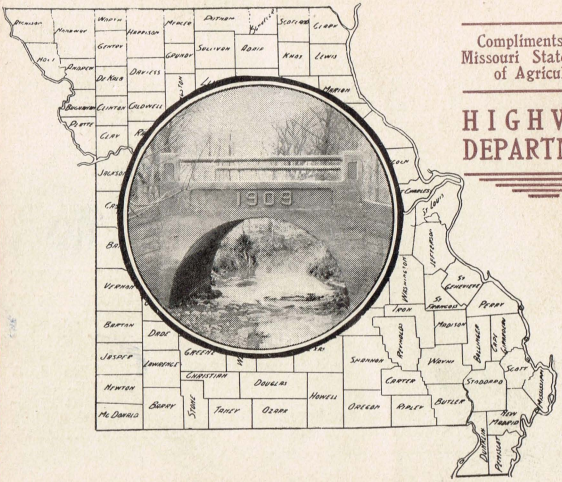
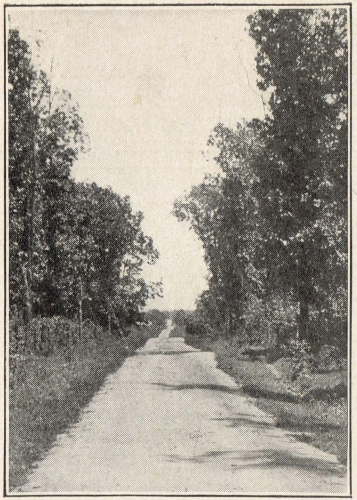
Testimonials on Missouri Roads



Compliments of the
Missouri State Board
of Agriculture

HIGHWAY DEPARTMENT



MO. STATE-WIDE HIGHWAY PLANNING SURVEY

Missouri Roads

OFFICE OF STATE HIGHWAY ENGINEER
COLUMBIA, MISSOURI, OCTOBER 1, 1909

EVERY county in Missouri has some special feature or characteristic in its road work. The state is as diversified in road material as in climate, crops, or mineral productions. No one method or plan is adaptable in all places alike, and often the plans and methods must be varied over one county. In one section gravel construction is best, in another rock, and in still others sand-clay or chert. A special feature in some counties is the well dragged earth road, while in others concrete or masonry in culverts or bridges may be pre-eminent.

It is necessary for the county highway engineer to study his field and choose the methods, plans and materials adaptable to the locality. The object of this booklet is not only to give testimonials to the fact that Missouri is making headway—and highways—but to portray this diversity of available materials for road work.

ROAD building is making use of natural materials in such a manner as to produce the improved road. With such widely distributed road materials as sand, clay, gumbo, chert, gravel and rock, Missouri can have as many good roads as she needs.

¶ The first cover picture of this booklet is of a plain concrete bridge, Cass county, Mo. Clear span, 14 feet; roadway, 16 feet. F. W. Barker, County Highway Engineer.

¶ The second cover picture represents a Southwest Missouri road near Aurora, Lawrence county, Mo., made of "chats," a mining refuse material of that section, at a cost of $600 per mile. Jno. A. Williams, County Highway Engineer.

Missouri has 110,000 miles of public roads

One of the "Silica" roads of Cape Girardeau county. "Silica" is the local term for deposits of a rotten rock running high in silica, and found in the vicinity of Cape Girardeau county. It has splendid road qualities. Dennis M. Scivally, County Highway Engineer.

GREENE COUNTY, MO., has a county convict road crew under the supervision of the county highway engineer. The plant consists of a convicts' cage, crusher and screen, traction engine, cooking tent and guard outfit. The county sheriff feeds the prisoners in the field the same as in the jail, a prisoner doing the cooking. The force, consisting of two guards, an engineer, twelve to fifteen prisoners, and a team, have an average daily output of 80 cubic yards. The cost to the county is about 20c per cubic yard of rock. The convict crew is doing only the crushing; the road district, wherein the road lies, attends to everything else. This does not take into account the fact that it would cost as much to feed the prisoners as if they were in jail doing nothing. From the known enhanced valuation of property along these roads built by the crew, and the increased taxes derived therefrom, the county is being paid a dividend upon the investment.

