

Preservation & Multi Lift Treatments



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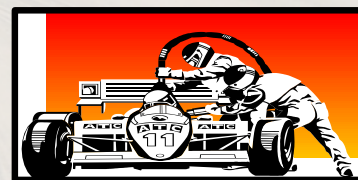
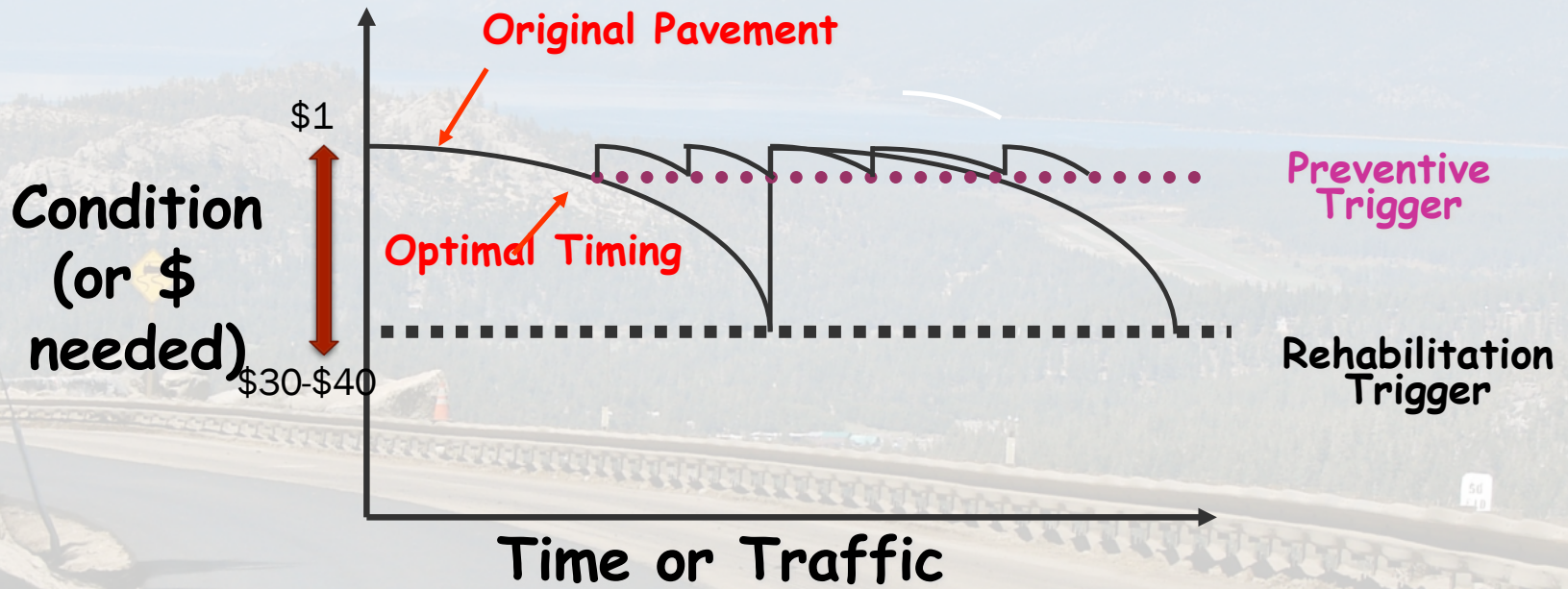
Before we start... GO...



The first question is: Preservation or Rehab?

- Why do we choose rehab vs preservation treatments?
 - Familiarity?
 - Ease of bidding?
 - Constituents want "their street done"
 - Pressure from local contractors?
 - "That's what we always do.."?
- What if we could help change the mindset by:
 - Showing the value of preservation
 - Show products that work through data and studies
 - Build trust (in us, yes... contractors, and our products)
 - Show added value by combining technologies for more benefit

How do/have we show(n) the value?



THE CURVE of course...

Then what do we do? Tell the story in pictures...

Pavement Preservation - What it IS



Chip Seal

Fog Seal



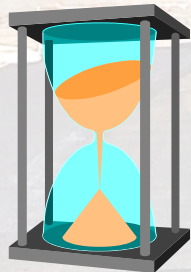
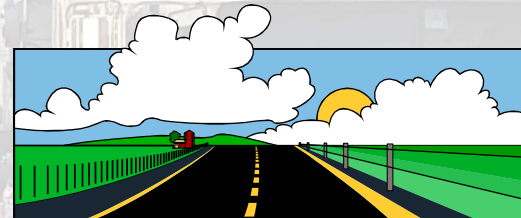
Keep the good
roads good

PAVEMENT PRESERVATION Philosophy



Right Treatment

Right Pavement



Right Time

Then we tell you what not to do, right?



