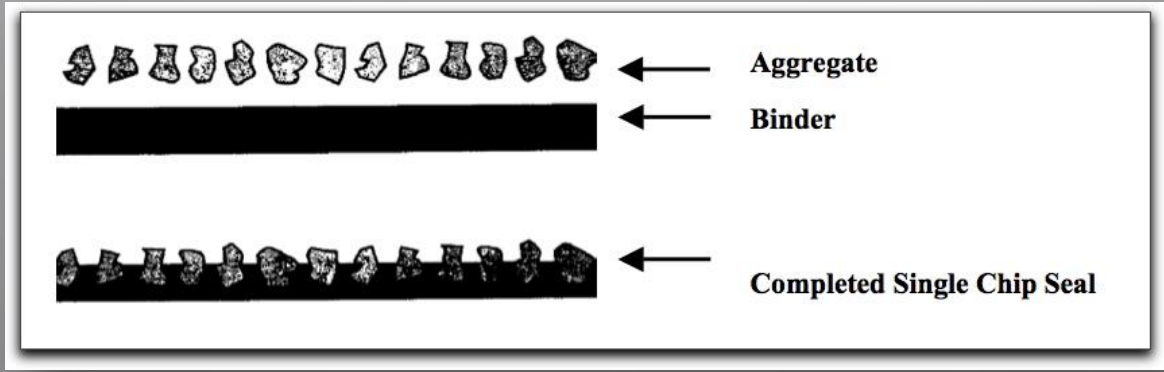
BOCC Tour of DCRD Chip Seal

July 21, 2015

Agenda:

- 1:00: Meet in front of the County Services Building.
- 1:05: Depart for Sunriver in the Road Department's Suburban. Discuss chip seal process en route.
- 1:30: Briefly stop at Harper Bridge to review safety improvements.
- 1:50: Arrive at River Summit Drive to observe chip seal installation, etc.
- 2:30: Depart and return to the County Services Building with arrival around 3:00 PM.



Why we chip seal

Pavement in Central Oregon suffers from the effects of the climate in the form of a scorching sun in the summer to frigid cold in the winter. It is not uncommon to experience a temperature swing of up to 120 degrees in the span of a few months.

As pavements age, they suffer from the negative impacts of oxidation in which they become more brittle and fatigued, and subsequently lose their ability to bend and flex with traffic loads and thermal conditions. The hot baking sun of Central Oregon can speed the process of oxidation (which leads to cracking) and the cold Central Oregon winter can wreak havoc with a constant freeze-thaw cycle in which water infiltrates cracks and expands.

The Deschutes County Road Department battles the effect of our local climate through an aggressive preventative maintenance program relying heavily on the use of chip seal.

Chip seal is a preventative maintenance treatment that can extend the life of a pavement by protecting it from oxidation and deterioration from moisture.

Deschutes County uses a hot oil chip seal process in which hot liquid asphalt (350 degrees) is sprayed on an existing pavement at a rate of approximately 0.40 gallons per square yard; this provides a seal of existing asphalt surface. This hot asphalt is then covered by a layer of chip rock which embeds in the hot oil and provides a wearing surface to protect the seal and improve skid resistance. Deschutes County utilizes a chip rock with a maximum size ranging from 3/8 to ¼ of an inch. Prior to application, the chip rock is also coated with asphalt to improve adhesion to the hot oil, provide additional resistance to oxidation, and reduce the amount of loose rock on the surface after installation.

When applied at the appropriate time in the life cycle of a pavement, a chip seal can double the lifespan of the original asphalt and extend the interval between expensive pavement overlay treatments from 15 years to 30 years.

Why we chip seal, con't.

The time to apply a chip seal is when a pavement is already in good condition – before significant oxidation and cracking occurs; such is the nature and meaning of preventative maintenance.