One of the finished roads (yet to be rolled) built by the Greene county convict outfit. Fred J. Marshall, County Highway Engineer.

Greene county is bountifully supplied with road material in the form of chert, gravel and rock.

THE people of Jackson county are justly proud of their roads. This is the banner road county of the State. It has good roads, well maintained, and annually spends more money upon them than any other county of the State. Jackson county roads are built of native limestone and are treated with oil.

KANSAS CITY, JACKSON CO., MO., AUGUST 2, 1909.

To the Honorable County Court, Jackson Co., Mo.

GENTLEMEN:—In obedience to yours of June 16th, I beg to submit the following report:

WORK DONE FROM MAY 22 TO AUGUST 1, 1909.

Number of miles of road oiled	40	Total cost of labor	$1,574.00
" " " weeds cut along road side	17	Total cost of oil, including freight	2,110.37
" " " ditches opened	9	Total cost of supplies and repairs	199.57
" " loads of rock hauled for riprap	17		$3,884.94

Cost of oiling per mile, including above work	$97.11
Cost of oiling per square yard	0.0104
Number of gallons used per mile	2404.
Number of gallons used per square yard	0.256

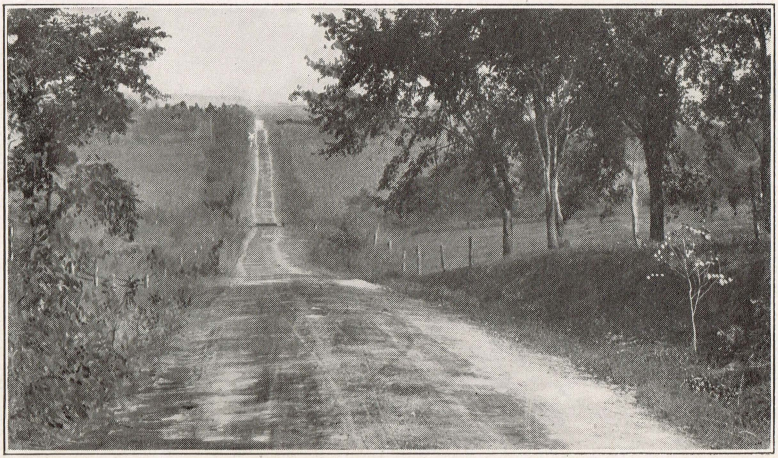
Respectfully submitted,

J. C. CLIFTON, *Supt. Oiling Dept.,*
Office of County Highway Engineer.

MISSOURI HAS 800 MILES OF ROCK ROAD.

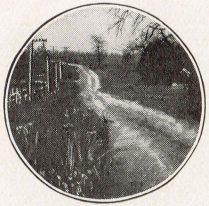
An oiling crew, consisting of five tank wagons and a sweeper, lined up on a Jackson county road waiting for the word to begin work, October 4, 1909.

Rocky Ford Road, Jackson County



Repaired, rolled and oiled for $200 per mile. R. T. Proctor, County Highway Engineer.

CLAYTON, ST. LOUIS COUNTY, MO.



THERE are 305 miles of road in St. Louis county that have macadam or Telford improvement, and 106 miles that are improved with gravel. These 411 miles comprise about 43 per cent. of the entire road mileage of the county, outside of the incorporated cities and towns, of which there are seven.

During the past six years there has been an average of $177,000 spent on the roads annually, of which about $48,000 went for repairs material (macadam, gravel and screenings), and $58,000 for new road construction. The remainder was spent for masonry, bridges, working earth roads, overseers' salaries, and for labor and hauling connected with repairs.

A few months ago we commenced applying oil to some of the principal improved roads, and by the close of the current year about $12,000 will probably have been expended in that manner.

Yours truly,

WILLIAM ELBRING,

County Highway Engineer.

MISSOURI'S ROADS WOULD REACH ACROSS THE STATE 400 TIMES

One of the roads which makes St. Louis county richer and more beautiful every day

CAPE GIRARDEAU COUNTY has 180 miles of rock and gravel roads; Franklin county, 200 miles; Gasconade county, 200 miles; Jasper county, 158 miles; Jackson county, 280 miles; Perry county, 140 miles; Pike county, 140 miles; St. Charles county, 150 miles; St. Louis county, 410 miles.