**Pavement
Preservation?
NOT**

Change the approach...

- Help you, the engineers, public works directors maintenance workers tell the story you need to tell...
- To your:
 - Board of Supervisors
 - County Supervisors
 - City Councils
 - City Controllers
 - And most importantly,
 - Your local residents



Step 1. Show the value, communicate it, and sell it

- But how do we do that??

What is the story? Value and Longevity. \$1.5M worth of “Rehab vs Preserve”

The City of Novato, CA had ~300 lane miles of road and a \$1.5M budget for:

- pavement reconstruction & rehab
- maintenance
 - Typical Breakdown
 - \$1M for reconstruction and rehab
 - \$500K for maintenance

What did they get for their dollars?

Reconstruction ~ \$35.00 per yd² (This is CA of course)

(4" mill and fill with HMA)

- $\$1\text{M} \div \$35/\text{yd}^2 = \sim 28\text{K yd}^2$ or 4.05 LM

Cost of maintenance ~ \$4 per yd²

(Scrub seal with micro surfacing finish (ie: cape seal))

- $\$500\text{K} \div \$4/\text{yd}^2 = 125\text{K yd}^2$ or 17.8 LN

Results: 21.85 LM repaired per yr.

$300 \text{ LM} / 21.85 \text{ LM/YR} = \sim \underline{14} \text{ Yr Roadway Cycle}$

SAME \$1.5M “Preserve vs Rehab”

Different approach – vastly different results

\$1M for Preservation - \$500M for Pave & Rehab

Pave and Rehab

$$\$500K \div \$40/\text{yd}^2 = 12,500 \text{ yd}^2 = 1.8 \text{ LN Mi}$$

Cost of maintenance ~ \$4.00 per yd²

$$\$1M \div \$4/\text{yd}^2 = 250K \text{ yd}^2 = 35.5 \text{ LN Mi}$$

Results = 37.3 LM Preserved

300 LM/ 37.3 LM/YR = **8** Year Road Preservation Cycle

Step 2. Show the value through data and studies.

✓ Metropolitan
Transportation
Commission –

Street Pavement
Condition Index

City	County	Year	PCI
Novato	Marin	2001	71
Novato	Marin	2002	68
Novato	Marin	2003	66
Novato	Marin	2004	64
Novato	Marin	2005	63
Novato	Marin	2006	68
Novato	Marin	2007	70
Novato	Marin	2009	74
Novato	Marin	2010	75
Novato	Marin	2011	71
Novato	Marin	2012	70
Novato	Marin	2013	71

Step 3. Build trust. Communicate Value

- Data from outside sources like:
 - NCAT Test Track
 - [Western Regional Association for Pavement Preservation \(WRAPP\)](#)
 - Chico State Pavement Preservation Association
 - In CA, Caltrans Maintenance Technical Advisory Guide
 - In your state, what resources do you have??

Wrapp.org NCAT presentation 2015

Pavement Preservation on Lee Road 159

1. Rejuvenating Fog Seal
2. Fibermat
3. Control
4. Control
5. Crack Seal (CS)
6. Single Layer Chip Seal
7. CS + Single Layer Chip Seal
8. Triple Layer Chip Seal
9. Double Layer Chip Seal
10. Microsurfacing + Single Chip (Cape)
11. Microsurfacing
12. CS + Microsurfacing
13. Double Layer Microsurfacing
14. Fibermat + Microsurfacing (Cape)
15. Scrub Seal + Microsurfacing (Cape)
16. Scrub Seal
17. Distress Demo Section
18. Fibermat + HMA thinlay (HMA Cape)
19. HMA Thinlay (PG 67-22)
20. HMA + 100% Foamed Recycle Inlay
21. HMA Thinlay (PG 76-22)
22. Ultra Thin Bonded Wearing Course
23. HMA Thinlay (50% RAP)
24. HMA Thinlay (5% PCRAS)
25. HMA Thinlay (High Polymer)

A scenic view of a winding road in a mountainous region. The road curves to the right, bordered by a concrete guardrail. In the background, there are snow-capped mountains under a clear sky. The foreground shows a rocky embankment on the left with some road signs.

Have a plan for the tools you have...

