

## STONE ROAD CONSTRUCTION

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During more than ten years in charge of stone road construction in Jasper County, we have made some rather radical changes in our standard specifications, especially with regard to the size of stone and the manner of placing.

In making such changes we have kept in mind the original cost to the taxpayer, the cost of maintenance, and the service to be rendered, that is, the amount and weight of traffic.

Jasper County has been very fortunate in having its heavy duty roads taken over by the state, thus leaving the 460 odd miles of county roads subject to moderate or light traffic.

Before the work of construction is begun the center line of the road is marked by stakes set along the margin of the road at 500 foot intervals and plainly marked with the number of feet to the center of the road. These center line stakes are set from corner stones or other controlling marks which must conform to the lines as determined at the time of the original survey and cross-sectioning. Station stakes are also set along the margin of the road, showing the location of each station. Grade stakes are set on both sides of the road at each station. The grade stakes are driven so the top of the stakes are flush with the finished grade in the fills and in the cuts they are left above grade and the cuts plainly marked thereon.

After the stakes are placed, the first part of the construction necessary is the clearing and grubbing. I will not go into detail on clearing and grubbing, as it is pretty well understood what the requirements are to make way for a good roadbed. Then comes the work of building the grade, cutting the side ditches and placing all cross-drain pipes and concrete headers.

In building the grade, proper allowance should be made for shrinking. Care must be taken to have the finished grade conform closely to the grade line shown on the profile.

It is extremely important to so construct the side ditches that they will drain the road wherever it is possible to obtain an outlet. Also tile drains are provided for on each side of the road wherever a sufficient outlet is obtainable. We have found that the most successful method of eliminating so-called "quicksand pockets" is by the proper placing of drain tile.

All cross-drain pipes are specified of corrugated metal and conform to the state specifications on corrugated metal pipe.

Here is a paragraph taken from our standard specifications on "Material":

The material for the improvement shall be of crushed limestone and of the best quality obtainable and in all cases the stone must be of hard and compact texture of uniform grain. The stone must be of cubical form, broken, crusher-run stone and shall have a French coefficient of wear of not less than five (5) and pass through a ring not greater than one inch in diameter. The stone is to be tough, strong, and uniform in color. No soft, spongy stone will be allowed on the improvement.

Whenever any portion of the grade of the road, not less than five hundred (500) feet in length, shall have been completed to the satisfaction of the engineer, he shall give permission to place macadam upon such portions of the grade as in his judgment seems best. There shall be spread a layer of crusher-run limestone of not less than ten (10) inches in depth and ten (10) feet in width requiring not less than thirty and eighty-six hundredths (30.86) cubic yards of limestone per each one hundred (100) lineal feet.

The finished surface of the macadam, ten feet in width, shall have a crown of three inches and be of the form of a parabolic curve. All material shall receive a backing of earth along the outer edge to hold it in position.

The grade boards shall be set on both sides of the macadam in advance of the dumping and are not to be removed until backing and leveling up flush with the top of the same is complete.

In the foregoing paragraphs there is nothing mentioned about rolling the subgrade or the stone. Ten years ago we included extensive and rigid specifications concerning the rolling of subgrade and stone, and a lot of money was spent for rolling. But close inspection has been kept upon these roads that were built of  $2\frac{1}{2}$ " stone base and rolled, and the maintenance has been high compared with the roads built with one (1") inch crusher-run stone.

We have observed and decided that by placing the money we used for rolling into additional stone and drain tile we are getting much more for every dollar spent.

To give you some idea of the cost per mile under the foregoing specifications I have taken the contract price on the last ten roads built in Jasper County and the average contract price is five thousand three hundred eleven (\$5,311) dollars per mile.