THE annual expenditure upon Missouri roads, bridges and culverts for 1908 was approximately two and three-quarter million dollars, distributed as follows: Road surface—rock, $300,000; gravel, $300,000; earth, $1,000,000; bridges, $800,000; culverts, $300,000.

THE cost of maintenance upon bridges is 17 per cent. of the annual expenditure upon these structures, culverts 41 per cent. This difference in the percentage of the cost of maintenance represents the difference in the methods of construction—the annual toll paid to the timber structure.

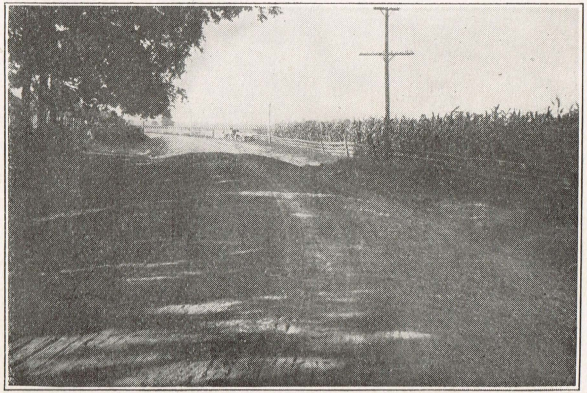
THE Missouri legislature of 1907 voted about one million dollars to the roads—the war debt fund of $475,000 and $500,000 from the state revenue—and submitted a constitutional amendment to the voters for a 10c State road tax. Unfortunately, the $500,000 appropriation was never available, and the state tax was defeated at the polls by 24,700 votes. Had all this been obtainable, Missouri would now be ranking well in road work.

Missouri has enough road mileage for 40 roads across the United States

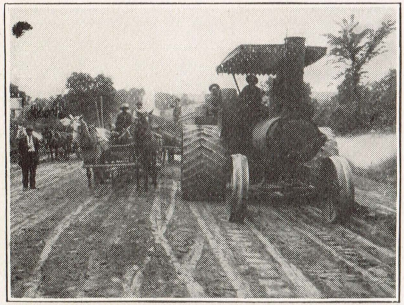
THE

State of Missouri

Has a large area in which the sand-gumbo method of road construction is adaptable. There are hundreds of miles of Mississippi and Missouri river bottom lands, and about 4,000 square miles of low gumbo and sand lands in one body in Southeast Missouri where good roads will help greatly toward placing these sections among the richest agricultural districts of the country.



A sand gumbo road of Mississippi county; cost $1,300 per mile. J. Russell Ellis, County Highway Engineer.



Reducing a road grade in Buchanan County with the elevating grader.

ST. JOSEPH, BUCHANAN COUNTY, MO.

BUCHANAN COUNTY is laying the foundation for a splendid road system by paying close attention to permanent bridges and culverts and by reducing the percentage of grades. The work is by contract. From January 1 to September 1, 1909, we have paid for 117,000 cu. yds. of earth excavation at a cost of $19,730. The yardage is for excavation only (the measured cut), and the average price is about 17 cents per cu. yd.

One mile of the Sparta road was graded 40 feet wide, and contained one cut 40 feet deep, besides other deep ones. The amount of excavation in this one mile of road was 75,000 cu. yards.

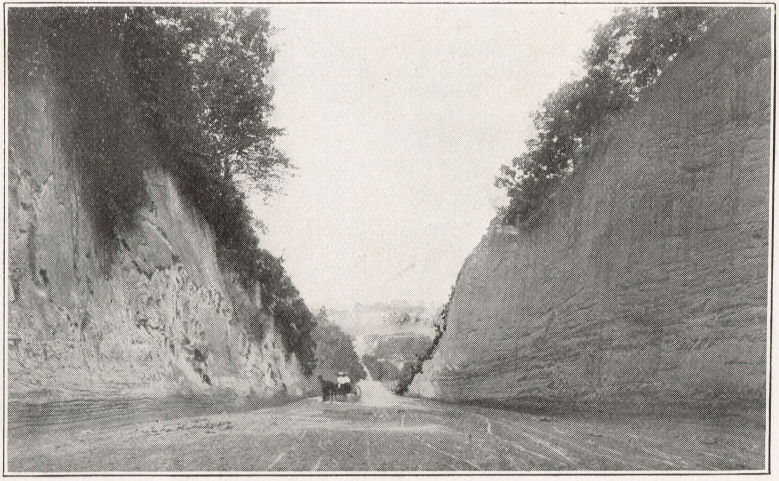
Another large grading contract completed was for four miles on the Saxton Station road, where 28,420 cu. yds. of earth was moved. We now have under contract 35,000 cu. yds. of earth excavation on three and one-half miles of the Agency road, besides approximately 75,000 cu. yds. of excavation in a number of smaller contracts.

