

# Proper Pavement Preservation

An overview of various preservation  
tools and practices

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Western Pavement Solutions


# What will we discuss

- Challenges
- When various treatments are traditionally used
- Innovations
- Creative & unconventional uses of surface treatments

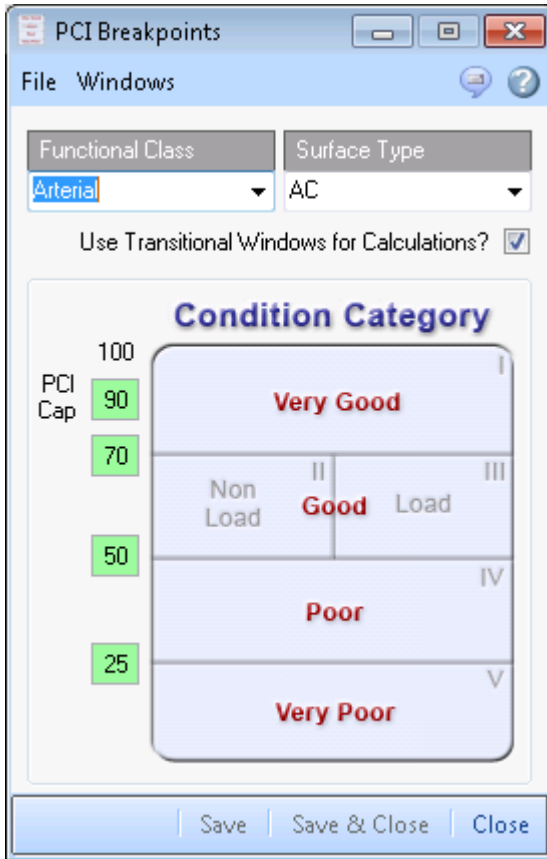
# Challenges

- Asphalt Pricing
- Fuel Costs
- Green Initiatives
- Budgets – Stagnate or Shrinking
- Education – not knowing all of the options

Higher costs have reduced how far budgets will stretch

 <b>OREGON DEPARTMENT OF TRANSPORTATION</b> <b>MONTHLY ASPHALT CEMENT MATERIAL POSTING FOR MAINTANANCE OLD CALCULATION</b> <b>JUNE 2009</b>		
<b>ENGLISH</b>		
<b>POTEN PACIFIC NORTHWEST</b>	<b>POTEN BOISE IDAHO</b>	<b>PUBLISH MONTH</b>
\$448.00	\$483.00	January 2011
\$454.00	\$483.00	February 2011
\$463.00	\$493.00	March 2011
\$489.00	\$517.00	April 2011
\$520.00	\$536.00	May 2011
\$541.00	\$577.00	June 2011
\$551.00	\$621.00	July 2011
\$566.00	\$628.00	August 2011
\$562.00	\$603.00	September 2011
\$541.00	\$575.00	October 2011
\$522.00	\$552.00	November 2011
\$529.00	\$548.00	December 2011
\$564.00	\$549.00	January 2012
\$581.00	\$555.00	February 2012
\$594.00	\$575.00	March 2012
\$611.00	\$606.00	April 2012
\$624.00	\$623.00	May 2012
\$639.00	\$630.00	June 2012
\$638.00	\$630.00	July 2012
\$607.00	\$603.00	August 2012
\$595.00	\$600.00	September 2012

