

Stabilization of County Roads

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Roads are roads wherever they may be. They are used to transport people and merchandise or goods from one place to another place. Roads transport farm products from the farm to the market place. Today nearly all fresh milk moves from the producer to the consumer entirely over highways and streets all the way.

These same roads transport manufactured goods back to the farm. The coal miners are interested in good roads. Large amounts of coal are used to generate electricity which is sold to farmers. Good roads enable the farmers to sell their produce so that they can buy the electricity.

This is indeed a two-way road. Products flow both ways. Good roads benefit everyone—not just the immediate few that they may serve.

Nearly everyone overlooks and neglects public relations. Friendly relations with the local newspapers always helps out. The local papers are generally glad to get all local stories, especially those affecting the public, like highway work. Tell your story. Tell all about your work. Keep the people informed about what is going on. I have found out that people really read the local newspapers. A good public relations program will help you get a better job done.

Good equipment is necessary to do any work today. The use of equipment is for extending the productivity of your labor force. Hand labor is over and long gone. It is too expensive even if you could get the men to do the work. You must mechanize every operation that is possible to mechanize.

It is our belief that you must have adequate machinery to do any work today. I have observed other highway departments, contractors, industry and farmers doing their work. Those outfits that do the best job are those that have the best equipment. We have a lot of good equipment. We think that we have a lot to show by reason of having this equipment.

Keep this equipment looking good. Good looking equipment will be noticed by everyone. It will bring favorable comment from your people. If it is possible, make it look distinctive. We changed our paint design. We are now using a two tone paint job—orange and white. The tops of the truck cabs from the bottom of the door glass up is painted white with a white V down the top of the hood. The rest of the truck is painted orange. Good looking equipment makes people think that you have a good department.

The employees like good looking equipment. Their morale is better. They take more pride in their equipment and have more pride in their work. Everyone is better satisfied and more work is accomplished.

Get the right equipment for the job. Do not accept substitutes. A contractor buys what he thinks will do the work. Political subdivisions should do the same thing. This equipment must not be selected by a salesman or a politician. It must be selected by those who are responsible for doing the work.

The purchase price of equipment is **not** the determining factor in the buying of equipment. It is what this equipment will accomplish for you. A cheap piece of equipment that will not accomplish your work is expensive at any price.

Two-way radio is one of the cheapest pieces of equipment that you will ever get. It is so cheap that you cannot afford to be without it. You are always in communication with all of your crews. Decisions can be made in minutes instead of hours or perhaps a day or two.

Buy your men labor saving tools and equipment. You will be repaid many times by more work accomplished.

All of this will help you in your public relations. Your workmen will help you in this every day. They meet many people that you never see.

Highways are big business today. Highways are getting more use today. Highways require full time expert technical people for planning and administration. The part-time government official cannot manage highways today. They cannot be expected to keep up with all the developments that are being made in this age. Better roads require more training and technical supervision. If a black topping job is done before the base is ready, that pavement can be lost the first winter. This is a great waste of money. Specialists will save their salaries several times in one year. There must be good administrators to manage all the operations in a highway department today.

Stabilization

Now to stabilization in our county. Champaign County is a small rural county in mid-west Ohio. Our population is about 28,000.

In Ohio we have three systems of highways—the State system, the County system, and the Township system. Each system is administered by its own officials who are practically independent of each other. In Champaign County the State has about 200 miles, the County 240 miles and the 12 Townships about 350 miles.

We have a plentiful supply of gravel, but this gravel is getting more expensive each year. We find that we must conserve it if the money is to reach all the way around.

Webster's dictionary defines stabilization as follows: (1) "to make stable, steadfast or firm, (2) to hold steady, to prevent fluctuations." Stabilization of bases compacts the bases, makes them more dense, much harder and more firm than before stabilization. Good granular material such as gravel can be compacted to near the density of concrete.

Gravel roads are much better when they are salt stabilized. The use of salt in the base makes for a much better riding surface. The surface is much smoother. The washboard effect is eliminated. The loss of material is greatly reduced. If the top of the road becomes dusty, this can be controlled with light applications of calcium chloride.

Bases for black top pavements are better when they are stabilized with rock salt. The use of rock salt allows the base to be compacted to greater density. This base material has a greater density after stabilization than it had in its natural state.

The salt in the base lowers the freezing point of the base. This means less freezing and thawing of the base.

Black top pavements cannot stand the freezing and thawing of the base. These pavements will break up when the bases freeze and then thaw out. The use of salt will greatly reduce this cycle. This means better pavements with a longer life.

