.58	\$6,902,029.62	\$ 3,191.96	\$686,548.02	\$4,731,015.05	\$5,717,563.07	\$4,960,397.73	\$ 750,965.34

*Overdrawn

SUMMARY TABLE NO. 26

Bonded Indebtedness of Counties—Annual Reports of County Engineers

County	Bridge			County Roads		
	Bonds out-standing Jan. 1, 1920	Bonds issued 1920	Bonds paid 1920	Bonds out-standing Jan. 1, 1921	Bonds issued 1921	Bonds paid 1921
Adair	\$ 25,000.00	\$ 19,000.00		\$ 44,000.00		
Adams						
Allamakee	132,000.00		8,000.00	124,000.00	\$ 16,000.00	\$ 16,000.00
Appanoose	44,339.52			44,339.52	25,520.00	\$ 23,245.96
Audubon	122,500.00			122,500.00		49,765.96
Benton	137,800.00	25,000.00	2,000.00	160,600.00	9,400.00	5,000.00
Black Hawk	37,000.00	70,000.00		107,000.00	65,000.00	65,000.00
Boone	110,154.11	45,000.00		155,154.11	10,928.50	93,428.38
Bremer		29,189.55		29,189.55	904.05	904.05
Buchanan	34,098.61			34,098.61	27,377.70	27,377.70
Buena Vista	309,500.00		6,000.00	303,500.00	193,500.00	28,000.00
Butler	80,500.00			80,500.00	17,000.00	17,000.00
Calhoun	5,000.00		5,000.00		140,000.00	10,000.00
Carroll	135,000.00		5,000.00	130,000.00		
Cass	82,000.00	85,000.00	3,000.00	164,000.00	25,000.00	25,000.00
Cedar						
Cerro Gordo	45,000.00	46,250.00		91,250.00	57,037.27	57,037.27
Cherokee	265,488.08	84,000.00		349,488.08	19,511.92	36,000.00
Chickasaw	75,500.00			75,500.00		55,511.92
Clarke	32,000.00			32,000.00	10,000.00	20,000.00
Clay	265,470.43		15,000.00	251,470.43	150,529.57	10,000.00
Clayton	49,000.00		8,000.00	41,000.00		140,529.57
Clinton	97,000.00		5,000.00	92,000.00		
Crawford	342,000.00	150,000.00	8,000.00	484,000.00	191,000.00	100,000.00
Dallas	127,000.00			127,000.00		
Davis	47,500.00		5,500.00	42,000.00		
Decatur	102,847.71	42,345.75	11,000.00	134,193.46	7,947.25	7,947.25
Delaware						
Des Moines	\$ 500.00		6,500.00	2,000.00	12,500.00	500.00

SUMMARY TABLE NO. 26—Continued

County	Bridge				County Roads			
	Bonds out-standing Jan. 1, 1920	Bonds issued 1920	Bonds paid 1920	Bonds out-standing Jan. 1, 1921	Bonds out-standing Jan. 1, 1920	Bonds issued 1921	Bonds paid 1920	Bonds out-standing Jan. 1, 1921
Dickinson								
Dubuque	276,000.00			276,000.00	77,300.00			77,300.00
Emmet					110,500.00	60,000.00		170,500.00
Fayette	133,000.00		8,000.00	125,000.00				
Floyd	118,234.14	37,178.83		155,412.97	17,485.49			17,485.49
Franklin	26,500.00	17,600.00		44,100.00		81,744.00		81,744.00
Fremont	278,500.00	106,000.00	12,500.00	372,000.00	13,000.00	25,000.00		38,000.00
Greene	60,000.00	193,000.00		262,000.00		30,575.00		30,575.00
Grundy	66,382.73	159,859.16		226,241.89	9,777.96	38,809.15		48,587.11
Guthrie	175,000.00	57,000.00	4,000.00	228,000.00		35,000.00		35,000.00
Hamilton	103,000.00	30,000.00		133,000.00	122,000.00	143,000.00		265,000.00
Hancock								
Hardin	63,704.22	94,000.00	1,000.00	156,704.22	51,294.10	16,000.00	1,000.00	66,294.10
Harrison	218,097.47	32,128.00		250,225.47	6,183.53	29,116.00		35,299.53
Henry								
Howard	56,200.00		9,000.00	47,200.00	17,300.00			17,300.00
Humboldt	47,000.00			47,000.00	15,500.00			15,500.00
Ida	20,000.00	75,000.00		95,000.00				
Iowa	176,078.85	100,000.00		276,078.85	19,185.00	12,000.00		31,185.00
Jackson	191,000.00		7,000.00	184,000.00				
Jasper	163,000.00	48,000.00		211,000.00	92,000.00	27,000.00		119,000.00
Jefferson	55,632.00			55,632.00	43,838.00			43,838.00
Johnson	30,000.00		5,000.00	25,000.00		34,000.00		34,000.00
Jones								
Keokuk								
Kossuth	187,500.00		8,000.00	179,500.00		121,000.00		121,000.00
Lee	5,000.00		50,000.00	55,000.00				
Linn	32,000.00	20,000.00		52,000.00	8,000.00	40,000.00		48,000.00
Louisa	33,500.00	27,400.00	4,000.00	56,900.00				
Lucas	100,100.00	40,000.00	6,500.00	133,600.00	7,000.00	14,000.00		21,000.00
Lyon								
Madison	33,068.38		2,000.00	31,068.38	20,000.00			20,000.00

Mahaska	108,372.77			108,372.77	23,523.81			23,523.81
Marion	205,448.88	23,000.00		218,448.88	25,442.39			25,442.39
Marshall	313,000.00	81,000.00		394,000.00	68,000.00	102,000.00		230,000.00
Mills	152,000.00	22,000.00	5,000.00	169,000.00	131,000.00	22,000.00	5,000.00	148,000.00
Mitchell	22,444.00	48,000.00		70,444.00	6,556.00	46,000.00		52,556.00
Monona	39,000.00			39,000.00	26,000.00			26,000.00
Monroe	13,000.00			13,000.00	23,500.00	85,000.00		108,500.00
Montgomery	82,000.00	131,885.00		213,885.00	71,000.00	19,635.00		90,635.00
Muscatine								
O'Brien	18,775.00	34,708.75		53,483.75		5,291.25		5,291.25
Osceola	99,000.00	72,000.00	1,500.00	169,500.00				
Page	102,260.00		6,000.00	96,260.00	39,000.00			39,000.00
Palo Alto	100,000.00	45,500.00	5,000.00	140,500.00	77,000.00	6,500.00	2,000.00	81,500.00
Plymouth								
Pocahontas	103,000.00		5,000.00	98,000.00	57,000.00	75,000.00		132,000.00
Polk	488,000.00	96,000.00	36,000.00	548,000.00	404,000.00	210,000.00	3,000.00	611,000.00
Pottawattamie	412,000.00		7,500.00	404,500.00	95,000.00		6,500.00	88,500.00
Poweshiek	113,000.00			113,000.00	11,500.00			11,500.00
Ringgold	57,026.25	38,726.17	1,080.00	94,672.42	3,058.06	8,069.36	1,920.00	9,237.42
Sac	129,200.00			129,200.00	74,800.00			74,800.00
Scott								
Shelby		20,000.00		20,000.00				
Sioux								
Story						133,500.00		133,500.00
Tama	223,468.51			223,468.51	20,031.49			20,031.49
Taylor	50,097.11		9,303.21	40,793.90	29,902.89		5,606.79	24,296.10
Union	95,000.00		5,000.00	90,000.00				
Van Buren								
Wapello	216,000.00			216,000.00	60,000.00			60,000.00
Warren	62,500.00		20,000.00	42,500.00				
Washington	65,000.00			65,000.00	20,000.00			20,000.00
Wayne	18,388.40	8,750.59		27,138.99	900.20	19,424.51		20,354.71
Webster								
Winnebago								
Winneshiek	237,000.00			237,000.00				
Woodbury	38,000.00		9,000.00	29,000.00				
Worth								
Wright	106,500.00		5,000.00	101,500.00		19,000.00		19,000.00
Total	\$9,129,972.17	\$2,254,521.80	\$275,473.21	\$11,109,967.18	\$2,789,944.88	\$1,923,319.51	\$ 45,526.79	\$ 4,667,737.60

