

# Rural Technical Assistance Program NEWSLETTER

MONTANA STATE UNIVERSITY  
BOZEMAN, MT 59717

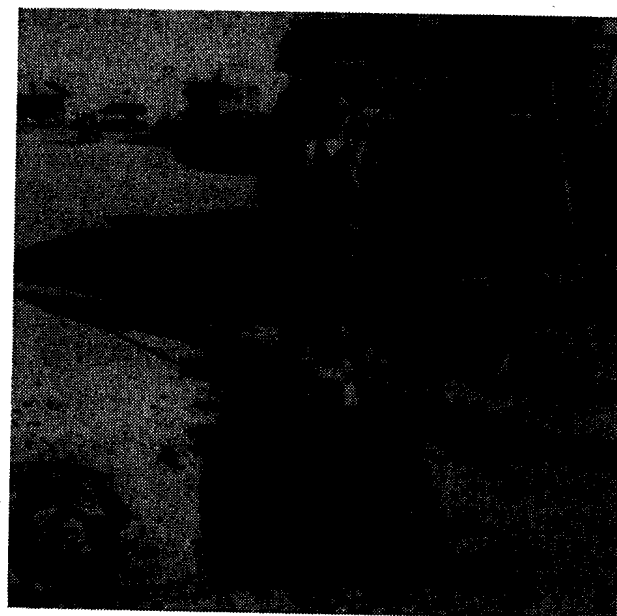
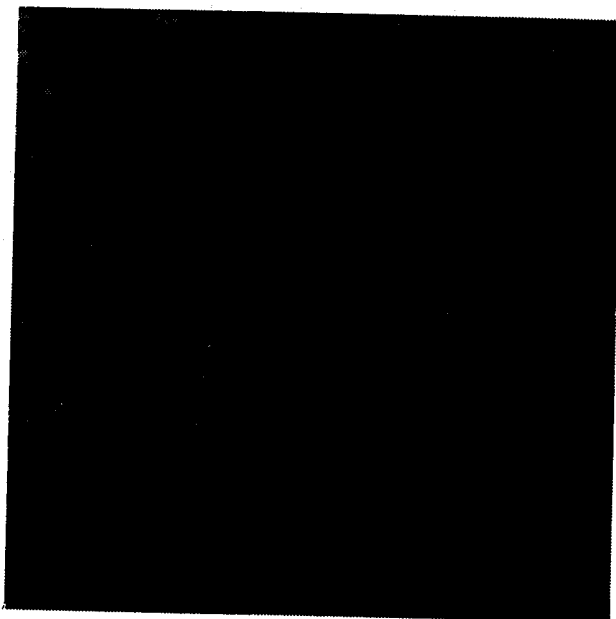
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## POTHOLES - FIX THEM RIGHT THE FIRST TIME

Robert F. Erickson

Street Superintendent; City of Helena



Roads and streets are the single public facility which practically every taxpayer uses every day. The public relations value of providing timely preventive maintenance is very obvious. We try to impress on the men who work for the Helena Street Department that by doing the best possible job the first time, we will not have to keep going back and doing the same holes over again.

In order to do a good job, you have to have the best equipment available and trained personnel who know how to use it properly. Fortunately through the far-sightedness and generosity of our City Fathers, we have good personnel and equipment. I feel that we have the finest piece of patch equipment that I am aware of on the market today. With this machine we are able to do a good job of patching the year around. We use hot mix when available and cold mix in the winter. The unit carries all the necessary materials and tools to do a proper job. We can cut, heat, tack, and compact. The success of pothole repairs can be directly related to good preparation of the hole and the amount of compaction attained.

It is a proven fact that doing your pothole patching using these methods costs many dollars less than filling the hole with asphalt and hitting it with a shovel as the patches last months and probably years longer. I realize every one cannot afford the best equipment on the market, but this should not prevent anyone from doing the best job with the equipment and materials on hand.

By taking a little more time and just rolling the patch with a truck tire, the patch will last much longer than just throwing the material in the hole and hitting it with a shovel; and by sweeping the area, tacking the edges, and compacting with a wacker, the patch could last for years.

So remember, fix them right the first time, and you will be on the right track to solving your chuck hole problems!!

\*\*If there are any questions concerning the equipment or the procedures used, Bob can be reached at (406)442-9920.

## **TREATMENT OF POTHoles DESCRIBED IN FHWA MANUAL**

Potholes seem a never-ending source of aggravation. Although often caused by insufficient paving thickness, poor drainage, and inadequacies at utility trenches and castings, they are most often caused by the winter weather. When ice thaws, water seeps into the cracks and crevices of the pavement. When temperatures again fall below the freezing point, the water freezes and expands, creating pressure that is compounded by the weight of automobile traffic. The result is fracturing action which creates small holes in the pavement. This freeze-thaw cycle recurs throughout the winter and gradually produces a significant size hole - the POTHOLE!

The recommended procedure for pothole repair involves first removing fractured surfacing, squaring the hole and applying a tack coat of liquid asphalt. Fill the hole with asphalt mixture to a level above the adjacent pavement and compact it to pavement level. Greatest emphasis should be placed on shaping the hole for firm support and on compacting the mix to the level of adjacent pavement.

