## Any drawbacks?

Although chip seal is an effective low cost way to repair road, it has some drawbacks. Loose crushed stone is often left on the surface, due to under-application of emulsion or over application of stone. If not removed, this can cause safety and environmental problems such as cracked windshields, loss-of-control crashes (especially for motorcyclists and bicyclists),

and deposition of foreign material into drainage courses. Therefore, it is very important to sweep the road after the emulsion sets.

## What about road noise?

While the small stones used as surface yield a relatively even surface without the edges of patches, it also results in a rough surface that leads to significantly louder rolling noises of automobile wheels.

The surface of the chip seal generates more roadway noise at any operating speed than typical asphalt or concrete surfaces. This typically is not a major concern at very low operating speeds; moreover, chip seals are typically used on 2 lane open ditch rural and urban roadways. These sound intensities increase with higher vehicle speeds. The rough surface causes noticeable increases in vibration and rolling resistance for bicyclists, and increased tire wear in all types of tires.


***Questions or Comments?***
Genesee County Road Commission
211 W. Oakley Street Flint, MI 48503
Call: (810) 767-4920
Email: jdaly@gcrc.org
Visit us on the web: www.gcrc.org


## What drivers should know

Chip seal treated roads are **safe to drive on** and are **environmentally friendly**. There is no reason to avoid them. Although there may be some vibration and road noise does increase at higher speeds, prudent drivers should experience no difficulty with them. Problems with loose stones are minimal at reasonable speeds.

The Genesee County Road Commission is committed to **providing a safe, smooth road system** in the most cost effective manner possible. Chip seal is one treatment the Road Commission uses as part of a total asset management approach of applying the right treatment on the right roadway at the right time. Using the right "mix of fixes" to maintain a roadway lengthens the effective life of that roadway reduces the total cost of that pavement over its useful life.

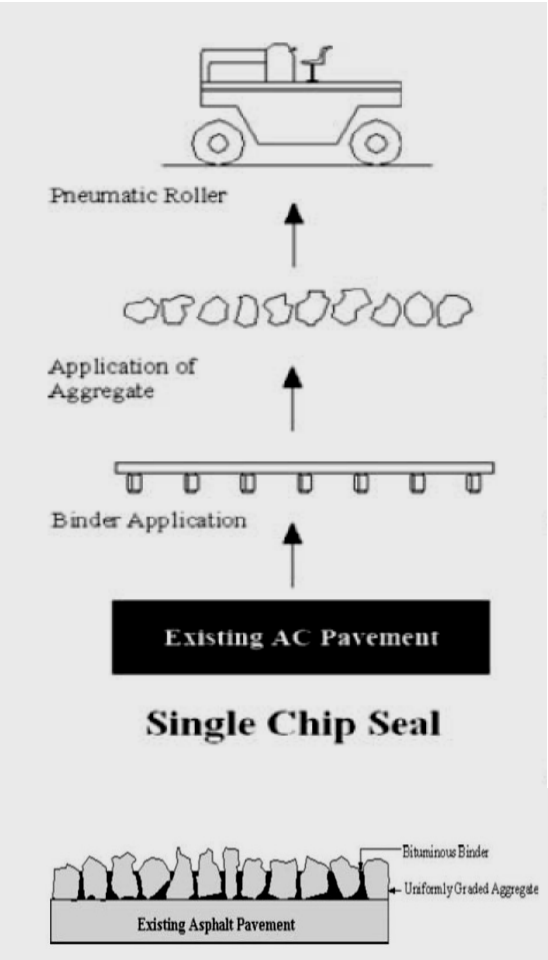


**GCRC Mission Statement**

***Our mission, as Genesee County Road Commission employees, is to collectively provide and maintain a safe, cost efficient and quality county road system for the motorists in Genesee County, Michigan.***

# Genesee County Road Commission

# Chip Seal Basics



# Chip Seal Basics

The Genesee County Road Commission has full responsibility for the primary roads within Genesee County. Of the almost 1600 miles of total roads within the county, the primary road system comprises 460 miles. The Road Commission has limited available funds each year to maintain this 460 mile primary road system.

With rehabilitation and resurfacing of 2 lane roads costing $600,000 per mile, the Road Commission would use up the total roadway budget on just 19 miles each year. At this rate it would take us over 25 years to completely rehabilitate and resurface the primary system. In order to stretch our budget and slow roadway deterioration the Road Commission applies chip seal to our roads to help preserve them.

## What is "chip seal"?

Chip seal, also sometimes called chip and seal, or seal coat, is a pavement surface treatment that combines a layer(s) of asphalt with a layer(s) of fine aggregate. In the United States, chip seals are typically used on rural roads carrying lower traffic volumes. It is cheaper than resurfacing, but not as long lasting. In some states of the United States, chip sealing is used in conjunction with new road construction to make the road bed more durable and longer lasting.

## How is it Installed?

Chip seals are constructed by evenly distributing a thin base of hot bitumen or asphalt onto an existing pavement and then embedding finely graded aggregate into it. The aggregate is evenly distributed over the seal spray, then rolled into a smooth pavement surface. A chip seal surfaced pavement can optionally be sealed with a top layer which is referred to as a fog seal or cape seal.


FIGURE 11 Single chip seal.


FIGURE 12 Double chip seal.

Genesee County Road Commission expands on this procedure by first repairing or patching areas where pavement has deteriorated and need some type of structural reinforcement. A chip seal is then applied over the whole surface to seal and give the top surface a uniform appearance. This patching helps provide more structural integrity to a distressed road surface and can also help prolong the effective life of the pavement.

## What is it good for?

A chip seal's main purpose is to seal the fine cracks in a pavement's surface and prevent water intrusion into the base and subgrade. But it provides no structural strength and will only repair minor cracks. Chip seals are expected to provide at least 5 years of service. When applied on an existing flexible pavement, a chip seal will provide a surface wearing course, seal the underlying pavement against water intrusion, enhance or restore skid resistance, and enrich the pavement surface to prevent the distresses caused by oxidation. Chip seals are generally effective in sealing fine cracks on the roadway surface, unless the cracks are indications of structural distresses. The popularity of chip seal is a direct result of its low initial costs in comparison with those of asphalt overlays.

## How are roads selected?

The Road Commission selects candidates for chip sealing each year by selecting which two lane open ditch primary roads have PASER pavement surface rating between 3 and 5, age, and traffic volume. We do not apply a chip seal surface to multi-lane or curbed roadways because the small stone chips will accumulate in the gutter pan, in the drainage structures and can also spread on yards and lawns.

Our budget allows us to chip seal and repair approximately 30 to 40 miles of primary two lane roads every year for a cost of approximately $1,000,000. Chip seal is also used on local section mile roads on recommendation from each township and largely at the expense of the township.