# When do we use what treatment?



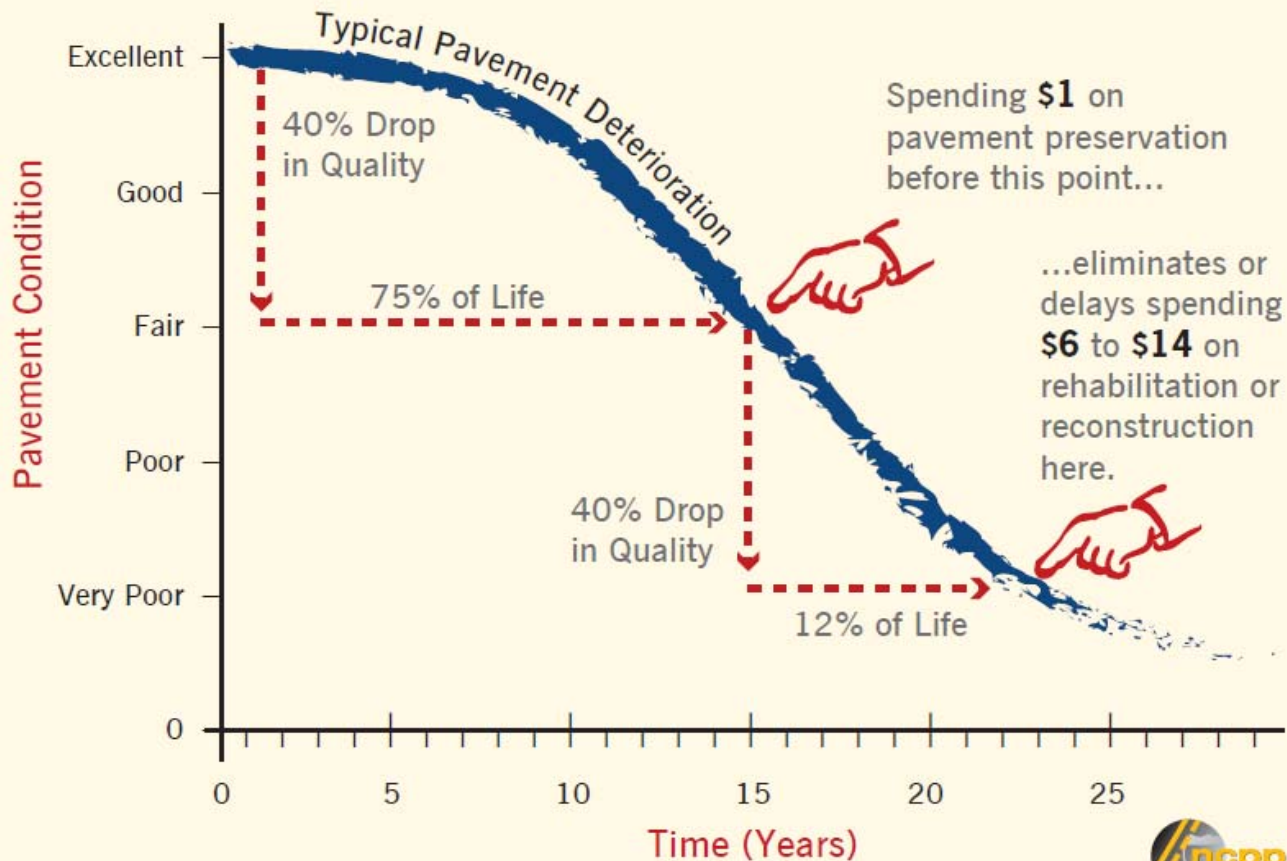
## Arterials/Collectors

Surface Type	Condition Category	Treatment	Years Between Seals	# of Surface Seals before Overlay
Asphalt	I – Very Good	Seal Cracks	5	1
		Micro-Surfacing	8	
		Mill & Thin Overlay		
	II – Good, Non-Load	Micro-Surfacing	8	
	III – Good, Load Related	Mill & Thin Overlay		
Concrete	IV – Poor	Mill & Thick Overlay		
	V – Very Poor	Reconstruct Structure		
Concrete	I – Very Good	Seal Cracks	5	
	V – Very Poor	Reconstruct Structure		
ST	III – Good, Load Related	Chip Seal		
	IV – Poor	Double Chip Seal		
	V – Very Poor	Reconstruct Structure		



# Worst-First?

## PAVEMENT PRESERVATION IS COST EFFECTIVE



Source: National Center for Pavement Preservation.

# When do we use what treatment?

PCI	CONDITION
100	EXCELLENT
85	VERY GOOD
70	GOOD
55	FAIR
40	POOR
25	VERY POOR
10	FAILED

**REJUVENATING FOG  
SEALS**

**SLURRY SEALS**

**MICRO SURFACING**

**VARIOUS CHIP SEALS**

**CAPE SEALS**

**COLD IN-PLACE  
RECYCLING**

**FULL DEPTH  
RECLAMATION**

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# REJUVENATING FOG SEAL

- Typically used on very good surfaces
- Enriches dry pavement surfaces, reduces raveling & can penetrate ~1/4"
- Diluted asphalt emulsions, lite oils and hardeners
- Application rate a function of surface condition
- Construction- applied using a distributor truck in diluted form
- Expected Service Life - 1 to 3 years
- Anticipated cost: \$0.30-\$0.50