SUMMARY TABLE

Total Indebtedness of Counties for County Road and Bridges, Work

County	Bridge				Total
	Outstanding bills	Warrants issued and stamped	Warrants outstanding not stamped	Bonds outstanding	
Adair	\$ 2,617.20		\$ 128.00	\$ 44,000.00	\$ 46,745.20
Adams		\$ 68,275.34			68,275.34
Allamakee	2,045.00	1,182.49		124,000.00	127,227.49
Appanoose				44,339.52	44,339.52
Audubon	500.00	25,555.03	500.00	122,500.00	149,055.03
Benton	3,500.00	87,346.80		160,600.00	251,446.80
Black Hawk	6,635.82	94,778.57	57.36	107,000.00	208,501.75
Boone	4,500.00	70,297.33		155,154.11	229,951.44
Bremer	2,065.80			29,189.55	31,255.35
Buchanan	2,000.00	537.76	402.92	34,093.61	37,034.29
Buena Vista				303,500.00	303,500.00
Butler	1,750.88		748.46	80,500.00	82,999.34
Calhoun					
Carroll	266.70	32,632.63		130,000.00	162,899.33
Cass				164,000.00	164,000.00
Cedar	317.53	72,193.34	759.10		73,269.97
Cerro Gordo	325.02			91,250.00	91,575.02
Cherokee		62,963.55	1,904.40	349,488.08	414,256.03
Chickasaw		24,271.06		75,500.00	99,771.06
Clarke	1,000.00	45,556.77		32,000.00	78,556.77
Clay				251,470.43	251,470.43
Clayton			1,466.21	41,000.00	42,766.39
Clinton	299.18			92,000.00	93,692.04
Crawford	1,692.04			484,000.00	500,701.16
Dallas	5,000.00	69,571.26	2,129.87	127,000.00	198,501.13
Davis		8,959.32		42,000.00	50,959.32
Decatur	1,897.87	53,071.17	106.24	500.00	55,075.28
Delaware	75.00	60,843.66		134,193.46	195,012.15
Des Moines	2,175.00	12,048.85	1,527.22		15,751.10
Dickinson	100.00		181.52	2,000.00	2,281.52
Dubuque		1,254.80			1,254.80
Emmet	1,000.00	63,717.08	150.00	278,000.00	342,867.08
Fayette	1,257.66				1,257.66
Fayette	1,700.00	68,293.76	558.51	125,000.00	195,552.27
Floyd	37.50		1,797.94	157,248.41	159,083.85
Franklin		13,883.68		44,100.00	57,983.68
Fremont	2,000.00	866.72	444.57	372,000.00	375,311.29
Greene	8,948.01	20,448.72		262,000.00	291,396.73
Grundy	700.00	62,449.11	150.00	236,241.89	289,541.00
Guthrie		34,000.00		228,000.00	262,000.00
Hamilton		14,964.96	185.37	133,000.00	148,151.33
Hancock			463.85		463.85
Hardin				156,704.22	156,704.22
Harrison				250,225.47	250,225.47
Henry	500.00		398.86		2,075.79
Henry	1,676.93		7.90	47,200.00	47,883.57
Howard	385.67			47,000.00	47,385.67
Humboldt				95,000.00	95,000.00
Ida		48,125.83		276,078.85	324,204.68
Iowa				184,000.00	184,000.00
Jackson	320.71		108.43	276,507.90	276,936.04
Jasper			1,249.26	184,000.00	185,249.26
Jefferson	500.00	51,602.97	200.59	211,000.00	263,304.56
Johnson	1,084.45	32,291.70	1,542.81	55,832.00	94,550.96
Jones	300.00			25,000.00	25,300.00
Keokuk		44,674.08			44,674.08
Kossuth	1,500.00		2,394.45	179,500.00	183,394.45
Lee	100.00	27,180.04	946.35		28,226.39
Linn	1,500.00	44,484.57	2,500.00	52,000.00	100,484.57
Louis	1,194.52	12,092.33	301.74	56,900.00	70,388.59
Lucas	500.00	64,966.89	126.70	133,600.00	199,193.59
Lyon	2,531.02	73,906.54	4,432.65		80,870.21
Madison		19,827.63		31,068.38	50,896.01
Mahaska	5,106.32		856.35	108,372.77	114,335.44
Marion	2,000.00			318,448.88	320,448.88

NO. 27

January 1, 1921—Annual Reports of County Engineers

County	Road				Total	Total county road and bridge indebtedness
	Outstanding bills	Warrants issued and stamped	Warrants outstanding not stamped	Bonds outstanding		
Adair	\$ 1,559.23		\$ 258.33		\$ 1,817.56	\$ 48,562.85
Adams	850.00				850.00	145,003.32
Allamakee	1,775.83			\$ 16,000.00	17,775.83	71,800.53
Appanoose		\$ 23,034.57		49,765.96	72,800.53	116,140.05
Audubon	500.00		250.00		750.00	149,805.03
Benton	3,500.00	10,055.61		14,400.00	27,955.61	279,402.41
Black Hawk	4,878.78	54,771.55	18.91	65,000.00	124,669.24	333,170.99
Boone	2,500.00	120,934.26		104,356.88	227,791.14	457,742.58
Bremer	351.26			904.05	1,255.31	32,510.66
Buchanan		3,807.98	1,391.06	27,377.70	32,576.74	69,611.03
Buena Vista		79,694.98	1,181.21	221,500.00	302,376.19	605,876.19
Butler	4,102.15		454.90	17,000.00	21,557.05	104,556.39
Calhoun				130,000.00	247,131.00	247,131.00
Carroll		117,131.00			600.71	163,500.03
Cass	600.71			25,000.00	25,000.00	189,000.00
Cedar					630.70	73,900.67
Cerro Gordo		630.70			57,007.27	57,506.17
Cherokee		468.90			16,377.41	5,496.25
Chickasaw			5,496.25		55,511.92	77,385.58
Clarke						99,771.06
Clay						99,771.06
Clayton	500.00	10,743.20		30,000.00	41,243.20	119,799.97
Clinton		27,938.58		140,529.57	168,468.15	419,938.58
Crawford	6,180.92		121.35		6,302.27	49,067.66
Dallas	2,545.82				2,545.82	96,237.86
Davis	8,000.00	50,803.39	1,241.81	291,000.00	351,045.20	911,746.36
Decatur		52,068.57			52,068.57	188,027.89
Delaware	810.62	22,116.81	233.61		23,161.04	120,236.32
Des Moines	90.00	29,379.47	75.00	7,947.25	34,491.72	230,103.87
Dickinson	3,411.00	23,621.17	261.80		27,293.97	43,045.07
Dubuque	75.00			12,000.00	12,179.49	14,461.01
Emmet		104.49			16,342.01	17,596.81
Fayette		16,342.01			77,300.00	77,950.00
Fayette	300.00		350.00		650.00	418,817.08
Floyd	2,384.40	62,131.49	51.90	170,500.00	235,067.79	236,325.45
Franklin	4,200.00		886.20		5,086.20	200,638.47
Fremont	41.00		2,000.13		17,486.49	177,676.03
Greene		96,412.36			81,744.00	178,156.36
Grundy	1,000.00	1,745.90	107.77	38,000.00	40,853.67	416,164.96
Guthrie	2,197.79	20,384.77		30,575.00	53,157.56	344,554.29
Hamilton	450.00	30,463.74	175.00		48,587.11	369,216.85
Hancock				35,000.00	35,000.00	297,000.00
Hardin		88,759.03	11,275.00	295,000.00	395,034.03	513,185.36
Harrison	500.00	9,664.49			10,164.49	10,628.34
Henry	1,676.93	72,000.00		66,294.10	138,294.10	294,998.32
Howard				35,799.53	35,799.53	286,525.00
Humboldt						1,202.78
Ida					1,202.78	3,278.57
Iowa					17,300.00	74,805.47
Jackson		4,720.27	4,963.80		9,684.07	77,337.38
Jasper		317.74		15,500.00	15,817.74	170,938.44
Jefferson		425.00			27,812.61	316,081.13
Johnson		27,812.61		31,185.00	39,573.14	185,249.26
Jones		7,917.35	201.19		8,118.54	440,156.80
Keokuk					43,888.35	142,639.31
Kossuth					34,000.00	62,300.00
Lee					94.82	44,768.90
Linn						
Louis						
Lucas						
Lyon						
Madison						
Mahaska						
Marion						