There are some innovative products on the market to increase pothole repair efficiency, some requiring only one operator and a minimum of interaction with the chemical mix. Geotextiles have been successfully used in an number of states with very good results. Geotextiles range from woven glass fiber/asphalt polymer binder combinations to nonwoven asphalt overlay fabric. They are effective in retarding and repairing potholes and reflective cracking as well as ensuring pavement stability by minimizing water penetration.

A good source of information is the FHWA report "Pavement Patching Guidelines", February 1983, Report No. FHWA-75-82-221. Write the Engineering and Highway Operations Implementation Division, HRT-10 Federal Highway Administration, Washington, DC 20590.

# POTHOLES - BIRTH/DEATH

## CAUSES

One or more of the following can lead to the birth of a pothole.

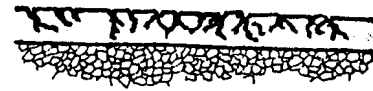
1. Insufficient pavement thickness which is not capable of supporting traffic loads during winter-spring thaw cycles.
2. Poor drainage which can cause the failure of not only thin pavements but thick pavements as well.
3. Manholes and other castings can cause thin pavements to fall.
4. Poor maintenance techniques and delay in maintenance activities could be a contributing factor to pothole occurrence.

## MAINTENANCE STRATEGY

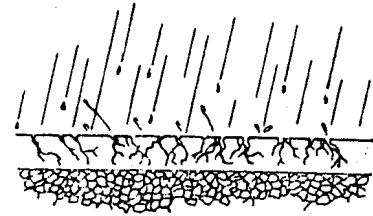
1. Detect and repair potholes as quick as possible.
2. Schedule repair activities during dry weather conditions.
3. Provide sufficiently trained personnel for the identification of the problem and the appropriate technique to solve it.
4. Make sure that the pothole crew is equipped to blow out, sweep, or otherwise remove water. Equipment to dry and prepare the hole should also be available.
5. Train the pothole crew in the uses and limitations of all equipments used.
6. Patch the pothole with cold mix asphalt materials, hot mix asphalt materials, or concrete.
7. Equip the crew with reflective clothing, and help its members understand the safety aspects of repairs under traffic conditions.

## BIRTH OF A POTHOLE

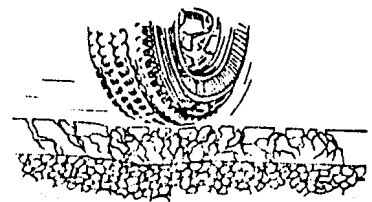
① NORMAL CRACKING BEGINS DUE TO TRAFFIC & WEATHER.



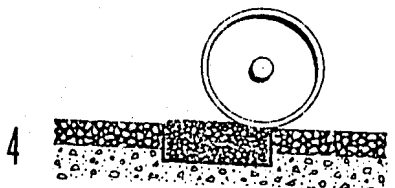
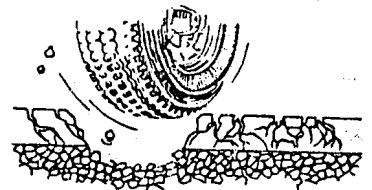
② WATER AND CHEMICALS ENTER CRACKS.



③ WEATHER AND TRAFFIC MAKE CRACKS WORSE.



④ VEHICLE WEIGHT PUSHES PAVEMENT IN. A POTHOLE IS BORN!



Pothole permanent repair. 1) Untreated pothole, 2) Surface and base removed to firm support, 3) Tack coat applied, 4) Full-depth asphalt mixture placed and being compacted, 5) Finished patch compacted to level of surrounding pavement

## WHILE WE ARE STILL PATCHING UP THE SUBJECT

In the March 1980 issue of Update, #16 by Robert Krull, he mentions a short, well-done Texas report on the use of Asphalt Roll Roofing Material for Pavement Crack Repair.

It isn't often that a new idea comes along that is simple, cheap, and effective. Since 1980, several States and local agencies who have tried this technique for crack repair and patch sealing and a couple of other uses like the installation of loop detectors and special pavement delineation. It not only works, it works incredibly well - if you have ever tried to remove spilled asphalt shingles from hot pavement, you can understand how and why it works.

A pothole patch correctly done, then sealed with a strip of roofing material is about as permanent a patch as can be made and about as simple as you can get. Try it, you will be pleased with the long-term results and your budgets will show it.

Also, if any of you readers have tried this technique, please let me know --- you must have some opinion on it or maybe a new use (I hope) that we can pass along to others.

## COMING EVENTS

APRIL 2,4,5&6 : PAVEMENT MAINTENANCE AND REHABILITATION WORKSHOP This workshop is being sponsored by the Asphalt Institute and Montana State University Civil Engineering Department, the Rural Technical Assistance Program. The workshop is being held in Billings (4-2-84), Great Falls (4-4-84), and Bozeman (4-5&6-84). To register or for more information call Allan Jackson at (406)994-6103.

APRIL 11,12&13: Montana Association of County Road Supervisors Annual Conference. The Conference will be taking place at the Colonial Inn in Helena. To register or for more information call Jim Ellis, Road Supervisor, Lewis & Clark County, Helena at (406)443-1010 ext. 294.

For any inquiries concerning this publication or RTAP contact Alan Jackson - (406)994-6103.