Within the time specified above, we have built 21 reinforced concrete culverts and bridges, with spans from 4 feet to 50 feet, and from 24 feet to 100 feet in length, containing 942 cu. yds. of concrete at a cost of $9,453. We also have 10 concrete culverts under contract, comprising 513 cu. yds. of concrete, at a contract price of $4,400. These costs of concrete include excavation, steel reinforcements, and in some cases wing pipe.

In addition to the above items, we have this year spent about $25,000 upon rock roads and $20,000 by the road overseers.

Yours truly, L. M. STALLARD, *County Highway Engineer.*

A road cut of Buchanan Co. 40 feet deep



The constitutional amendment for an additional road tax of 25c on the $100 assessed valuation carried by about 20,000 votes.

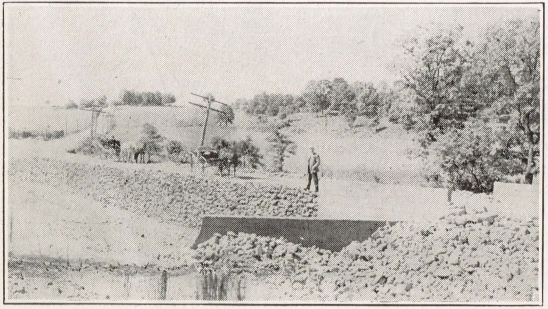
MONETT, BARRY COUNTY, MO.

THE accompanying pictures are of one mile of the Purdy road, recently improved. The road is surfaced with 8 inches of creek gravel. The highest fill is at the culvert approach. This fill is 900 feet long, 10 feet high at the highest point, and is 20 feet wide across

THE PURDY ROAD BEFORE WORK OF THE MONETT SPECIAL ROAD DISTRICT.

the top. 1,500 cubic yards of field rock helped to build up this embankment. The bridge is a concrete arch (gravel concrete), with an 18-foot span, 6-foot rise, and a 20-foot roadway. The culvert was built for $224 and the mile of road for $1,738.

Yours truly, J. F. MERMOUD,
Monett Special Road District.



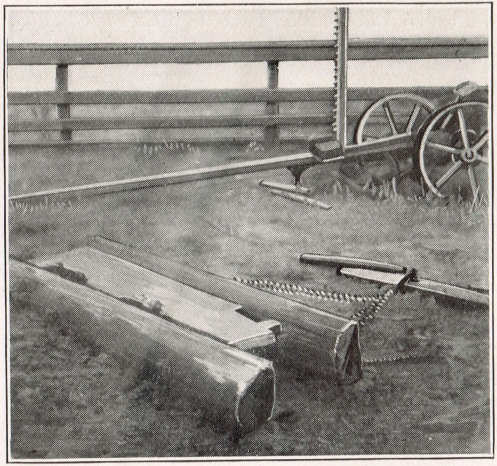
Purdy road rebuilt by Monett Special Road District. Frank A. Wightman, Pres. Board of Com'rs.

The Road Drag

Has done as much toward making good earth roads as any other one tool ever known. Every foot of earth road in Missouri should be under maintenance with the drag.

The first public lecture ever made upon the drag for road purposes was at Chillicothe, Mo., December, 1901, by Mr. D. Ward King, under the direction of the Missouri State Board of Agriculture. This was followed by lectures and demonstrations over the entire State.