SUMMARY TABLE

County	Bridge				Total
	Outstanding bills	Warrants issued and stamped	Warrants outstanding not stamped	Bonds outstanding	
Marshall	130.32	86,366.13	485.70	394,000.00	480,982.15
Mills		68,981.10		169,000.00	237,961.10
Mitchell			67.38	70,444.00	70,511.38
Monona				39,000.00	39,000.00
Monroe		1,425.18	13,438.98	13,000.00	27,864.16
Montgomery		155,347.88		213,885.00	369,232.88
Muscatine	6,677.06				6,677.06
O'Brien	1,010.13	50,262.50		53,483.75	104,755.43
Osceola	300.00	7,065.96	400.00	169,500.00	177,265.96
Page	644.94	36,065.53		96,260.00	133,570.47
Palo Alto	1,000.00	14,565.95	2,247.13	140,500.00	158,313.08
Plymouth					
Pocahontas	7,710.00		892.87	98,000.00	106,602.87
Polk	3,500.00	16,533.39		548,000.00	568,033.39
Pottawattamie		160,000.00		404,500.00	564,500.00
Poweshiek	2,000.00	95,645.51		113,000.00	210,645.51
Ringgold		1,838.90		94,672.42	96,511.32
Sac		39,339.25	378.02	129,200.00	168,917.27
Scott		49,577.47	4,199.80		53,777.27
Shelby		66,431.23		20,000.00	86,431.23
Sioux					
Story	15,450.00	26,320.25	22.25		41,792.50
Tama	2,355.41			223,468.51	225,823.92
Taylor	4,577.31	16,204.30		40,703.90	61,485.51
Union		10,719.52	242.27	90,000.00	100,961.79
Van Buren	560.00	11,459.27	500.00		12,519.27
Wapello		86,919.36	799.34	216,000.00	303,718.70
Warren	283.78		555.60	42,500.00	43,339.38
Washington		50.85		65,000.00	65,050.85
Wayne	906.82			27,138.99	28,045.81
Webster		10,683.26			10,683.26
Winnebago		1,232.19			1,232.19
Winneshek	1,900.00	38,269.15		237,000.00	277,169.15
Woodbury		81,541.91		29,000.00	110,541.91
Worth					
Wright			68.00	101,500.00	101,568.00
Total	\$122,641.65	\$2,626,402.46	\$ 53,616.03	\$ 11,109,020.76	\$ 13,911,680.93

NO. 27—Continued

County	Road				Total county road and bridge indebtedness
	Outstanding bills	Warrants issued and stamped	Warrants outstanding not stamped	Bonds outstanding	
	2,211.03	53,320.74	428.47	230,000.00	285,960.24
		29,236.10		148,000.00	177,236.10
		46,920.75	1,493.24	52,556.00	100,909.99
				26,000.00	26,000.00
		14,762.58		108,500.00	123,262.58
		20,529.58		90,635.00	111,164.58
	423.33	4,714.67	36.97		5,174.97
	1,864.50	12,450.23	30.00	5,291.25	19,635.98
	400.00	3,186.58			3,586.58
	180.81	26,674.94		39,000.00	65,855.75
	2,000.00	40,470.69	447.99	81,500.00	124,418.68
	14,433.76	95,362.43		132,000.00	241,796.19
	1,000.00	50,733.84		611,000.00	662,733.84
		21,000.00		88,500.00	109,500.00
	1,000.00	28,212.75		11,500.00	40,712.75
		8,347.48		9,237.42	17,584.90
			790.37	74,800.00	75,590.37
		20,631.18	3,186.73		23,817.91
	5,550.00		1,657.00	133,599.60	140,806.60
	1,767.72	2,477.95		20,031.49	24,277.16
	605.68	8,420.94		24,296.10	33,322.72
			361.85		361.85
	1,500.00	360.05	100.00		1,960.05
		13,634.35	7,439.57	66,000.00	87,073.92
	209.00		1,112.58		1,321.58
				20,000.00	20,000.00
				20,000.00	40,000.00
	266.86			20,354.71	20,621.57
		36,870.01			36,870.01
	470.00		513.92		983.92
		39,978.58			39,978.58
	500.00	62,862.47	700.00	19,000.00	83,062.47
Total	\$ 108,603.33	\$ 1,931,195.59	\$ 162,276.87	\$ 4,667,737.60	\$ 6,869,813.39
					\$ 20,781,494.32