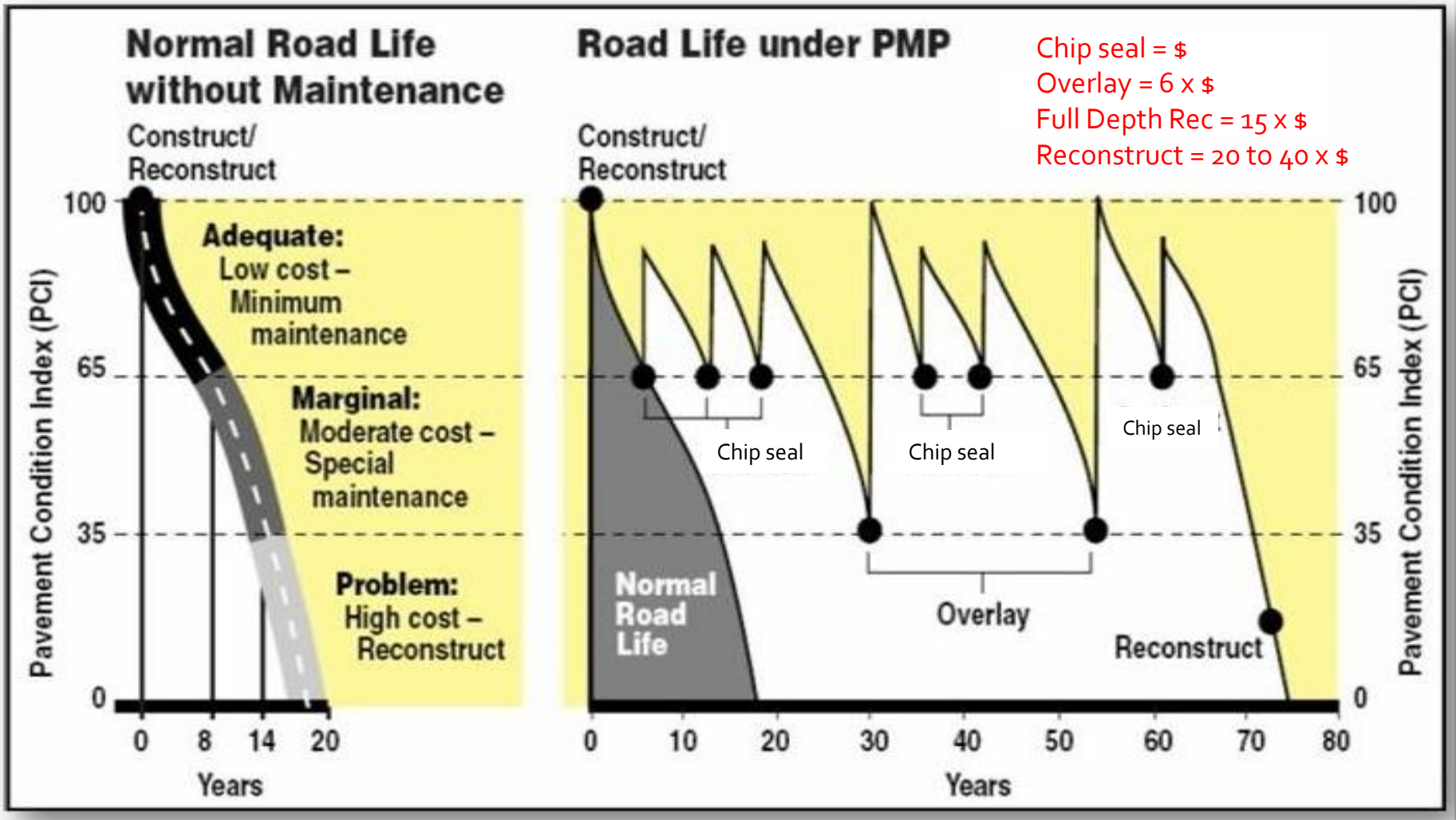
It's not uncommon for our customers to ask why we are chip sealing their "perfectly good road" because there is "nothing wrong with it". That is the point however – to provide a treatment before visible deterioration in order to keep our good roads in good condition.

Deschutes County has approximately 700 miles of paved road in its maintenance jurisdiction and 90% of those miles are rated in good or better condition. Roads in "good condition" have a pavement condition index of 70 or greater on a scale of 100.

Chip seal is the most cost effective preventative maintenance treatment designed to keep good roads in good condition. We are able to use chip seal treatment on 90% of our system and that quantity necessitates a very aggressive chip seal program.