MISSOURI HAS SPENT NOT LESS THAN $30,000,000 UPON HER ROADS ALONE



One of the farmer's road tools—"The Missouri Idea"

HALE, CARROLL COUNTY, MO.

This township has used the Road Drag successfully for six years

An overseer is placed over every eight miles of road and is held responsible for dragging the roads under his care. The overseers are under the township board's direction, thus making a central authority, by which means a united action is obtained over the entire township. After a rain, each overseer uses the telephone to get the citizens out with the drags, and all the roads of the township are dragged at practically the same time. The major part of the work is done in April, May and June. Volunteer work is gratefully accepted but not depended upon. Those doing the regular work are paid for it by a previous agreement. In this way the roads over the whole township are maintained in excellent condition for from $10 to $15 per mile annually, including $15 paid to each overseer.

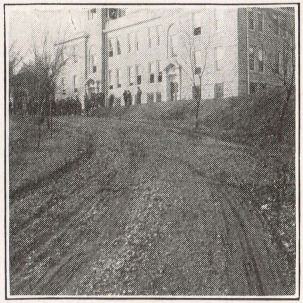
This process keeps the crown of the road firm, well packed and raised about 18 inches. No ditches are cut, as the crown sheds the water, and the depressions caused by dragging carries it away. Besides the required number of drags, each overseer is furnished with a plow and two or three slip scrapers.

Yours truly, W. S. DEARDORFF,
Chairman Township Board.

MANY ARE, AND ALL SHOULD BE, FAMILIAR WITH THE GOOD WORK OF THE

Road Drag

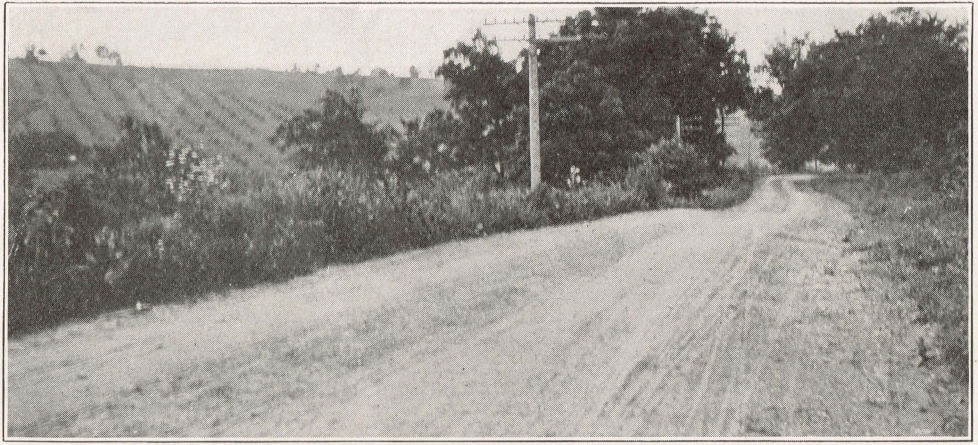
a cheap, simple and easily built device for maintaining earth roads. While it is used principally upon earth roads, it can also be used successfully in many instances for maintaining gravel roads.



An old gravel road in Cape Girardeau county waiting for the drag.

The same old road in Cape Girardeau Co. one hour later, after the work of a road drag.

MISSOURI HAS 4,000 MILES OF ROCK GRAVEL AND CHERT ROADS



A good gravel road of Pike county—one of the prides of the Pikers. Scene near Clarksville. Pike county builds rock as well as gravel roads. C. H. Harris, County Highway Eng.

Missouri has 240 miles of bridging, enough to reach across the State

WARRENSBURG, JOHNSON COUNTY, MO.

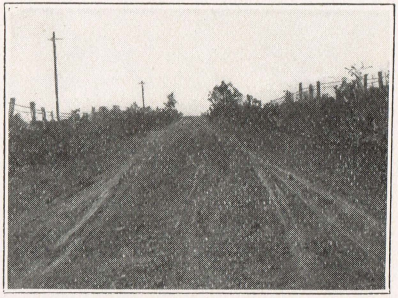
IN THE YEAR 1908 Johnson county built 29 steel bridges with concrete backing and wing walls. We also built 62 concrete culverts with wing walls, all of which are in first class condition at present. These culverts are four feet square and 18 feet long, with 6-foot wing walls. Walls are 8 inches thick, slab floor 6 inches. The slab is reinforced with quarter inch rods, 6 inches apart. These culverts were built by contract at a cost of $127 each.