SUMMARY TABLE NO. 28

Financial Statement—Primary Road Funds

County	Primary Road Fund					Primary Road Bond Fund		
	Bal. or overdraft Jan. 1, 1920	Apportionments 1920	Total	Disbursements 1920	Bal. or overdraft Jan. 1, 1921	Receipts 1920	Disbursements 1920	Bal. or overdraft Jan. 1, 1921
Adair	\$ 66,420.66	\$ 98,741.60	\$ 165,162.26	\$ 42,178.48	\$ 122,983.78			
Adams	49,496.71	73,582.32	123,079.03	90,513.82	32,565.21			
Allamakee	77,780.55	115,629.37	193,409.92	24,361.61	169,048.31			
Appanoose	59,465.61	88,402.17	147,867.78	70,506.84	77,360.94			
Audubon	51,351.41	76,339.50	127,690.91	4,672.07	123,018.84			
Benton	82,533.16	122,694.64	205,227.80	38,631.56	166,596.24			
Black Hawk	*3,346.82	97,535.35	94,188.53	71,835.55	22,352.98			
Boone	67,000.24	90,603.24	166,603.48	121,005.21	45,598.27			
Bremar	50,308.15	74,788.59	125,096.74	17,033.17	108,063.57			
Buchanan	65,725.15	97,707.67	163,432.82	6,850.64	156,582.18			
Buena Vista	67,232.09	99,947.87	167,179.96	136,218.84	30,961.12			
Butler	65,884.32	99,430.91	165,315.23	27,131.70	138,183.53			
Calhoun	61,326.00	98,396.96	159,722.96	151,587.26	8,135.70			
Carroll	66,304.75	98,569.29	164,874.04	10,716.53	154,157.51			
Cass	65,377.41	97,190.69	162,568.10	17,243.50	145,324.60			
Cedar	67,000.23	99,603.24	166,603.47	7,522.23	159,081.24			
Cerro Gordo	19,893.40	99,080.25	118,973.65	270,762.84	*151,783.19	\$ 340,000.00	\$ 334,543.89	\$ 5,456.11
Cherokee	66,420.66	98,741.61	165,162.27	17,872.19	147,290.08			
Chickasaw	17,599.62	85,644.99	103,244.61	66,273.57	36,971.04			
Clarke	49,612.63	73,754.65	123,367.28	60,089.01	63,278.27			
Clay	66,420.67	98,741.60	165,162.27	11,861.38	153,300.89			
Clayton	91,574.71	136,135.89	227,710.60	7,359.34	220,351.26			
Clinton	82,185.40	122,177.65	204,363.05	36,450.56	167,912.49			
Crawford	82,880.92	123,211.61	206,092.53	8,975.95	197,116.58			
Dallas	46,962.29	102,015.77	148,978.06	81,776.68	66,901.38			
Davis	58,190.53	86,506.61	144,697.14	10,034.50	134,662.64			
Decatur	56,205.97	91,848.66	148,054.63	132,009.94	16,044.69			

Delaware	66,188.83	98,396.96	164,585.79	46,047.18	118,538.61			
Des Moines	49,728.56	73,926.96	123,655.52	16,918.42	106,737.10			
Dickinson	47,642.04	70,825.13	118,467.17	16,982.90	101,484.27			
Dubuque	71,405.10	106,151.55	177,556.65	84,313.88	93,242.77			
Emmet	48,337.54	71,859.08	120,196.62	58,563.31	61,633.31			
Fayette	83,924.19	124,762.52	208,686.71	14,130.64	194,556.07			
Floyd	57,379.11	85,300.34	142,679.45	254,953.89	*112,274.44	335,000.00	234,645.67	100,354.33
Franklin	67,000.23	99,603.24	166,603.47	15,885.02	150,718.45			
Fremont	60,508.87	89,963.10	150,461.97	71,973.08	78,488.89			
Greene	63,768.41	99,258.58	163,026.99	90,474.47	66,552.52			
Grundy	58,074.61	83,334.28	141,408.89	17,028.88	127,380.01			
Guthrie	69,202.69	102,877.38	172,080.07	11,343.74	160,736.33			
Hamilton	66,072.90	98,224.64	164,297.54	24,509.70	139,787.84			
Hancock	66,420.67	98,741.61	165,162.28	10,569.59	154,592.69			
Hardin	65,956.99	98,052.30	164,009.29	17,907.80	146,011.49			
Harrison	82,533.16	122,694.64	205,227.80	82,908.77	122,319.03			
Henry	49,496.71	73,582.32	123,079.03	35,065.36	88,013.67			
Howard	42,533.37	80,647.59	123,210.96	40,619.37	82,591.59			
Humboldt	50,308.15	74,788.59	125,096.74	72,557.59	52,539.16			
Ida	49,844.48	74,099.28	123,943.76	51,278.28	72,665.48			
Iowa	67,579.83	100,464.86	168,044.69	24,464.30	143,580.39			
Jackson	75,230.40	111,838.23	187,068.63	10,205.84	176,862.79			
Jasper	84,619.68	125,796.47	210,416.15	14,928.55	195,487.60			
Jefferson	2,744.79	74,271.61	77,016.40	48,876.71	28,139.69			
Johnson	70,825.52	105,289.92	176,115.44	20,528.91	155,586.53			
Jones	65,956.99	98,052.30	164,009.29	5,335.70	158,673.59			
Keokuk	43,069.69	99,603.24	142,672.93	67,490.94	75,181.99			
Kossuth	112,903.53	167,843.50	280,747.03	26,149.28	254,597.75			
Lee	63,174.97	93,916.62	157,091.49	13,273.33	143,818.11			
Linn	26,307.40	123,556.26	149,863.66	161,419.66	*14,556.00			
Louisa	49,380.81	73,409.99	122,790.80	8,072.88	114,717.92			
Lucas	50,076.33	74,443.93	124,520.26	26,268.12	98,252.14			
Lyon	67,463.90	100,292.53	167,756.43	8,000.78	159,655.65			
Madison	65,261.49	97,018.38	162,279.87	9,001.37	153,278.50			
Mahaska	66,652.50	99,086.25	165,738.75	14,532.55	151,206.20			
Marion	21,820.62	99,430.91	121,251.53	18,587.37	102,664.16			
Marshall	66,304.75	98,569.29	164,874.04	74,187.39	90,686.65			
Mills	51,815.07	77,028.80	128,843.87	39,500.31	89,343.56			
Mitchell	53,669.74	79,785.97	133,455.71	22,825.90	110,629.81			
Monona	82,069.51	122,055.33	204,074.84	14,049.59	190,025.25			
Monroe	21,841.96	74,616.26	96,458.22	66,447.32	30,010.90			
Montgomery	*1,325.68	73,065.34	71,739.66	175,431.25	*103,691.59			
Muscatine	52,742.40	78,407.39	131,149.79	41,469.49	89,680.30			
O'Brien	65,956.99	98,052.30	164,009.29	63,478.48	100,530.81			
Osceola	45,787.37	68,067.95	113,855.32	23,392.61	90,462.71			
Page	61,552.15	91,504.00	153,056.15	10,280.65	142,775.50			
Palo Alto	66,304.75	98,569.29	164,874.04	172,520.28	*7,646.24			
Plymouth	99,804.87	148,370.90	248,175.77	12,869.37	235,306.40			

