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How To Treat Dirt Roads.

Dr. Pratt Offers Some Good Advice--Care Should Be Taken With Location--What a Road Drag Will Do--Some Valuable Don't's.

By Dr. Joseph Hyde Pratt, State Geologist, in June Number of Southern Good Roads.

When we stop to consider the number of miles of road in any county and compare this number with the small number representing the miles of specially surfaced road, we can readily see that it will be a great many years—perhaps, generations—before all or even half the public roads are surfaced with macadam, or sand-clay. For this reason it is very important that we should give very careful

consideration and thought to the construction and maintenance of the dirt road. When properly constructed, the dirt road can be kept in good condition throughout nearly the whole year, except, perhaps, during periods of severe freezes and thaws. At the present time we have very few earth roads but what can be improved, and usually the question of the improvement is not a very

engineer. The location of any public road is the only permanent portion of the road; therefore, great care should be taken that when the road is once constructed there should be no question whatever regarding its relocation. In locating a road it should be done so as to permit of an easy grade—none over 4 1/3 per cent—and should be constructed so that it will readily shed the



Fig. 1. Dirt road that should be improved 100 per cent. by use of split log drag.

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rainfall. How often we see a road going up a hill and down the other side, when, by building around the side of the hill, it could have been kept at an even grade, reaching the identical point within the same distance, or but a little greater.

If, in grading a road, we have any grades over 4 1/3 per cent, it will be necessary to construct across the surface of the road a V-



Fig. 2. Road with steep grade (average 10 per cent.) Travel made more difficult by uneven surface of road; large stones project above the road.

difficult one to solve.

The old idea that anybody can build a dirt road is fast losing ground, and our people are beginning to realize that road construction, even of dirt road, requires the services of men who have been trained in this line of work. As careful thought should be given to the construction of dirt roads as is given to the hard surfaced roads; and in those counties which

shaped surface ditch to turn the water off the surface of the road, for if this is not done the water will, with the grade over 4 1/3 per cent, have momentum enough to seriously gully the surface of the road. No matter how carefully these V shaped ditches across the surface of a road are constructed, they are very inconvenient to travel, are hard on the wagons, and should be avoided whenever pos-



Fig. 3. Surface ditch in dirt road for carrying water from one side to the other. These ditches should not be used, and the water should be carried under the surface by means of a culvert.

rely on just the labor tax for the construction of their public roads a great advance can be made if this labor tax is utilized under the supervision of an experienced road

sible. They can be avoided if the grade is kept below 4 1/3 per cent. In fig 2, is illustrated a steep grade on a road in Davidson county, N. C., which could readily be elim-



Fig. 5. A road where surface contains a great many stumps. Such a road cannot be maintained properly.

ated by relocation of the road. The surface of the road is uneven, and large rocks are projecting above the surface. "Thank you-mams" have been made across the road to turn the water off the surface of the road, which add a great deal to the discomfort of travel over this road.

The dirt road is more susceptible to damage by water than, of course, any of the specially surfaced roads; therefore great care should be taken to work out an efficient system of drainage for the road. Water must be kept away from the road, and the rain which falls on the road must be permitted to run off as rapidly as possible, and by a very easy grade. It must not only be taken off the surface of

venience to travel. Fig. 3 shows a surface ditch with lower side so high that a heavily loaded team would apt to be stalled. Wooden culverts should be avoided if possible and where necessary, to use them they should be made of good timber and all planks securely nailed. They should be examined constantly so that they can be kept in good condition. The surface of the road should be kept as near flush with the surface of the culvert as possible. Fig. 4 is a very poor form of culvert.

After the system of drainage has been installed, provision should be made to keep it up, so that the drains and the culverts will not become stopped up.

The surface of a dirt road



Fig. 6. The old way of throwing dirt from ditches on one side of road preventing drainage from road into ditch. The scene is in Craven County.

the road as rapidly as possible, but also out of the side ditches. Care should be taken that these side ditches are not too steep, and that every opportunity is seized for turning the water out of the ditches into the adjoining fields.

