

You can see that Howard County is an advocate of crushing the gravel. I have not tried to give the impression of being an authority, because that would be out of reason. Conditions govern everything. The highway extension here at Purdue is trying to gather facts and figures about all phases of road work so that we can all have a better understanding of the one common problem, that of maintaining roads.

WORK DONE ON DUBOIS COUNTY ROADS DURING 1933

By Carl Heim, Dubois County Surveyor and Road Supervisor

Twenty-five miles of road were graded by the landowners under the Gap Road Law and 14.2 miles of these newly constructed grades were surfaced with stone or gravel in 1933. *The grades on these roads were constructed by the landowners without cost to the county, except for finishing the grade with the county tractor and grader. The county furnished the culverts and bridges.* This method of road construction has been practiced in the adjoining counties for the past ten or twelve years and provides a low-cost road to the county. A comparison of the roads built in previous years by contract is shown in Table II.

Table I lists roads worked on in 1933 and shows the mileage surveyed, the mileage on which the grade is practically completed, the mileage of grade surfaced, and the approximate cost to the county to date.

TABLE I
ROADS WORKED ON IN 1933

Name of Road	Miles Surveyed	Miles Graded	Miles Metaled	Cost To Date
O. Schwenk.....	0.194	0.194	0.194	\$201.60X
Schnarr.....	2.226	2.226	2.226	4,207.01*
Lubberhusen.....	2.062	none	none	none*
Bretz.....	4.000	1.000	none	630.48
Schipp.....	2.252	2.252	0.500	2,026.09
Metzger.....	4.508	4.000	1.100	3,455.68
Weyer.....	1.073	1.073	0.500	1,766.40
Lange.....	2.709	1.500	none	170.00
Schmidt.....	1.000	1.000	1.000	3,581.70
Himsel.....	1.250	2.000	1.250	2,445.28
Schwenk.....	1.000	1.000	1.000	1,757.26
G. Mann.....		0.250	0.250	634.70
Mehne.....	1.800	0.750	none	155.40
Milburn.....	1.500	0.500	0.500	968.46
Scott.....	0.250	0.250	0.250	332.50
Weickert.....	0.500	0.500	none	211.00
Hautch.....	1.000	1.000	1.000	1,564.57
Katterhenry.....	1.326	1.326	1.326	2,566.82
Poor Farm Lane.....		0.500	0.500	287.00G
Shiloh.....	0.200	0.200	0.200	1,058.10G
Stewart.....	0.694	0.694	0.694	1,283.00*
Huelsman.....	1.000	1.000	none	157.00
Duff.....	0.150	0.150	0.150	255.30
Teder.....	1.600	1.600	1.600	2,189.64
Witte.....	1.200	0.500	none	214.56*
Total.....	33.494	25.465	14.240	\$32,118.95

Roads marked X were graded in 1932.

Roads marked * were surveyed in 1932.

Roads marked G were graded by the County.

The estimated average cost per mile, based on completed roads and including all culverts and new bridges, is \$1,856.

If this type of road construction had been started in 1921, when the Gap Road Law was passed by the legislature, the county would have several times the mileage of stone and gravel road it now has.

The price of shipped crushed stone advanced approximately 20 cents a ton June 1st. The county also bought stone from four local crushers which gave several months' employment to about forty men. The cost of this local crushed stone

ranged from \$1.10 to \$1.90 per yard laid down on the road. This is a very reasonable price.

The Shiloh Cemetery Road was constructed as recommended by the county council, at a total cost to the county for the grading, culverts, and stone complete, of \$1,058.10. The contract bid for this road as laid out over a longer route in 1929 was \$5,973.

BRIDGE CONSTRUCTION

During 1933, \$16,856.55 was spent on new bridges and culverts, approximately \$12,642.42 of which was used on new road construction. A contract was awarded for supplying the county with corrugated culverts at a price which was approximately 20 per cent below the price which we had been paying the previous year.

STONE AND GRAVEL ROAD MAINTENANCE

Approximately 8,857 tons of stone and gravel were used for maintenance in the county. Many of the side ditches along the improved roads had not been cleaned out for several years and we were unable to open up all of them properly, although we had two crews of men working on them several months. The side ditches along the improved roads should be opened up every year in order to provide proper drainage for the roadbed.

EARTH ROAD MAINTENANCE

Although the majority of the townships have been using tractors to grade their roads, I believe this is the first year that all of the roads in the county were graded with tractors. Grading work on many miles of roads was hindered by brush-covered right-of-ways, but I believe that next year we will be able to do a better job of grading on those roads which were cleared out by the C.W.A. workers. Each township assistant has a gang clearing out the right-of-way on the earth roads in his township. The extremely wet spring delayed the grading work considerably and the unusually heavy rainfall did a great deal of damage to the earth roads.

Approximately 100,000 board feet of lumber were used in repairing bridges and culverts on the earth roads this year. This does not include two new floors on Patoka River bridges and one on a Mill Creek bridge.

About 90 per cent of all lumber used was treated by dipping into a tank of hot creosote and asphalt mixture. This adds about 50 cents per 100 board feet to the cost of the lumber, but increases the life of the lumber considerably.

TABLE II
HIGHWAY COST COMPARISONS

(These comparisons are based on a three-year average from 1929 to 1931 inclusive.)