SUMMARY TABLE NO. 28—Continued

County	Primary Road Fund				Primary Road Bond Fund			
	Bal. or overdraft Jan. 1, 1920	Apportionments 1920	Total	Disbursements 1920	Bal. or overdraft Jan. 1, 1921	Receipts 1920	Disbursements 1920	Bal. or overdraft Jan. 1, 1921
Pocahontas.....	67,232.09	99,947.87	167,179.96	56,409.75	110,770.21			
Polk.....	69,086.75	102,705.05	171,791.80	171,709.59	82.21	275,000.00	285,854.88	*10,854.56
Pottawattamie.....	111,048.85	165,086.32	276,135.17	72,573.50	203,561.67			
Poweshiek.....	67,232.09	99,947.87	167,179.96	15,499.32	151,680.64			
Ringgold.....	58,901.47	93,054.90	151,956.37	79,253.34	72,703.03			
Sac.....	66,768.41	99,258.58	166,026.99	102,564.93	63,462.06			
Scott.....	47,053.54	89,992.24	128,045.78	103,481.45	24,564.33	435,000.00	334,625.74	100,374.26
Shelby.....	68,275.36	101,498.81	169,774.17	68,258.13	103,516.04			
Sioux.....	88,097.23	130,906.19	219,003.42	149,797.43	69,265.99			
Story.....	65,725.19	97,707.67	163,432.86	49,367.30	114,065.56			
Tama.....	83,460.53	124,073.23	207,533.76	8,392.46	201,141.30			
Taylor.....	61,899.80	92,020.97	153,920.86	5,361.27	148,559.59			
Union.....	49,496.71	73,582.32	123,079.03	12,166.38	110,912.65			
Van Buren.....	56,799.53	84,438.70	141,238.23	59,027.02	82,211.21			
Wapello.....	50,771.81	75,477.89	126,249.70	79,135.13	47,114.57			
Warren.....	66,188.83	98,396.96	164,585.79	9,872.54	154,713.25			
Washington.....	64,797.84	96,329.07	151,126.91	19,975.10	141,151.81			
Wayne.....	60,740.70	90,297.74	151,038.44	12,403.82	138,634.62			
Webster.....	83,808.28	124,590.19	208,398.47	152,489.17	55,909.30			
Winnebago.....	46,251.06	68,757.26	115,008.32	48,709.03	66,299.29			
Winneshiek.....	79,519.32	118,214.22	197,733.54	19,001.87	178,731.67			
Woodbury.....	46,821.28	151,300.40	198,121.68	67,318.50	130,803.18			
Worth.....	46,251.06	68,757.26	115,008.32	5,043.27	109,965.05			
Wright.....	67,000.24	99,603.24	166,603.48	53,953.93	112,649.55			
Total.....	\$5,000,683.42	\$9,675,471.46	\$ 15,666,154.88	\$5,198,839.94	\$ 10,467,314.94	\$1,385,000.00	\$1,189,679.16	\$ 195,329.84

*Overdrawn in anticipation of future allotments.

SUMMARY TABLE NO. 29
Financial Statement Primary Road Funds

County	Special Assessment Funds				
	Balance or overdraft Jan. 1, 1920	Receipts 1920	Total	Disbursements 1920	Balance or overdraft Jan. 1, 1921
Carro		\$168,430.00	\$168,430.00	\$128,068.14	\$ 40,361.86
Gordio		140,621.00	140,621.00	97,318.62	43,302.38
Floyd		10,284.47	10,284.47	10,284.47	
Idona					
Total		\$319,635.47	\$319,635.47	\$235,668.23	\$ 83,997.24

SUMMARY TABLE NO. 30

Showing Total Indebtedness of Counties for Primary Road Construction

County	Primary Road Bonds			Primary Road Certificates			Total Indebtedness Primary Roads			Total
	Bonds issued Jan. 1, 1920	Bonds paid 1920	Bonds out-standing Jan. 1, 1921	Certificates issued 1920	Certificates paid 1920	Certificates out-standing Jan. 1, 1921	Outstanding bills	Outstanding bonds	Outstanding certificates	
Adair.....							\$ 545.57			\$ 545.57
Adams.....							8,169.70			8,169.70
Audubon.....							464.75			464.75
Benton.....							6,678.16			6,678.16
Black Hawk.....							21.28			21.28
Boone.....							9,360.26			9,360.26
Buena Vista.....							50,926.44			50,926.44
Butler.....							80.60			80.60
Calhoun.....							14,650.36			14,650.36
Cerro Gordo.....	\$ 340,000						45.50	\$ 340,000	\$145,329.54	485,375.04
Cherokee.....				\$145,329.54			664.88			664.88
Chickasaw.....							1,794.89			1,794.89
Clarke.....							363.88			363.88
Clinton.....							12,296.30			12,296.30
Dallas.....							6,094.82			6,094.82
Davis.....							51.08			51.08
Decatur.....							1,025.33			1,025.33
Delaware.....							8,429.93			8,429.93
Des Moines.....							1,771.38			1,771.38
Dickinson.....							1,196.70			1,196.70
Dubuque.....							192.31			192.31
Emmet.....							4,326.55			4,326.55
Floyd.....	335,000						15,692.29	335,000	109,500.00	490,192.29
Franklin.....			335,000	130,000.00	20,500.00	109,500.00	195.00			195.00
Fremont.....							2,892.86			2,892.86
Greene.....							5,861.01			5,861.01
Grundy.....							146.84			146.84
Guthrie.....							12.02			12.02
Hamilton.....							5,509.98			5,509.98
Hardin.....							625.00			625.00
Harrison.....							12,931.99			12,931.99
Henry.....							2,312.18			2,312.18
Howard.....							856.87			856.87
Humboldt.....							2,132.58			2,132.58
Jefferson.....							1,295.04			1,295.04
Johnson.....							293.84			293.84
Keokuk.....							20.05			20.05
Kossuth.....							1,083.16			1,083.16
Lee.....							1,007.80			1,007.80
Linn.....							18,085.74			18,085.74
Louisa.....							279.12			279.12
Lucas.....							1,299.40			1,299.40
Marshall.....							6,612.66			6,612.66
Mills.....							3,223.59			3,223.59
Monona.....							999.07			999.07
Montgomery.....							357.68			357.68
Muscatine.....							7,512.12			7,512.12
O'Brien.....							3,031.15			3,031.15
Osceola.....							394.73			394.73
Palo Alto.....							7,307.34			7,307.34
Pocahontas.....							4,961.35			4,961.35
Polk.....	275,000						5,695.19	275,000		280,695.19
Pottawattamie.....			275,000				13.44			13.44
Ringgold.....							125.76			125.76
Sac.....							6,379.15			6,379.15
Scott.....	435,000	50,000	385,000				31,196.13	385,000		416,196.13
Shelby.....							80.64			80.64
Sioux.....							12,474.00			12,474.00
Story.....							7,194.22			7,194.22
Tama.....							482.45			482.45
Van Buren.....							271.44			271.44
Wapello.....							4,420.80			4,420.80
Wayne.....							570.66			570.66
Webster.....							369.51			369.51
Winnebago.....							10,413.94			10,413.94
Woodbury.....							3,114.62			3,114.62
Worth.....							257.05			257.05
Wright.....							11,045.77			11,045.77
Total.....	\$ 1,385,000	\$50,000	\$ 1,335,000	\$275,329.54	\$ 20,500.00	\$254,829.54	\$30,091.80	\$ 1,335,000	\$254,829.54	\$ 1,919,921.34