Many of our county roads are bad because in their construction no arrangement was made for taking care of the water, and thus they are very muddy and filled with ruts and holes. Instead of the middle of the road being higher than the edges, so that the water can readily run off on each side, many of them are flat, or even concave, with the center of the road the lowest point. If the road has been constructed so that it is

should be kept of dirt, and whenever any holes or ruts have developed in the road, they should not be filled up with stone, or brush, but with dirt, and with dirt as nearly as possible of the same character as the dirt composing the surface of the balance of the road. If, on the other hand, holes or ruts are filled with rock, gravel, or brush, the wearing effect will be uneven, and the wheels will begin to scoop and cut out holes just beyond or on the opposite side of the road, from the hole filled up. If there are stumps or rocks in the road, they should all be removed, so that the dirt surface can be smoothed over and brought to an even slope from the center



Fig. 7. Wayne county farmer using the public road for a turning place for cultivator thereby damaging the road.

well crowned, with the slope about 1 in 20 from the center of the road to the side ditches, and these ditches have been graded so as to readily take care of the water, and yet not steep enough to cause them to cut deep gullies on the side of the road, and if the water is taken from these ditches at every available point so as to prevent seepage of water under the surface of the road, there should be little difficulty in keeping the road in good condition. Very often it is necessary to carry the water from one side of the road to the other; and when this is necessary it should be carried under the surface of the road by means of either concrete, metal, or terra-cotta culverts or pipe. The water should never be carried across the surface of the road, for it keeps the surface soft, is apt to flow down the surface of the road unless prevented by high rock, and is a great incon-

to the ditches. Fig. 5, represents a road that it is impossible to maintain properly on account of the stumps. After the road has been well constructed and the right slope and surface obtained, it can be kept in this condition very readily by judicious application of the split-log or King drag. Fig. 8. This simple road machine, if used regularly after a rain when the roadbed is wet, will smooth and shape up the road, so that as soon as it has dried out it will be firm and hard. The drag will fill up the ruts and holes and will keep the dirt road in first-class condition, with hard surface throughout nearly the whole year.

As moisture is very detrimental to a dirt road, the sun should be permitted to strike the surface of a dirt road as much as possible; and, therefore, care should be taken not to have too much shade along a dirt road, and, where ne-

cessary, the trees should be cut away so that the whole surface of the road is exposed to the sun for at least several hours during the day. Shade is good for a macadam road, but bad for a dirt road.

In repairing a dirt road the same thought must be given as in the construction of the road, and, when cleaning out ditches, the material should not be thrown into the middle of the road or on any part of the surface of the road, but it should be thrown into adjoining fields, for this material is usually composed largely of fine silt and vegetable material, which holds moisture like a sponge and becomes very difficult to dry out, and is entirely different in character and consistency from the dirt surface of the road. How many

posite side of the ditch.

Don't leave the center of the road the lowest point; but make it the highest and give the surface of the road a slope of about 1 in. 20 to the side ditch.

Don't carry the water across the surface of the road from one side to the other; but carry it by means of culverts underneath the road.

Don't have grades on your road over 4 1/3 per cent; for if you do it will be necessary to build V-shaped surface ditches or "Thank-you-mam's" across the road.

Don't, in working out the labor tax on the roads, try to make a holiday of it; but give an honest day's work on the road. Let us eliminate what is often seen in those sections where the roads are maintained by labor tax—ten or twelve men and an overseer, a little

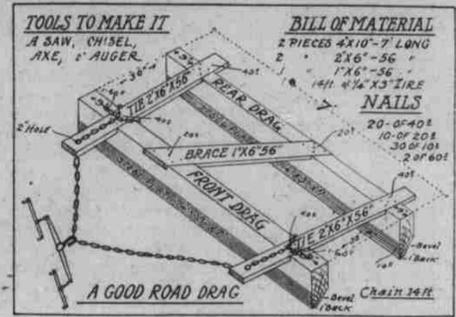
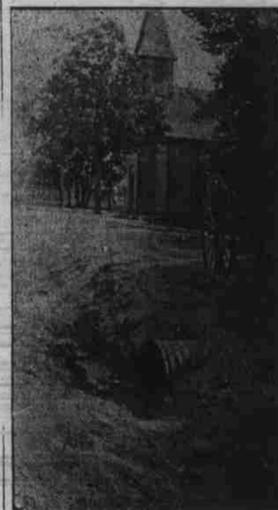


Fig. 8.

times we have seen the dirt road repaired by this material being thrown up into the center or just beyond the edge of the ditch, thus preventing the surface water from flowing into the ditches, and often turning it down the road!

