

PATCHING ROAD SURFACE BREAKS

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The patching of road surface breaks is a very important subject, especially to every man who has charge of maintenance. The making of proper repairs to the surface determines the life of the pavement. A surface that has been properly repaired will last much longer than the surface that has been neglected. There are no types of surface built today that are not subject to breaks and future maintenance. Each type requires a different kind of repair. The types of repair that you see today are usually good or bad. Good maintenance does not cost as much as bad maintenance.

There is always a cause for breaks in the surface. Those most common to us are poor drainage, weak subbase, and inferior materials. A thorough study should be made to determine the exact cause of breaks before repair is started.

If it be poor drainage caused by capillarity, the best repair is to insert a French drain at the source of the trouble. Capillary attraction is responsible for most of the breaks in road surfaces. With French drains properly constructed and proper outlets provided, you can be reasonably assured that you have prevented any future surface breaks due to capillarity. Drains are constructed with large-sized stones, boulders, or perforated pipe. These materials will give very good satisfaction if properly handled.

If breaks are caused by inferior material, and often this is the case in a bad break, all such material should be removed and replaced with a suitable type.

There are numerous reasons for surface breaks, and the causes mentioned above the most likely to produce the most serious trouble. In all types we have various kinds of failures, such as raveling, depressions, and pot holes.

In repairing surfaces we have experienced some bad results by failing to use proper materials or to place them properly. It is common practice for a patching crew to make a repair with the very best of material, and after the patch has been completed to find that they have actually built a bad bump on the surface. This patching crew was not careful to make a good smooth patch; their only thought was to repair the hole or stop raveling. By not being careful, money was spent, and the resulting surface was as bad as, if not worse than, when the repair was started. This kind of work is very unsatisfactory to the traveling public.

On a surface where there is a considerable amount of raveling, very often an excessive amount of bituminous material is used, which is, of course, costly. This, in most cases,

develops a fat spot which becomes very slippery in wet weather. If proper care is taken, this type of repair can be made without bad results. Don't use too much bituminous material!

We have found by depositing ready-mix materials at various points along the road that the men will not neglect the needed repairs, because the material is handy for the patching crew. Care should be taken to patch with the same kind of material as was used in the existing surface, if possible. A surface patched with various kinds of material is very unsightly. Also great care should be taken to build a smooth patch. The patching crew should carry a straight-edge at all times and be sure to use it in finishing their patch. The most valuable man in the maintenance crew is the one who can make a good, smooth, substantial, and uniform patch.

A bituminous mixing machine or a concrete mixer are ideal equipment for mixing the ready-mix materials. We have found that by using twelve to fourteen gallons of bituminous materials to one cubic yard of aggregate, a good uniform mix is obtained. Use grade "A" crushed aggregate, always being sure that the aggregate is dry and thoroughly mixed for the best results. Ready-mixed material should be put in various small stock piles. Mixed materials will give better results if left in the stock pile for a week or ten days before using.

SOME EXAMPLES

Various sizes of aggregate should be mixed. Proper patching requires different sizes of aggregates. One of the reasons for making a bad patch is that too much fine aggregate is used in the deeper holes. A good patch should be built in stages as follows:

First, the break or patch should be thoroughly cleaned of all loose materials.

Second, apply a light prime to the open patch; then paint the edges and the sides. This will tie down all the loose materials and dirt that have not been removed.

Third, if the break of the patch is six to eight inches in depth, the larger aggregate should be placed first. Then use the smaller aggregate to finish the patch, leaving from an inch to an inch and a half in which the same kind of material should be used as was used in the original surface.

I have seen repairs being made on rock asphalt surfaces when the patch crew would deposit three to four inches of rock asphalt in the hole. This is all wrong, as in most cases it will cause a rough patch. This patch should have been built in stages; first, by using the proper size of bituminous concrete and then not more than three quarters of an inch of rock asphalt as a wearing surface.

There is another type of patching that is very expensive and on which satisfactory results are seldom obtained. That is building a light oil mat one year and the next year trying to save the surface by doing a lot of patching. If the surface shows a large number of pot holes and much raveling, which in most cases is caused by a weak base, a lot of time and money could be saved by lightly scarifying the oil mat, adding some new aggregate, and applying a bituminous material. This should be thoroughly mixed in place. By doing this, you will increase the strength and get a uniform riding surface.

Rolling of patches is very important and should never be neglected, provided the patch is large. I have seen instances where much care and time have been spent to build a good substantial patch, only to have the roller man ruin the whole job by improper rolling when the temperatures were high. You will get bad results by rolling on bituminous surfaces when the bituminous material has not been given the proper time to become tacky.

A state, county, or city may construct a building costing a hundred thousand dollars. In most cases this building will receive the very best of maintenance and in making repairs the very best of materials and labor be obtained. A building, so maintained, will last many years. This same state, county, or city has only to build five or six miles of high-type road to have the same amount of money invested, but the road will get much more wear and tear than the building will. If the road received the same high type of maintenance as the building, we would see a great improvement in making repairs to the breaks in the surface.

Today the newspapers carry lists of motor accidents and fatalities. Quite a number of these accidents are caused by the motorist's hitting a bad break or hole in the road surface that has been neglected by maintenance forces. Good maintenance is not only valuable to the life of the surface, but also very valuable in preventing many serious accidents to the traveling public.

Probably no part of highway maintenance is more important than making the proper repairs to all types of road surfaces.

OVERHAULING AND REPAIRING HIGHWAY EQUIPMENT

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Much concern is shown over the requirements for materials and equipment for governmental units, but seldom is any attention given to the question of specifications for person-