THE CONSTRUCTION AND MAINTENANCE OF EARTH ROADS IN THE SOUTH.*

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It matters not how active we are in our efforts to encourage the construction of macadam, gravel, and other hard surface roads, there will of necessity, for years to come, be a greater percentage of earth roads in every southern state.

The reasons for this are apparent to anyone familiar with conditions from a financial and population standpoint, to say nothing of the lack of road building material that exists in a large number of counties.

We are informed by the United States Office of Public Roads, that the ten southern states; namely, Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Texas, had, in 1904, 472,589 miles of unimproved roads. Assuming that since then the mileage of improved roads has doubled, we will have left 458,381 miles. If these figures are approximately correct, should not the question of the proper construction and maintenance of these roads receive our most careful and thoughtful attention?

Wonderful improvements have been made in earth roads where common sense men have used common sense methods of construction and maintenance, but so long as we are content to place this important work in the hands of incompetent or grafting politicians, as is so often the case, we cannot expect anything but the worst. I would not for a moment say that all failures in this work are due to graft, for I am convinced that a large majority of road commissioners and overseers are honest men, but as a rule they are elected to office not because of their fitness for the work, but because of their personal popularity. These evils coupled with the statute labor system, have fostered upon the south the very worst earth roads in the nation.

The first and most important thing to do is to change our laws, abolishing the statute labor system and substituting therefor the cash tax system. If this can be done and the work of improving and maintaining our roads be placed in the hands of men who are engaged in no other occupation and are required to give their full time and attention to the work, there is no question but that the greatest good will result.

Very few earth roads have, in the true sense, been constructed. The average road is opened without regard to grades or proper location and simply because it is desirable to have it pass the house of A, B and C. The opening consists of cutting down any trees or bushes that cannot be avoided by crooks and bends, leaving the stumps just high enough to allow a wagon to pass over and requiring expert driving to miss. The highway is then ready for traffic. Unfortunately houses have been built and other improvements made near and abutting on these old roads to such an extent that it is detrimental to such property to make any great change in location, or to rectify bad alignment and grades. Of course, beneficial changes that will be an advantage not alone to the road but also to the abutting property, can be made in many places.

As to the proper reconstruction of an old public earth highway: The road should be gone over carefully by the proper official and such changes of a proper nature as can be made, should be noted, taking into consideration initial cost, cost of maintenance, alignment and grade. The center line and grade of the road should be established by an engineer, if it is possible to secure one. If an engineer cannot be secured, the ordinary method of lining a fence, that is, by means of sight poles, can be used. After the center line has been established and the width of roadbed agreed upon, you are ready for construction work. The proper and efficient grading force for this work should consist of a foreman, eight or ten good two-horse teams with drivers, one wheel and one drag scraper for each team and one extra wheeler and drag for emergencies, one good railroad grading plow, one grading machine, one road drag, one dump man and one loader, with five or six extra men for grubbing and other work. The foreman should be an experienced grading man who understands handling earth and knows when it is proper to use drag scrapers, wheel scrapers or wagons. The road should be so graded that the ditches or gutters are parallel with the centre line of the road and at uniform distances from it. When completed the road should be uniform in width and the surface should be smooth and even, free from holes and high places, with a uniform crown having a fall of one inch to one foot from center to gutters. On grades this ratio of fall should exceed that of the grade to such an extent that water will readily flow to ditches instead of down the road. Drain pipe should be freely used and no water should be allowed to flow over the road if it can be avoided. In some cases it is not practicable to build the road above high water. In such cases, danger signs should be posted, showing at what stage the water becomes too high to ford the stream.

We have, in the south, nearly every kind of soil, from sticky gumbo on the one hand to coarse sand on the other. The methods used for the improvement of roads through a section of one will not do altogether for the other. The worst roads, by far, that we have in the south, are in our rich and fertile prairie lands, where, unfortunately, there is very little road building material to be found. This soil readily absorbs water and becomes very sticky after rains. It expands freely, and dries rapidly when the sun shines, and becomes very hard under the tamping effect of teams and vehicles. From observation and experience I have learned that these roads more than most others, require a very high crown and that the driving surface should be only wide enough to allow two vehicles to pass. If a prairie road is narrow, with a fall of not less than 1½ inches to one foot, water will shed rapidly to the ditches and the entire surface will dry out quickly. A road of this kind can be constructed quickly and at little expense, except where grades are to be reduced or bottoms filled, with a grading machine, or even with a road drag. The latter method will require more time, but in the end will be found to be very satisfactory. No earth road can be maintained in good condition unless it be so constructed as to drain well, and unless it be kept free from ruts and holes.

The best method of maintaining an earth road, especially a prairie road, is by the systematic use of the road drag. A sand road is never good under any circumstances, but certainly is not improved by crowning. A sand road is at its best when moist, so it should be left flat. No one wants a sand road, so, if possible, clay should be added to, and mixed with the sand, making what is known as a sand clay road; the construction of which cannot be discussed in this paper.

The old way, and it is used to-day by many, of filling a mud hole with brush with a little earth on top, cannot be too strongly condemned, and is only permissible in cases of emergency, when it is impossible to drain the hole or to get sand or stone to fill it. The overseer or foreman should in dry weather, center his work on such places until the road is raised to a sufficient height to drain well. I have seen overseers have brush hauled two miles to fill a mud hole when sand was within shovelling distance of it.

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