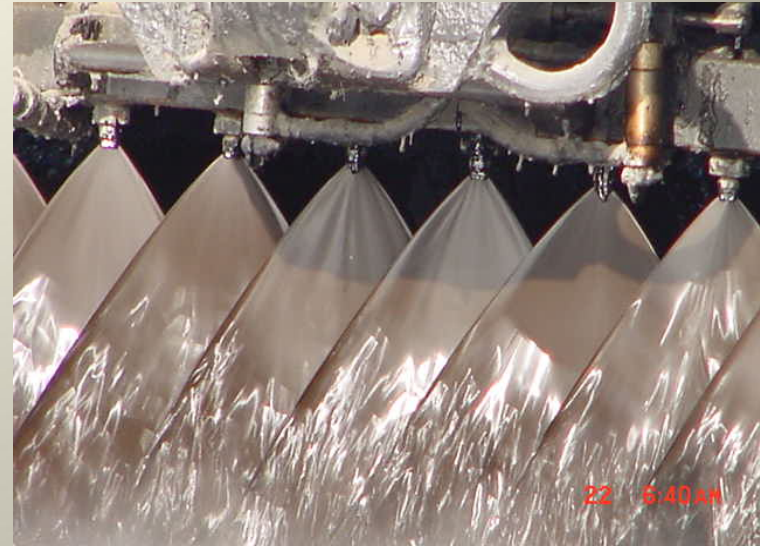
# REJUVENATING FOG SEAL

Creative uses:

Fog Sealing Chip Seal

- Commonly standard specification – But not universal
- Helps chip retention and mitigates cover aggregate loss

Fog Seal shoulders/bike lanes instead of using other treatments.



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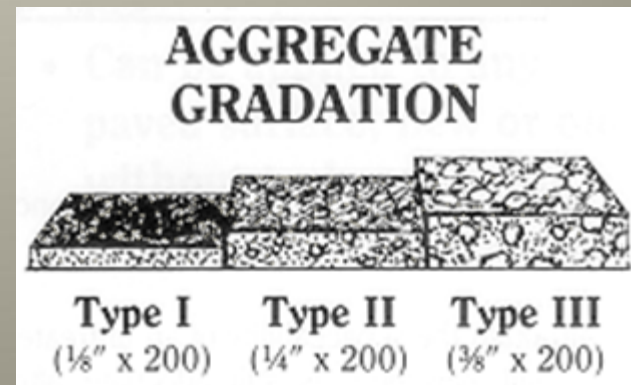
**CAPE SEALS**

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# Slurry Seals

- Used to correct minor defects:
  - Halts raveling, restores loss of matrix, improves skid resistance
- \$1.25 - \$1.50 /SY
- Expected Service Life: 4-7 Years





# Slurry Seals

Creative uses:

- Massive backer rod
  - Band-aid approach
  - Seal much smaller cracks later
- Supplement virgin aggregate with RAP





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# Micro Surfacing

- Suited for higher volume collectors, arterials and highways
- Resistant to rutting after initial consolidation
- Rut Filling
- Double Applications for addressing surface irregularities
- \$2.25 - \$3.25 /SY



# Micro Surfacing

## Creative Uses:

- Leveling course for chip seals or overlays
- Band-aiding major surface irregularities
- Micro Surfacing emulsion used with Type 2 where time to traffic is a large concern (Vancouver, WA)
- Mitigating bleeding chip seals
- Locking in failing “F” Mix or other Open Graded HMA















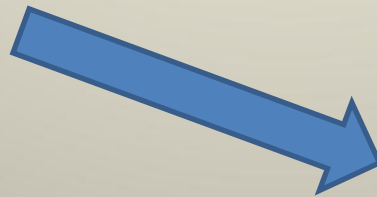




**4 YEARS AFTER INITIAL  
APPLICATION**

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# Chip Seals

- “Tried and True”
- Performs well when there is some cracking
  - Flexible
  - Wards off reflective cracking
- Most typically used in lower volume or rural roads
- 5 – 7 Years
- \$1.50 - \$5.00 /SY

# Chip Seal

Industry has presented a lot of variations to meet specific needs:

- Rejuvenating / Scrub Seals
- Fiber Reinforced Chip Seals
- Asphalt Rubber Binder Chip Seal

These types of materials help stretch where we can viably apply chip seals...