SUMMARY TABLE NO. 31

Classification of Township Road Work—

Annual Reports of County Engineers

County	Number townships in county	Number townships reporting	Construction	Maintenance	Special cases (R. R. crossings)	Total
Adair	16	16	\$ 33,165.36	\$ 8,058.56		\$ 41,223.92
Adams	12	12		32,388.79		32,388.79
Allamakee	18	9	1,733.40	36,243.66		37,977.06
Appanoose	17	16		37,902.00		37,902.00
Audubon	12	10		35,055.15	\$ 1,785.42	\$ 36,840.57
Benton	20	15	4,763.89	55,696.81		60,460.70
Black Hawk	18	15	4,739.90	44,812.80		49,552.70
Boone	17	12	48,897.16	35,557.42	1,453.48	85,908.06
Bremer	14	11	3,138.00	33,657.59		36,795.59
Buchanan	16	11	2,538.36	41,115.70		43,654.06
Buena Vista	17	13	21,661.00	40,655.27	2,596.23	64,912.50
Butler	16	16	78.20	50,486.59	2,357.97	52,922.46
Calhoun	16	16	24,672.23	29,693.49	5,274.61	59,640.33
Carroll	16	14	12,856.19	38,046.37		50,902.56
Cass	16	15	9,714.95	42,479.05	31.50	52,225.50
Cedar	17	15	7,559.44	55,698.06		63,257.50
Cerro Gordo	16	16	24,087.94	48,067.15		72,155.09
Cherokee	16	16	2,454.89	65,325.83		67,780.72
Chickasaw	12	12	19,660.36	20,031.54		39,691.90
Clarke	12	12		30,431.45		30,431.45
Clay	16	11	61,063.34	17,420.83		78,484.17
Clayton	22	19		53,005.89		53,005.89
Clinton	20	17		63,641.15		63,641.15
Crawford	20	20		76,315.68		76,315.68
Dallas	16	16	31,754.42	60,113.00		91,868.02
Davis	15	15		41,189.61	3,302.30	44,491.91
Decatur	16	7		12,121.75		12,121.75
Delaware	16	13	4,692.03	44,230.79		48,922.82
Des Moines	13	13	5,892.22	34,209.33		40,101.55
Dickinson	12	12	5,390.60	38,831.00		44,221.60
Dubuque	17	7		17,576.62		17,576.62
Emmet	12	12	15,523.00	32,823.51		48,346.51
Fayette	20	20		60,280.73		60,280.73
Floyd	12	12	6,013.48	47,203.06		53,216.54
Franklin	16	11	11,437.88	33,045.70		44,483.58
Fremont	13	10	1,285.84	37,108.70		38,394.54
Greene	15	15	28,125.85	50,186.83		78,312.68
Grundy	14	14	16,906.49	32,326.27		49,232.76
Guthrie	17	8	4,098.37	28,897.75		32,996.12
Hamilton	16	14	17,463.46	38,497.51	857.68	56,818.65
Hancock	16	13	15,776.46	40,992.80		56,769.26
Hardin	16	14	10,575.92	38,910.40	286.81	49,773.13
Harrison	20	17	1,675.03	49,459.36		51,134.39
Henry	12	10		39,807.40		39,807.40
Howard	12	12	11,198.47	23,484.94		34,683.41
Humboldt	12	10	15,519.00	25,159.07		40,678.07
Ida	12	8	6,164.93	32,213.47		38,378.40
Iowa	16	16	8,723.10	54,483.97	1,410.18	64,617.25
Jackson	18	18	30,499.07	11,733.09	4,151.10	46,383.26
Jasper	19	16	6,842.50	72,722.76		79,565.26
Jefferson	12	10		49,730.06		49,730.06
Johnson	21	14	3,032.07	52,021.81		55,053.88
Jones	16	11	5,278.97	34,099.61		39,378.58
Keokuk	17	16	16,677.25	31,423.15		48,100.40
Kossuth	28	8	36,687.87	58,853.74		95,541.61
Lee	15	15	2,656.30	35,542.08		38,198.38
Linn	20	20	85,445.95	12,067.34	2,487.44	100,000.73
Louis	12	9	8,086.89	30,141.52	280.83	38,509.24
Lucas	12	11	9,519.06	20,922.43	98.08	30,539.57
Lyon	18	17	431.39	45,826.03		46,257.42

SUMMARY TABLE NO. 31—Continued

County	Number townships in county	Number townships reporting	Construction	Maintenance	Special cases (R. R. crossings)	Total
Madison	16	15	5,970.42	41,678.54		47,648.96
Mahaska	18	18	7,572.48	47,631.98	3,745.81	58,950.27
Marion	15	8	1,671.07	50,719.27		52,390.34
Marshall	18	18	8,445.19	53,044.63		61,489.82
Mills	13	11		46,350.67		46,350.67
Mitchell	16	16		45,760.21		45,760.21
Monona	19	12	3,244.35	32,481.74		35,726.09
Monroe	12	12		35,557.57		35,557.57
Montgomery	12	12	10,351.49	28,319.23	6,130.47	45,110.19
Muscatine	14	14	6,123.63	28,166.30	1,799.13	35,089.06
O'Brien	16	14	6,303.79	45,450.68		51,754.47
Osceola	11	7	10,632.39	19,606.95		30,239.34
Page	16	16	7,070.47	36,454.14	3,089.98	46,614.59
Palo Alto	16	5	4,604.15	14,846.13		19,450.28
Plymouth	24	12	5,889.47	37,729.49		43,618.96
Pocahontas	18	17	45,762.35	20,804.06	8,716.64	75,283.05
Polk	19	12	2,423.08	34,157.04		36,580.12
Pottawattamie	28	18	17,198.33	44,283.20	527.97	62,009.50
Poweshiek	16	11	5,472.67	36,136.80		41,609.47
Ringgold	16	12	755.65	23,731.10		24,486.75
Sac	16	16	17,511.68	50,106.62	4,555.21	72,173.51
Scott	15	15	7,887.95	49,070.16		56,958.11
Shelby	16	16	2,492.42	57,602.05	1,542.06	61,636.53
Sioux	23	22	1,772.01	68,233.70	5,471.91	75,477.62
Story	16	12	21,951.25	37,142.71		59,093.96
Tama	21	21	2,512.62	72,978.38		75,491.00
Taylor	17	17		51,036.59	737.93	51,774.52
Union	12	10		25,024.55		25,024.55
Van Buren	14	13		33,461.39		33,461.39
Wapello	14	13	5,131.33	29,237.57		34,368.90
Warren	16	13	90.66	40,091.95		40,692.61
Washington	15	10		48,555.57		48,555.57
Wayne	16	13		27,135.15		27,135.15
Webster	23	23	19,908.72	70,689.54		90,598.26
Winnebago	12	12	5,553.75	41,907.11		47,460.86
Winneshek	20	13		38,546.89		38,546.89
Woodbury	23	20	14,266.48	70,909.69		85,176.17
Worth	12	12	10,578.55	23,509.29		34,138.84
Wright	16	14	9,485.00	52,238.66		61,723.66
Total	1,606	1,348	\$43,791.88	\$3,970,713.45	\$ 62,609.44	\$ 4,977,304.77

SUMMARY TABLE NO. 32—PART I

Inventory of Equipment and Machinery Showing Estimated Value January 1, 1921—Owned by County—Annual Report of County Engineers

