



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

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INDOT LaPorte District would like to share some information concerning why potholes form in the Spring.

Sometime around early spring, many roads develop deep divots and pockmarks called potholes. Indeed, certain cities are said to have two seasons - winter and pothole repair. What causes these potholes to form, and why can't they be prevented in the first place? The answer involves both nature and the limitations of road construction.

Most roadways are built in layers, starting with compacted earth and gravel for drainage. Some older city streets may even have a subsurface of bricks. All of these layers are covered with asphalt, which is a gooey blend of tar, oil byproducts, curatives and aggregate gravel. In an ideal setting, this layer of asphalt repels rainfall and snow, forcing it into drains off the shoulder of the road.

Potholes form because asphalt road surfaces eventually crack under the heat of the day and the constant stresses of traffic. These cracks allow snow and rainwater to seep into the underlying dirt and gravel. During cold winter nights, this water freezes and expands. Some of the dirt and gravel is pushed out as a result, leaving a hole when the water eventually melts. Drivers continue to drive over these unseen holes, putting even more stress on the thin asphalt layer covering them.

Eventually, the asphalt layer over these divots collapses, creating the traffic hazards we call potholes. Potholes can cause significant damage to a car's suspension system or tires if the driver fails to avoid them. Potholes can also fill with water, obscuring any other hazards they may contain. Even in places where the air temperature rarely falls below freezing, excessive rainfall or flooding can also cause potholes to form.

Road maintenance crews have two different forms of repair methods for potholes. These repairs are roughly similar to a dentist using either a temporary or permanent filling material for cavities. During the winter months, potholes receive what is known as a cold winter mix. This is a temporary fix consisting of a soft asphalt poured into the potholes after they have been cleared of debris. A layer of gravel may be added to increase strength and stability, but the potholes are often expected to reappear by spring.

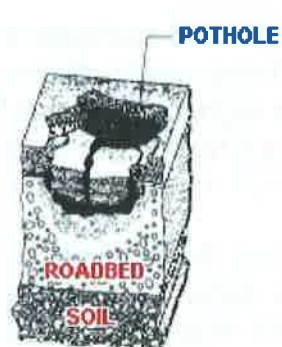
A more permanent fix for potholes is called a hot summer mix. This combination of road grade asphalt and aggregate is designed to last for years, but it can only be applied during dry, warm weather. When road crews use a hot summer mix to repair potholes, they often reroute traffic around the worksite and spend more time preparing the road surface for the patch. The finished layer of new asphalt is usually compacted to match the level of the road, rendering it nearly invisible.



Rainwater sinks through cracks in old or weakened asphalt. The water is soaked up by the mixture of rock, gravel, and sand that supports the road.



Vehicles passing over the road force water through the soggy roadbed, eventually eroding parts of it.



Asphalt sinks into the eroded portions of the roadbed and eventually cracks under the continued impact of vehicle tires. Chunks come loose.

**HOT PATCH OR
COLD PATCH
MATERIAL**



Holes may be patched with proprietary cold patch or hot patch materials.

We hope you'll share this information with your co-workers and families.

Jim Pinkerton

On Behalf of the Staff of LaPorte District - INDOT