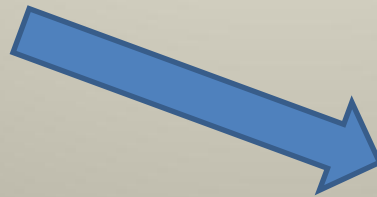






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# Cape Seals

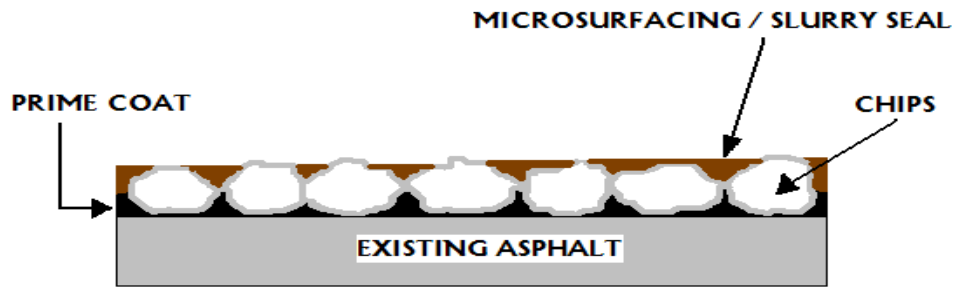
- Cape Seals fill the gap between a conventional overlay or a traditional seal coat option (Chip/Slurry/Micro Surfacing)
- Best Suited for fatigued but stable pavement
- Well suited for higher distressed pavements
- Chip Seal – creates a flexible water tight membrane that seals surface cracks.
- Slurry/Micro eliminates the loose rock, creates a tighter asphalt appearance, reduces liability and roadway noise.
- Each system compliments the other's drawbacks



# Cape Seals

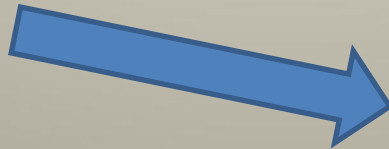
## Creative Uses:

- Clark County, WA – “Snivy Patches”
- Allows you deploy a chip seal in urban/residential neighborhoods
- Proven to be more resistant to snow-plow wear than conventional chip seal



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# Cold In-Place Recycling

- Good option where existing pavement would fall between a structural overlay and overlay
- Utilized to bring stability to existing pavement section.
- Anticipated service life: 10 years
- Typical Cost: \$9-\$12, \$24-\$32 / SY w/ Overlay  
(Compare to Full Pavement Rehabilitation: \$28-\$40/SY)

# Cold In-Place Recycling

Creative uses:

- Eco-friendly

- Based on the reuse of deteriorated pavement
- Lower Carbon Footprint

- Utilized in remote areas to reduce cost of raw materials

- Cold Central Plant Recycling used in urban areas where train does not fit.

- Washoe County, NV recently utilized 205,000 SY of CIR combined with a Fiber Mat Interlayer and Slurry Seal Wear Surface

- Process itself is creative – now agencies are tackling more and more higher volume roads with this treatment due to Engineered Emulsions.





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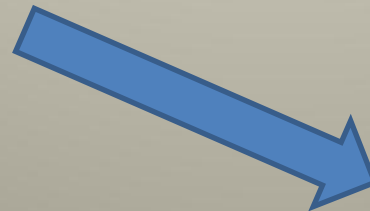
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# Full Depth Reclamation

- Alternative to reconstruct or structural overlay
- Utilized when the road is beyond what an overlay can fix
- Structural section is no longer adequate to support expected traffic loads
- Addresses structural deterioration
- Anticipated service life: 10 years
- Expected cost: \$18-\$25 /SY

# Full Depth Reclamation

## Creative Uses:

- Correct existing drainage issues
  - Processed material can be re-graded
  - Existing material can be removed or supplemented to help change profile
  - Upgrade “Farm to Market” Roads
    - Unknown/Various Layers (Chip Seals, Thin Lifts, Etc.)
    - Modify structural section to handle increased traffic
    - Widen to accommodate traffic





# In Closing...

- Dare to think outside of the box
- Chances are someone has done it – just ask
  - Utilize the T2Pave ListServ  
([T2PAVE@LISTSERV.WA.GOV](mailto:T2PAVE@LISTSERV.WA.GOV))
  - There are a lot of people who are passionate about our industry who are willing to share experiences.
- Utilize Local Contractors or Suppliers as Resources
- Utilize Conference Vendors as Resources

# Questions?



Vendor List/Card

- 1. \_\_\_\_\_
- 2. Unique Paving
- 3. American Highway Products
- 4. Evolution Paving Resources
- 5. Portland Cement Association
- 6. Alliance Geosynthetics
- 7. Roadwise
- 8. MTC StreetSaver
- 9. McAsphalt Industries Limited
- 10. Lakeside Industries/EZ Street Asphalt
- 11. Western States Asphalt
- 12. Capitol Asset & Pavement Services
- 13. \_\_\_\_\_
- 14. Tensar
- 15. CTS Cement
- 16. Valley Slurry Seal
- 17. Kwik Bond Polymers
- 18. TenCate
- 19. ASF West
- 20. Fugro
- 21. Duval Engineering
- 22. \_\_\_\_\_
- 23. Special Asphalt Products
- 24. Western Pavement Solutions
- 25. \_\_\_\_\_
- 26. \_\_\_\_\_