	Tractors Estimated		Trucks Estimated		Concrete Mixers Estimated		Pile Drivers Estimated		Blade Graders Estimated		Wheeled Scrapers Estimated		Slip Scrapers Estimated		Cross Footings Estimated
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value
Adair	4	\$ 6,468	4	\$ 1,300	5	\$ 1,572	1	\$ 125	11	\$ 3,191	16	\$ 290	28	\$ 100	\$ 12,956
Adams									1	925	8	260	3		35
Allamakee	4	4,500	1	500	1	350	1	100	5	1,340	8	50	13	150	6,900
Appanoose	2	6,200					1	100	10	2,665	10	350	32	275	9,500
Audubon	1	1,500							3	1,225	5	125	6	50	2,900
Benton	6	6,500	4	8,240	1	400	1	100	4	1,135	6	300	6	50	16,725
Black Hawk	4	4,200	7	11,900					12	4,175	10	100	32	185	20,560
Boone	1	500			2	100	2	150	8	1,200			4	4	1,954
Bremer	2	1,500	1	800	2	200			14	2,855	15	200	19	100	5,855
Buchanan	2	6,500					1	150	12	2,600	10	75	10	60	9,385
Buena Vista	2	3,500	1	500	1	100			10	1,100	12	150	12	50	5,400
Butler	5	5,450	2	1,175	3	1,200	3	150	8	1,950	30	2,500	25	140	12,565
Calhoun	4	7,700							9	2,675	24	975	20	65	11,415
Carroll	1	1,400							1	125			2	40	1,565
Cass			1	1,170					2	1,170					2,340
Cedar	3	2,700							8	1,900	14	120	14	25	4,745
Cerro Gordo	1	900			2	440			11	2,100	11	175			3,615
Cherokee							1	50	13	2,743	5	195	13	81	3,098
Chickasaw	1	500	4	7,000	4	600	2	500	18	3,850	17	700	35	100	13,250
Clarke	1	2,500	4	7,000	1	350	1	175	4	2,250	21	200	29	150	12,625
Clay							1	50	9	2,375	6	200	10	30	2,655
Clayton	3	6,500							23	2,900	18	250	34	200	9,850
Clinton	2	5,500							19	3,550			3	20	9,070
Crawford							300		11	650	3	15	13	90	1,055
Dallas	3	3,000			4	450	1	75	7	1,825	6	50	8	70	5,470
Davis	3	8,000	5	11,500	3	150	2	75	10	2,700	16	30			22,455
Decatur	1	2,250	4	11,250	2	375			11	900	11	175	35	250	15,200
Delaware	2	3,500							10	1,300	18	350	25	150	5,300
Des Moines	1	800			2	300	1	20	9	750	5	50	18	110	2,030
Dickinson	1	1,200							6	2,300	6	100			3,600
Dubuque	1	2,200								3,000					5,800
Emmet	1	500			1	250	1	50	9	1,450	20	50	20	20	2,320
Fayette	2	3,000			4	1,940	2	500	13	1,670	16	700	20	162	8,032

Floyd	4	2,700	1	3,000					11	1,100	16	150	50	95	7,045
Franklin					3	250	4	242	9	1,700	26	400	12	43	2,635
Fremont					2	175			7	1,500	6	275	6	30	1,080
Greene	1	1,000	1	800	2	25			14	1,050	16	100			2,975
Grundy	3	5,800							12	500	24	1,150			7,450
Guthrie	3	2,600	2	1,200	1	150	1	100	8	1,375	11	450	20	200	6,075
Hamilton	4	4,700							14	4,500			6	60	9,260
Hancock							1	180	10	1,200	14	160	10	30	1,570
Hardin	2	5,000			3	350	1	90	6	2,025	11	210	12	220	7,895
Harrison					1	70			5	2,170	7	130	11	44	2,419
Henry	2	3,300			2	600	1	25	7	2,250	12	1,350	18	125	7,650
Howard	2	6,075			1	100	1	200	10	2,640	16	150			9,165
Humboldt	1	1,200							6	1,075	12	150	10	20	2,425
Ida	5	11,800	2	3,100	2	515	1	150	8	3,700	14	160	16	50	19,475
Iowa	2	3,500			1	400			6	7,100			6	79	11,079
Jackson							2	524	2	1,020			6	68	1,612
Jasper	6	12,200			1	200	1	50	8	3,680	29	638			16,768
Jefferson	4	3,667			3	500	1	75	13	1,790	10	150	10	25	6,207
Johnson									5	1,670	15	975			2,645
Jones	1	500							4	1,550					2,050
Keokuk	2	900	4	12,100			1	35	6	1,165			10	92	14,292
Kossuth	4	5,917							13	2,656					8,573
Lee	1	400	1	2,620	3	1,125	1	75	10	2,316	8	100	30	215	6,651
Linn									27	5,000	19	540	46	250	5,790
Louisa					1	500	1	150	7	2,465	6	300			3,415
Lucas									14	2,100	19	650	30	220	2,970
Lyon	2	1,850			2	1,050	1	150	8	1,725	24	820	32	130	5,725
Madison	3	6,000			3	350	1	100	6	1,600	10	200	6	30	8,280
Mahaska	9	11,550	1	1,400			1	20	12	3,350	18	500	11	45	16,885
Marion	3	8,000	3	8,500	1	600			18	2,755	15	700	32	300	29,855
Marshall	5	10,500	7	17,700	3	275	1	55	11	5,114					35,644
Mills							3	250	13	3,924	2	80	48	356	4,610
Mitchell	2	6,000	1	2,250	6	875			11	3,700	13	680	23	170	13,675
Monona	2	6,900					1	1,475	12	3,225	4	150	12	81	11,831
Monroe	4	3,200					1	100	12	3,150	10	275	38	278	7,003
Montgomery					2	300	2	200	5	500	37	500	38	100	1,600
Muscatine			5	10,000			1	280	8	2,250			13	150	12,780
O'Brien	4	5,000	4	5,500	1	200	2	400	11	3,400			5	25	14,535
Osceola									2	2,800			5	40	2,840
Page							1	300	16	2,075	67	1,550	25	170	5,695
Palo Alto	2	2,900			3	150	1	50	15	2,000	15	25	29	10	5,135
Plymouth	2	5,700			1	356	2	300	23	4,200	7	250	52	290	11,060
Pocahontas	7	10,700							9	780	20	146	23	107	11,733
Polk	4	8,500			3	995	2	100	24	2,800	20	290	8	70	12,665
Pottawattamie							5	1,000	10	1,000	18	33	54	280	2,313
Poweshiek	3	3,632			3	300	2	100	16	4,303	16	380	17	70	8,785
Ringgold									5	1,800	3	500			2,300
Sac	2	1,800			1	25			7	280	12	25	8	30	2,260

SUMMARY TABLE NO. 32—PART I—Continued

	Tractors Estimated		Trucks Estimated		Concrete Mixers Estimated		Pile Drivers Estimated		Blade Graders Estimated		Wheeled Scrapers Estimated		Slip Scrapers Estimated		Cross Footings Estimated
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value
Scott	2	1,200	6	17,050	3	300	1	100	12	1,500	12	125	12	77	20,352
Shelby									13	2,300			20	655	2,955
Sioux	3	11,000	1	2,000	1	800	2	300	12	3,650	8	400	8	70	18,220
Story	2	6,000	2	1,040			1	75	4	2,700	1	25	4	20	9,860
Tama	2	3,250							13	4,420	10	175	17	200	8,045
Taylor	1	1,397			1	900	1	60	8	2,683	16	340	4	20	5,400
Union					2	921			8	2,025	25	500	28	240	3,688
Van Buren	2	3,500			3	585	1	150	11	2,770	5	150	6	190	7,345
Wapello	2	1,700							10	1,080	5	80	4	10	2,870
Warren	2	1,950	3	2,900	3	150	1	50	6	1,200	6	30	15	125	6,405
Washington	3	7,400			1	172	1	75	15	5,800	24	400	33	268	14,115
Wayne	2	3,407	1	1,000	1	100	1	50	4	1,500	24	650	19	120	6,827
Webster	3	4,400	1	350	1	50	1	20	13	1,700			5	50	6,570
Winneshago									1	400	5	50	2	25	475
Winneshiek	1	3,600							1	650	3	150	9	80	4,480
Woodbury	3	5,000	3	900	3	600	4	585	16	3,330	5	150	33	330	10,895
Worth	3	3,000			2	500			10	1,625	15	500	2	15	5,700
Wright	3	2,700	1	1,200					6	1,200	35	300			5,400
Total	199	\$ 321,963	88	\$ 157,045	144	\$ 24,285	81	\$ 10,971	990	\$ 223,605	1,148	\$ 27,932	1,478	\$ 9,835	\$ 775,636

SUMMARY TABLE NO. 32—PART II

Inventory of Equipment and Machinery Showing Estimated Value January 1, 1921—Owned by County—Annual Report of County Engineers.