In the maintenance of our dirt roads they should be divided into sections, with a foreman or overseer in charge of each section, whose duties should be to go over every mile of his section after every rain and at least every two weeks, and whenever he finds a portion of the road needing repair, he should have it done. After each heavy rain he should run a road drag over the road in order to bring it into shape and fill up any ruts or holes that might have been started.



North Carolina Culvert Company's Culvert at Nelson, Duplin County, N. C.

We must bear in mind that roads will not maintain themselves, and that repairing a road simply once a year will not keep it in good condition.

The cost of maintenance of the public road is often increased by the farmer using the road as a turning place when plowing, harrowing or cultivating their fields. County and township road commissioners should not permit this as the farm implements carry a certain amount of soil into the ditches and onto the road. Fig. 7, illustrates this use of the public road which should be prohibited.

In repairing a dirt road:

Don't fill up the holes and ruts in the dirt road with brush, with rocks on top, and a little dirt to cover the rocks; but fill up the hole with dirt of the same character as the balance of the road. Don't throw all the refuse from ditches into the middle of the road, thus softening the surface and destroy the solid firm bed that you have obtained by previous work; but throw this material out on the op-

grey mule, a small plow, six dogs, three or four guns, and a few tools which often are not considered worth using at home. This road force is not only hard on the rabbits, but also hard on the roads.

Don't reject the split log drag because it is a cheap road machine but use it constantly, for it is the most efficient road machine that we can use in maintaining the dirt road. Fig. 8.

LOWESVILLE NEWS.

June 19.—Despite the dry, hot weather cotton is looking fine. Some corn has begun to show need of rain. Most farmers say wheat is light.—Many of our young people attended an ice cream supper at Mr. Will Long's at Triangle, last Saturday night.—Master Fredson of Mr. Chas. Henkel, cut a bad gash in his foot while chopping stove wood, the other day.—Mr. W. L. Edwards gave an ice cream supper to a large number of young people last Friday night.—Mr. Tyner and his sister Miss Robena McIntosh of Lucia, spent last Friday night at the home of their aunt Mrs. F. C. McIntosh and attended the ice cream supper.—Mr. I. C. Lowe, one of our own hustling merchants, has offered a prize for every home run knocked by the Lowesville boys this season. So far he has not had to give away one but several of our boys hit for three sacks last Saturday, and had Ruff Williamson been a fast runner, he doubtless would have captured the first prize given. The boys are playing good ball this season, not having lost a single game. In a one sided game here last Saturday our boys defeated Alexis by a score of 23 to 4. The visitors did not see home until the 6th when Nixon threw wild from second to home and let one score, then the local boys got careless and let three more score. Walter Nixon pitched for a shut out while Carl McIntosh did the receiving. Pink McConnell played errorless on first. Lattie Nixon played likewise on second with the exception of one wild throw. Frank Henkel fumbled with one on short.—Charley Hagar was on his toes at third and let nothing pass. Wiley and Harve Duckworth and Ruff Williamson kept the ball from touching the ground in the outfield.

The features of the game were the pitching of Nixon and the all-round batting of the Lowesville boys, and the pitching of Kennedy in the last half of the game for Alexis. Batteries: Nixon and McIntosh, Kennedy and Saddler. Look out for a hot game next Saturday.

The annual picnic will be on the 28 and 29th of July this year. A play "The Girl from Triangle Ranch" will be played Saturday night July 29.—Mr. R. O. Kincaid made a business trip to Charlotte Tuesday.

Success to the News. X.