	Average Miles Per Year	Average Cost Per Mile	Average Cost Per Year
New Township Road Construction	6 $\frac{3}{4}$	\$6,336.00	\$42,776.60
Levied for Township Earth Road Maintenance	600	42.20	25,326.33
Collected for Improved Road Maintenance..	175	301.00	52,705.42
Levied for New Bridges			9,191.00
Total Average Amount Spent Per Year (1929- 1931) on Road and Bridge Construction and Maintenance			\$129,999.35

The total amount received in 1933 for road construction, maintenance, and new bridges was \$89,938.18. Of this amount, \$82,669.91 was from the state gasoline tax and license fees and the balance was transferred from the township and improved road funds carried over from the previous year. Of the total amount spent on roads and bridges in 1933, \$32,118.95 was spent on new road construction. No tax levies are made for road or bridge maintenance or construction under the present state laws.

EQUIPMENT

Our grading equipment consists of seven crawler-tread, type-30 tractors, ranging in age from six to twelve years. One of these is unfit for further service because of excessive repairs required and should be traded in on a new tractor. We have three graders that are too large to be used efficiently with the type-30 tractors and five smaller graders in fairly good condition.

The following is a list of county trucks, showing their make and age:

Make	Year Purchased	Age
Service—3 $\frac{1}{2}$ -ton	1919	14 years
Indiana—3-ton	1929	4 years
2 Fords—1-ton	1929	4 years
Ford—1-ton	1926	7 years
Chevrolet—1 $\frac{1}{2}$ -ton	1929	4 years
Chevrolet—1 $\frac{1}{2}$ -ton	1933	
International—1 $\frac{1}{2}$ -ton		

The 1919 Service truck has had a good driver for the past ten years and is in good condition, although it is fourteen years old.

I do not believe in buying large heavy-duty trucks because their repairs are very high and the smaller trucks are much easier to handle and not so destructive to the roadbed.

TABLE III

COUNTY-UNIT AND DONATION ROAD MILEAGE

COUNTY-UNIT AND DONATION ROAD MILEAGE IN EACH TOWNSHIP TO JANUARY 1, 1934

(Township line roads were charged one half to each township.)

Township	County Unit	Donation	Total	Under Construction	Completed in 1933
Columbia . . .	2.90	0.97	3.87	1.50	0.75
Harbison		1.00	1.00	0.00	1.00
Boone	1.00	3.00	4.00	2.80	3.00
Madison . . .	2.40	3.81	5.21	1.00	3.81
Bainbridge . .	0.37	0.50	0.87	0.00	0.50
Marion	3.25	0.00	3.25	4.00	0.00
Hall	2.00	1.60	3.60	0.00	1.60
Jefferson . . .	2.50	0.00	2.50	0.00	0.00
Jackson	10.00	0.00	10.00	1.25	0.00
Patoka	0.12	2.23	2.35	0.00	1.48
Cass	2.60	1.25	3.85	0.00	0.00
Ferdinand . .	2.40	2.10	4.50	10.54	2.10
Totals	29.54	15.96	45.50	21.09	14.24

The average mileage of county-built roads per township on January 1, 1934, was 3.8 miles. One third of the total mileage of roads built by county funds was constructed under the Gap Road Law in the last two years at a cost of approximately \$20,500. The remaining two thirds, amounting to 29½ miles, cost the county over \$375,000 to construct. This does not include township road construction paid for by township funds.

GENERAL

When the Civil Works Administration jobs were allotted to our county by the state officials, we made application for two hundred men to work on county roads and bridges. These men began work the last of November and are distributed throughout the county in charge of the assistant highway supervisors. The supervisors have been given orders to clear

out the worst roads first, so that we can do a better job of grading this summer with our grading outfits. We have painted and repaired several bridges with these men, but the weather has been unfavorable for this kind of work.

The earth roads in each township are in charge of an assistant supervisor, appointed by the commissioners, who is responsible for their maintenance.

We will probably have enough money available in 1934 to improve about ten miles of new road.

TABLE IV

HIGHWAY SUPERVISOR'S REPORT FOR 1933

1. <i>Labor Performed</i>	
Single Hands	\$9,536.20
Teams and Drivers	3,736.14
Mechanics	5,653.29
2. <i>Express and Freight</i>	66.95
3. <i>Materials Purchased</i>	
Gravel and Stone	26,832.09
Cement	34.70
Sewer Pipe and New Bridges	16,988.95
Lumber	3,393.78
Hardware (Includes Dynamite).....	2,334.57
Tools	766.30
Paint	17.42
4. <i>Truck Repairs</i> (Includes Tractors and Graders).....	2,914.36
5. <i>Gas and Oil</i>	4,373.25
6. <i>Tires and Tubes</i>	296.32
7. <i>Insurance Premium</i>	3,232.71
8. <i>Superintendent</i>	
Salary (Jos. Wuchner).....	316.35
Office Expense	434.15
9. <i>Assistant Superintendents</i>	
Salary	8,268.82
10. Temporary Loans and Interest.....	none
	\$91,685.55
TOTAL EXPENDITURES	
(As Shown by Highway Ledger)	
Cost of New Road Construction.....	\$32,118.95
Cost of Maintaining Township Earth Roads.....	34,748.54
Cost of Improved Road Maintenance	24,816.06