A good stabilized base will require less bituminous material for the first paving. The salt stabilized base is very dense and very hard. The stabilized base will not absorb as much bituminous material as a non-stabilized base.

A salt stabilized base becomes very hard. In the summertime we have seen the bases so hard that a heavy motor grader would not cut the base.

We stabilized one gravel township road a mile and a half in length in the fall of 1952. In the late summer of 1953 this road was

surfaced with a bituminous pavement. The pavement was a prime and single seal type. This pavement went through the first winter without a single break. This is unusual for the first seal coat in our county. The second winter two small breaks occurred. There is only minimum skin patching on this road today. If the base had not been stabilized, I am certain that many patches would have been required by this time on this thin pavement. This road is in good shape today.

Rock salt is the easiest stabilizing agent to use. It is much easier than any other stabilizing agent. There are other agents that can be used. They will give a better base than a non-stabilized base. However, they are harder to use and more expensive than rock salt.

We have tried some bituminous stabilization. It is messy to use. It is more expensive, and requires very close control. If you get too much bituminous material in the base, it will become fluid and will move under traffic. This base will not get hard. The bituminous material acts as a lubricant between the granular materials in the base. Some laboratory control is almost necessary for this type of stabilization.

One county in Ohio uses soil cement base stabilization. They get a good base which makes a good road. However, this county has stated that this type of stabilization cost them \$10,000 per mile. This cost does not include any paving materials or additional material added to the base. The same results could be obtained by using rock salt as the stabilizing agent. The cost of using rock salt on the same road would be \$1,000 per mile, or less.

If you should get too much rock salt in the base, the base gets hard. Nothing has been damaged in any way. Nothing has to be corrected.

If you should get too much water in the base, it will take a little longer to dry out. The base gets just as hard as if the right amount of water had been added. It might take a little more rolling and shaping, but no damage has been done. Nothing has to be corrected.

Specialized equipment is not necessary for rock salt stabilization. This allows a wide latitude in the use of equipment and the different ways that different people work.

Salt stabilized roads or bases are very hard. These roads or bases cannot be cut with a motor grader when they are dry and hard. They must be worked when they are wet.

A stabilized gravel road, a mile and a half in length, in Jackson Township, was let go until it was in pretty bad shape. The Township

trustees thought the road was in a hopeless shape. I told them that I was confident that they could work the road into good shape again. But they would have to work it when it was wet—maybe in the rain, if necessary.

I know that they did not believe me, but they did follow my advice. One day one of the trustees was riding the road shaper on this road. One side of the road was working fine. It was wet enough. Before they could return and work the other side, the road had become too dry to work. They were convinced that the road must be wet to be worked. The trustees worked this road into good shape and it is a good road again.

This fall (1956) we tried F C grade rock salt for the first time in our stabilization work. This is a fairly fine grade of salt. I believe that it has some advantages in stabilization work. This salt went into solution quicker and with less water than is required for the coarser salt.

The fact that less water is required will be a big help to a lot of people. If your water hauling capacity is not large or if water is scarce, this reduction in the amount of water required would be a great help. It is still necessary that the base material be thoroughly moistened. It is our belief that the use of F C grade salt will reduce the amount of water required.

It is generally advised to do salt stabilization work before Decoration Day and after Labor Day. This is good advice, but stabilization work can be done right through the summer if water is available. We tried some summer stabilization work. We have a 4,500 gallon semi-trailer water tank. The weather was hot and dry. We just could not get this one road wet. It was still determined that we could do a good stabilization work in the summer. On the next project we hauled water at night. This reduced the evaporation. We got this road really wet. Do not let hot summer time scare you out if you want to do stabilization work. I suggest that you try hauling water at night if you do summer work.

We have used a Seaman pulvi-mixer to do the mixing job in our stabilization work. This machine does a good job of mixing. It is our opinion, established through observation, that the Seaman pulvi-mixer will not thoroughly mix more than 4 inches deep. If you want to stabilize deeper than this, you must do it in lifts of 4 inches. We used this procedure on one road, and we got good results. We have a stabilized base 8 inches thick on this road. This was made in two lifts.

A road or base is more dense and much harder after it is

stabilized with rock salt. It is a definite improvement in our highway or street construction and it is not expensive. It will pay to stabilize with rock salt.

Salt is not a substitute for good drainage and a good base. These are essential in any road. Salt is no panacea for road builders, but it will make any road or base better.