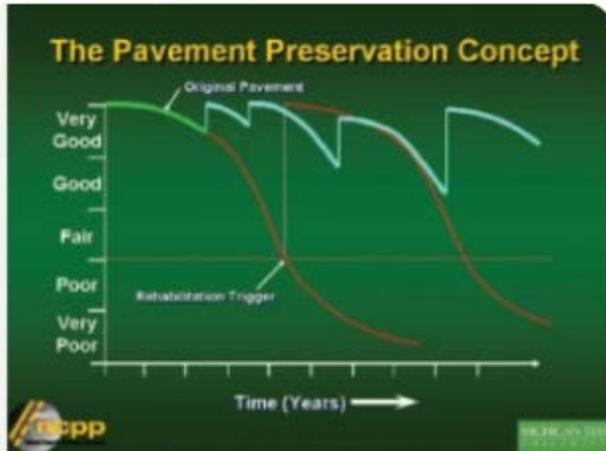


Chip Seal Information Sheet

“Chip Sealing” is a common pavement preservation practice that extends pavement life. The Chip Seal application “seals” the underlying pavement surface preventing water intrusion into the sub-base material and rejuvenates the underlying asphalt from the effects of oxidation while providing a good driving surface and higher friction. Our goal is to apply the preservation chip seal before the existing asphalt surface is degraded to a condition requiring rehabilitation or replacement.



By applying pavement maintenance at frequent intervals existing pavement (green) condition can be prolonged over many years (blue), as opposed to letting the pavement decline over years to a point where major expenditures are required (red).

Chip sealing one mile of roadway costs approximately 15-20 percent of that required to apply a thin lift asphalt overlay per mile of roadway. Both are considered preservation methods with similar expected life cycles. Chip sealing costs approximately 6-10% of rehabilitation/reconstruction costs while maintaining the drivability of, and extending the life of the roadway.

Of the 915 centerline miles that Kitsap County is responsible for maintaining, an average of 25 miles of roadway is chip sealed each year. It is expected that a single chip seal application will extend the life of the driving surface for 9 to 11 years,

which will vary with the type and amount of daily traffic. Candidate roadways are reviewed annually for condition, and added to the chip seal program if warranted.

The following are answers to commonly asked questions relating to the chip seal program:

How are Chip Seals Different from Asphalt Overlays?

The difference is in the construction method. Hot Mix Asphalt pavement is pre-mixed (asphalt oil and aggregate mixture) and produced at an asphalt plant. The mix is then spread and compacted to form a durable road structure and riding surface approximately one inch thick. Chip Sealing uses the same ingredients as asphalt concrete paving, but the construction method is different. With chip seals, a thin film of heated asphalt emulsion is sprayed on the road surface, followed by the placement of small aggregates ("chips"). The chips are then compacted to orient the chips for maximum adherence to the asphalt, and excess stone is swept from the surface.

Why Use Chip Seals?

1. Chip seals provide Kitsap County Public Works (KCPW) with the opportunity to maintain the roads in a safe manner for a very low cost.
2. A chip seal treatment costs considerably less than conventional asphalt overlays, as mentioned previously in this document.
3. By extending the time between asphalt overlays, chip seals result in better return on investment and performance over the long term.
4. Chip seals increase safety by providing enhanced skid resistance.
5. Chip seals provide an effective moisture barrier for the underlying pavement against water intrusion by sealing cracks in the pavement.
6. Chip seals prevent deterioration of the asphalt surface from the effects of aging and oxidation due to water and sun.

What steps are involved in Chip Seal application?

Prior to chip sealing a roadway, asphalt pre-leveling or full depth patching of the existing surface is completed to resolve deficiencies in the roadway, such as severe alligator cracking, potholes, localized settlement, or to restore roadway cross slope to ensure adequate surface water runoff from the travelled way. Roadway shoulders are often regraded, roadside ditches restored, and roadside or overhead vegetation removed. This preparatory work can occur a year prior to the intended chip seal application, but is often completed just before the actual work takes place.

Once all preparatory work is completed, an asphalt distributor truck applies hot liquid asphalt emulsion to one lane of travel at a rate of approximately 0.35 gallons per square yard, assuring an even distribution. The asphalt emulsion is applied at a temperature of approximately 125-195 degrees Fahrenheit. A chip spreader immediately follows with a 3/8 inch crushed rock application at a rate of 25 pounds per square yard. The asphalt emulsion must be fluid so the rock will be embedded by the displacement of the asphalt. Pneumatic (tire) rollers set and embed the rock into the liquid asphalt emulsion. Rolling orients the flat sides of the rock down and produces a tighter chip seal. Normal vehicle traffic, over time, continues to knead the rock into the asphalt material.

Excess rock is swept from the surface and warning signs are removed approximately two or three days after the chip seal application. A second sweeping is completed to remove residual loose rock material that becomes dislodged during the initial curing period. Permanent road striping is redone before the end of the season.

My roadway looks like a gravel road and creates more vehicle noise. Will it always be this way?

As explained previously in this document, Hot Mix Asphalt (HMA) is pre-mixed at an asphalt plant, which results in all of the aggregate being thoroughly coated with asphalt.

This results in its black appearance on the roadway. Chip seals are placed in two, consecutive applications; oil first, followed by the aggregate. The aggregate is embedded into the underlying asphalt leaving the top portion of the rock above the surface of the asphalt, and not coated with asphalt. The resulting surface is often brown or grey in color. As vehicles utilize the new chip seal surface the aggregate will begin to weather, rounding off the rough edges and changing its appearance. Any noticeable vehicle noise will quickly begin to diminish, and the appearance of asphalt will be very similar to that of an HMA surface.

When is Chip Seal work completed?

Chip seal applications occur during the warmer months and during dry weather. Temperatures at the time of application must be conducive to proper material performance. Warmer temperatures are required to allow the liquid asphalt to cure at a reasonably rapid rate. Generally speaking, Kitsap County begins chip sealing after July 4th and strives to complete all work by mid-September.

When are you planning to work in my neighborhood?

The County posts a one year chip seal plan on the *Road Maintenance and Preservation* web page. This list is subject to change depending on several factors (i.e. availability of asphalt oils, weather, equipment breakdown, etc.). A tentative list forecasting several years into the future is maintained, however, this list does regularly change as we are continually evaluating our chip seal roadways for performance. As stated previously in this document, some chip seal applications perform for slightly longer periods than others.