For 1909 we are building 27 steel bridges with concrete backing and wing walls. We have also built 64 concrete culverts. These are round culverts of 3 and 4 feet diameter over steel forms, 18 feet long with 10-foot headwalls. We are using river sand, Joplin chats and native limestone. These culverts, built by the county highway engineer, will cost about $90 apiece. The average haul for sand, gravel and cement is about 6 miles.

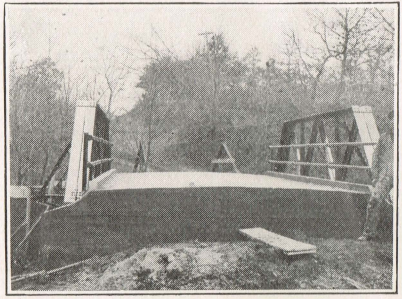
Yours truly, DAVID MOHLER, *County Highway Engineer.*

Missouri has spent not less than $20,000,000 upon her bridges and culverts alone

A Southwest Missouri Road



Barry county, made from the natural "chert" soil by ditching and crowning the road. Excluding any heavy cutting, this road cost about $150 per mile, and is shown here after two years' use with very little maintenance during that time. This was photographed the day following forty-eight hours of hard rain. Miles of road in South Missouri are on soils of this "cherty" formation.

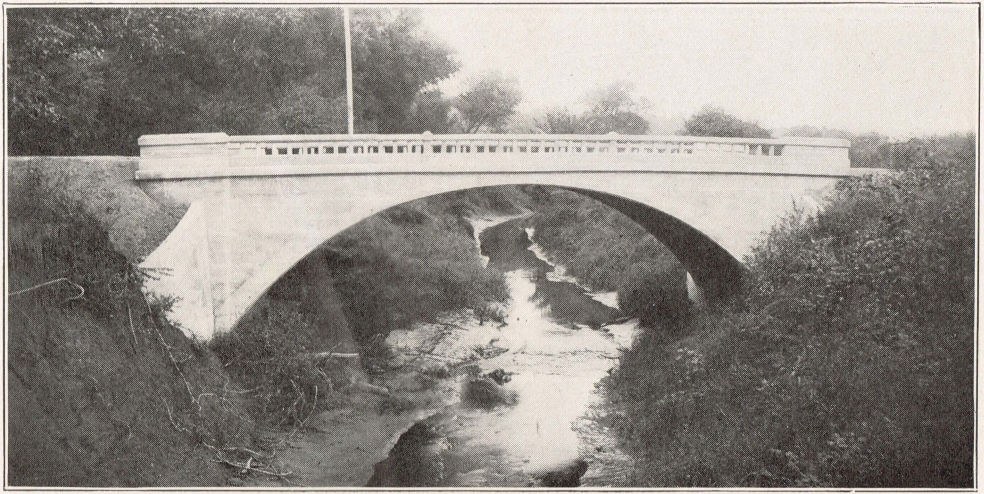


All steel and concrete bridge of Bates county. Steel trusses, gas pipe railing, concrete flooring and abutments. E. B. Borron, Co. Highway Eng.

CONSIDER THE POSSIBILITIES FOR GOOD ROADS AT A VERY SMALL COST

A stone masonry bridge of Franklin County. Chas. L. Moore, County Highway Engine'r

Missouri has 90,000 culverts (structures less than 10-foot clear span), not including small pipe openings.



One of Buchanan county's concrete bridges. L. M. Stallard, County Highway Engineer.
Missouri has 16,000 bridges of over 10 foot-span.

The road work of the State would go forward in leaps and bounds under a definitely fixed policy of State aid

A constitutional amendment for State aid to roads, authorizing a State levy of 5 cents on the $100 of assessed valuation, will be voted upon in 1910

Missouri roads reach every farm in the State. Does any other method of transportation? The highway is more necessary than the railway or the waterway

THE HUGH STEPHENS PRTG. CO., JEFFERSON CITY.