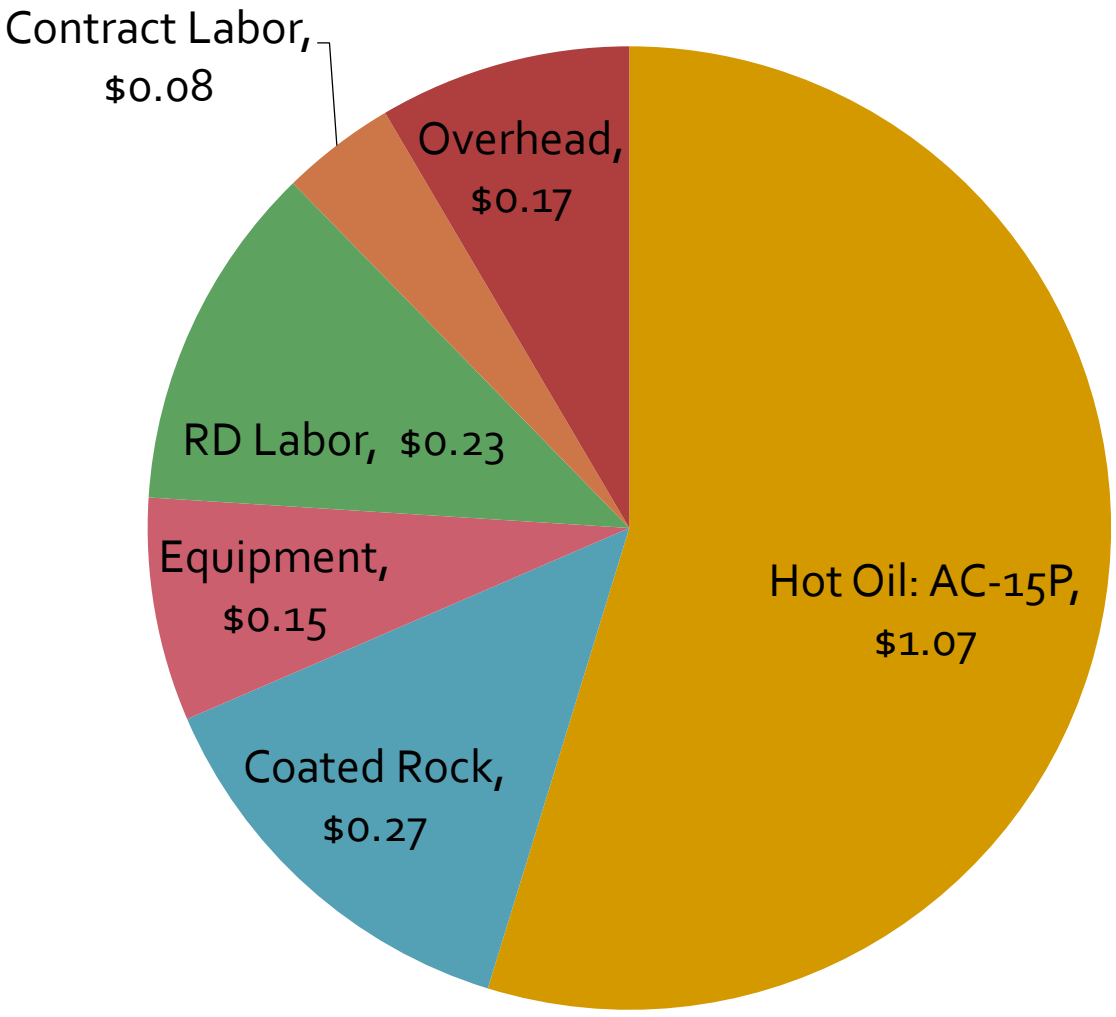
Unlike paving, which can occur eight or nine months out of the year in Central Oregon, chip seal has a relatively short weather window of three to four months. Chip seal requires warmer weather than paving, dry conditions, and several months of cure time prior to the arrival of winter. In this short weather window, Deschutes County will schedule 80 to 90 miles of chip seal on county road facilities in addition to 20 to 30 miles within the cities of Bend, Redmond, La Pine and Sisters. With the short weather window and significant mileage of chip seal required, the Deschutes County Road Department will chip seal every work day between Memorial Day and Labor Day, most seasons.

Strategic Pavement Investment



Fiscal Breakdown of a Chip Seal

Deschutes County – Chip Seal Cost - $1.96 per square yard (SY), 2014 Program (by expense category per SY)



Notes:

1. Total Cost In-Place: 1.96/sy.
2. Hot Oil: $683/ton (Albina Asphalt).
3. Coated Rock: $26.40 to 34.00/ton (High Desert Agg. and Paving).
4. Equipment rate includes depreciation cost.
5. RD Labor = Salary/Benefits of DCRD FTEs.
6. Contract Labor (Express Personnel).
7. Overhead (Road Department) billed as markup to RD Labor Rate at 72%.
8. 72.5% of the cost of a chip seal is comprised of locally contracted materials and labor.

Double-chip over low PCI

Jericho Road: pre chip seal
- PCI less than 40
- Severe alligator cracking

Jericho Road: post chip seal
- Double chip: 3/8" - #8 over 1/2" - 1/4" pre-coated chip

Double-chip over low PCI

Russell Road: pre chip seal
- PCI of 0 to 17
- Severe alligator cracking

Russell Road: post chip seal
- Double chip: 3/8" - #8 over 1/2" - 1/4" pre-coated chip

1/4” - #10 bike lane chip adjacent to 3/8” - #8 travel lane chip

Cline Falls Road: pre chip seal
- 12’ travel lanes, 3’ shoulder

Cline Falls Road: post chip seal
- 3/8” chip travel lane
- 1/4” chip bike lane
- 11’ travel lanes, 4’ bike lane