County	Drags Estimated		Fresnoes Estimated		Road Planers Estimated		Plows Estimated		Gas Engines Estimated		Camp Outfits	Tools and Miscellaneous Estimated Value	Total Estimated Value
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value			
Adair	79	900	32	500	1	350	16	130	5	\$ 550	\$ 1,340	\$ 1,377	\$ 18,223
Adams	6	250			3	830	2	45			50	45	2,440
Allamakee	28	400					9	100				2,300	9,750
Appanoose	12	300	1	30	3	400	5	175			975	10	11,480
Audubon	60	600			1	300	4	50					3,850
Benton	60	500	3	40			3	30	1	75	320	2,280	19,079
Black Hawk	43	350			1	400	7	70				4,250	25,630
Boone	25	100			2	475	3	10	2	25	155	615	3,334
Bremer	46	475			3	285	3	45				850	7,310
Buchanan	55	450			2	700	9	75			202	510	11,322
Buena Vista	34	350	4	140	4	1,125	2	55	1	40	380	2,010	9,500
Butler	26	200			2	500					40	1,725	15,000
Calhoun	64	1,200	12	60	6	855	11	140			975	433	15,078
Carroll	4	100			2	200	1	40				150	2,055
Cass					7	1,036						1,282	4,658
Cedar	41	320			3	900	1	2					5,967
Cerro Gordo	27	550			1	100					160	430	4,855
Cherokee	37	424			9	1,395						296	5,184
Chickasaw	25	250			2	250	9	50			372	10,081	24,253
Clarke	26	400					10	50			300	550	13,925
Clay	29	545			1	400	1	10				455	4,065
Clayton	54	800			3	800	19	130			45	2,410	14,035
Clinton	83	1,300			1	600						1,940	12,910
Crawford	22	375			1	300							1,730
Dallas	88	575			7	90	3	60	1	125	150	535	7,005
Davis	59	883	5	80			5	25			90	2,750	28,283
Decatur	128	1,105	15	250			10	200			375	945	18,075
Delaware	30	300			1	250	10	75			200	3,420	9,545
Des Moines	27	250			1	200	12	90			500	505	3,765
Dickinson	20	250			2	375							4,225
Dubuque	25	500										4,750	11,050
Emmet	17	115			5	840	4	30			110	1,560	4,975
Fayette	23	196							3	260	1,171	1,632	11,291

SUMMARY TABLE NO. 32—Continued

County	Drags Estimated		Fresnoes Estimated		Road Planers Estimated		Plows Estimated		Gas Engines Estimated		Camp Outfits	Small Tools and Miscellaneous Estimated Value	Total Estimated Value
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value			
Floyd	30	150			4	585	10	105	1	275	197	10,055	18,412
Franklin	11	155			6	640	4	18	2	135	1,800	2,503	7,886
Fremont	43	495											2,475
Greene	28	400			1	300	4	5	1	50	5	640	4,375
Grundy	2	50									325	448	8,273
Guthrie	80	800			4	525	3	60			520	1,518	9,498
Hamilton	62	800	1	30	1	400					200	700	11,390
Hancock	1	35			1	180		6				120	2,035
Hardin	12	400					13	210	1	400	300	2,140	11,345
Harrison	54	809			2	1,150	5	40				6	4,416
Henry	50	500	2	10			4	65				1,102	9,327
Howard	28	315			1	350	6	35			110	713	
Humboldt	16	240			1	25	4	20				3,200	
Ida	44	330			8	1,770	2	15			848	2,153	
Iowa	4	120			4	1,882	8	60			200	889	
Jackson	4	64			1	144	4	80				610	2,510
Jasper	50	1,200	3	30	2	1,200	5	100			90	1,675	
Jefferson	60	200	5	15	3	1,275	6	35				418	
Johnson	2	45	4	90	2	575	1	20			55	640	4,070
Jones													2,050
Keokuk	84	565			1	300	6	75				95	
Kossuth	90	506	2	45	6	308	1	5				438	
Lee	41	678					6	126			80	1,706	
Linn	77	1,000	2	40	1	400	7	100					7,330
Louisa	39	650							1	150	150	1,687	
Lucas	62	705	15	226			13	170					
Lyon	25	645			1	100	3	35	1	200	530	4,802	12,037
Madison	60	600	2	55			3	40			495	1,475	
Mahaska	56	500	3	85	7	2,800	8	100			415	1,100	
Marion	95	650	3	25	1	300	25	495			2,420	552	25,292
Marshall	82	2,050			7	475	16	400				6,158	23,882
Mills	22	500			8	1,005			2	155		475	
Mitchell					1	400			1	65		6,817	20,957
Monona	32	378	3	50	4	618	3	64			200	611	13,752
Monroe	45	790	4	35	3	2,350	7	135				200	10,513
Montgomery	24	180			2	700	3	40	1	65		1,005	3,500

Muscatine	45	550	1	15	2	200	6	110			500	2,781	16,906
O'Brien					6	300	1	20	1	100	900	6,150	22,005
Osceola					3	500						700	4,040
Page	90	910					15	180				1,025	6,210
Palo Alto	10	165					1	10				320	5,630
Plymouth	48	1,250	8	200			5	100			1,550	2,235	16,395
Pocahontas	25	1,400			1	150	7	82			60	1,100	14,585
Polk	61	660					1	10				1,974	15,309
Pottawattamie	51	3,350			1	133	6	40	1	85	240	1,271	7,432
Poweshiek	4	275			3	750	3	85			1,096	843	11,834
Ringgold							15	300				131	2,731
Sac	60	550			1	250	3	30				425	3,515
Scott	40	1,200			2	265	4	70			215	4,989	27,091
Shelby	23	505	17	350			4	85					3,805
Sioux	29	750	6	75	1	820	8	100			950	2,155	23,070
Story	32	360			14	1,525	7	60			875	7,055	19,735
Tama	68	900	3	75			10	150			395		9,565
Taylor	62	983			1	551	7	125			150	1,055	8,264
Union	49	620			1	600	9	225			51	700	5,912
Van Buren	52	850									150	1,370	9,715
Wapello	86	1,150			2	875	14	220				1,050	6,165
Warren	85	700					3	75			185	927	8,292
Washington							8	116			1,100	620	15,951
Wayne	36	350	3	20			20	300				270	7,767
Webster	83	975			5	1,650					45	1,819	11,059
Winnebago	2	30			1	300	1	20				35	890
Winneshiek	9	150			1	400	4	50	1	40	380	750	6,250
Woodbury	51	510	3	75	9	2,750	9	115	2	70	200	1,150	15,765
Worth	11	210			2	300	2	25				175	6,835
Wright							8	60			500		5,960
Totals	3,847	\$ 52,351	151	\$ 2,646	213	\$ 47,727	517	\$ 7,263	29	\$ 2,835	\$ 26,567	\$ 150,219	\$ 1,065,274

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