- [County of Santa Barbara](#)
- [Santa Barbara County Road Map](#)

Preventive Treatments	Raveling	Oxidation	Bleeding	Rutting		Climate				Traffic Volumes			Night	Cold			
				<1/2"	>1/2"	Desert	Valley	Coastal	Mountains	adt < 5000	adt>5000<30,000	adt >30,000					
Crack/Joint Seal																	
Emulsion	G	G	F	N	N	N	G	G	G	P	23,000	G	G	G	N	+0.30	N
Modified (Rubber)	G	G	F	N	N	N	G	G	G	P	24,000	G	G	G	N	+0.30	N
Seal Coats																	
Fog Seal (See note 1)	G	G	G	N	N	N	G	G	G	P	31,000	F	F	N	N	+0.20	N/A
Rejuvenator (See note 1)	G	G	G	N	N	N	G	G	G	P	31,000	F	F	N	N	+0.20	N/A
Scrub Seal (See Note 4)	G	G	F	N	N	N	G	G	G	F	27,000	G	F	N	N	+0.50-1.00	N
Slurry Seals																	
Type II (See note 1)	G	G	G	N	N	N	G	G	G	F	24,000	G	G	G	N	+0.50-1.00	N
Type III	G	G	G	N	N	N	G	G	G	G	65,000	G	G	G	N	+0.50-1.00	N
REAS	G	G	G	N	N	F	N	N	G	P		G	G	G	N		N
Microsurfacing																	
Type II	G	G	G	N	N	G	F	F	G	P	65,000	G	G	G	N	+1.20-4.00	N
Type III	G	G	G	N	N	G	G	P	G	P	65,000	G	G	G	N	+1.50-3.50	N
Chip Seals																	
PME - Med. Fine (See Note 4)	G	G	G	N	N	F	N	F	G	G	60,000	G	G	N	N	+1.20-4.00	N
PME - Medium (See Note 4)	G	G	G	N	N	F	N	F	G	G	85,000	G	N	N	N	+1.50-3.50	N
PMA - Medium (See Note 3.)	G	G	N			F	N	F	G	G	85,000	G	N	N	N	+1.50-3.50	N
PMA - Coarse (See Note 3.)	G	G	N			F	N	F	G	G	45,000	G	N	N	N	+1.20-4.00	N
AR - Medium	G	G	G	N	N	F	N	F	G	G	60,000	G	G	N	N	+1.20-4.00	N
AR - Coarse	G	G	G	N	N	F	N	F	G	G	65,000	G	N	N	N	+1.50-3.50	N

Criteria	Type of Cracking												
	Alligator "A"			Alligator "B"			Alligator "C"			Longitudinal/Transverse		Edge	
	Low	Medium	High	Low	Medium	High	Low	Medium					
Width	<1/4"	>1/4", <1/2"	>1/2"	<1/4"	>1/4", <1/2"	>1/2"	<1/4"	>1/4", <1/2"	Alligator "B"				
Criteria	Alligator "A"			Alligator "B"			Longitudinal/Transverse		Edge				
Width	<1/4"	>1/4", <1/2"	>1/2"	<1/4"	>1/4", <1/2"	>1/2"	<1/4"	>1/4", <1/2"	>1/2"				
Area	<10%	>10%, <20%	>20%, <30%	<10%	>10%, <20%	>20%, <30%	<10%	>10%, <20%	>20%, <30%				
Preventive Treatment													
Slurry Seals													
Type II (See note 1)	F _F	N _N	N	F _N	N	N	N	F _F	N	N _N	F	P	N _P
Type III	F	P	N	F	P	N	N	F	P	N	F	P	P
Microsurfacing													
Type II (See note 2)	G _G	F (See Note 4)	N	G _N	P (See Note 4)	N	N	F _P	P	P	P _N	P	P
Type III	G _G	F (See Note 4)	P	G _N	P (See Note 4)	N	N	F _P	P	P	P _N	P	P
Chip Seal													
PME - Med. Fine	G	P	N	G	F (See Note 4)	N	N	G	F (See Note 4)	N	N	N	
PME - Medium	G _G	F (See Note 4)	N	G _N	F (See Note 4)	N	N	G _G	F (See Note 4)	P	P	P	
PMA - Medium (See Note 3.)	G _G	G	F (See Note 4)	G _P	F (See Note 4)	N	N	G _G	F (See Note 4)	P	P	P	
PMA - Coarse (See Note 3.)	G	F (See Note 4)	F (See Note 4)	G	F (See Note 4)	N	N	G	F (See Note 4)	P	P	P	
AR - Medium	G _G	G (See Note 4)	P (See Note 4)	G _F	G	N	N	G _G	P	F	G _F	N	F
AR - Coarse	G _G	F (See Note 4)	F (See Note 4)	G _F	F (See Note 4)	N	N	G _G	F	F	G _P	P	P

Why use Multi-Layers?

To Preserve and Maintain

We do this:



Seal the good roads first to keep them in good shape

To prevent this:



Using the Right Layer at the Right Time

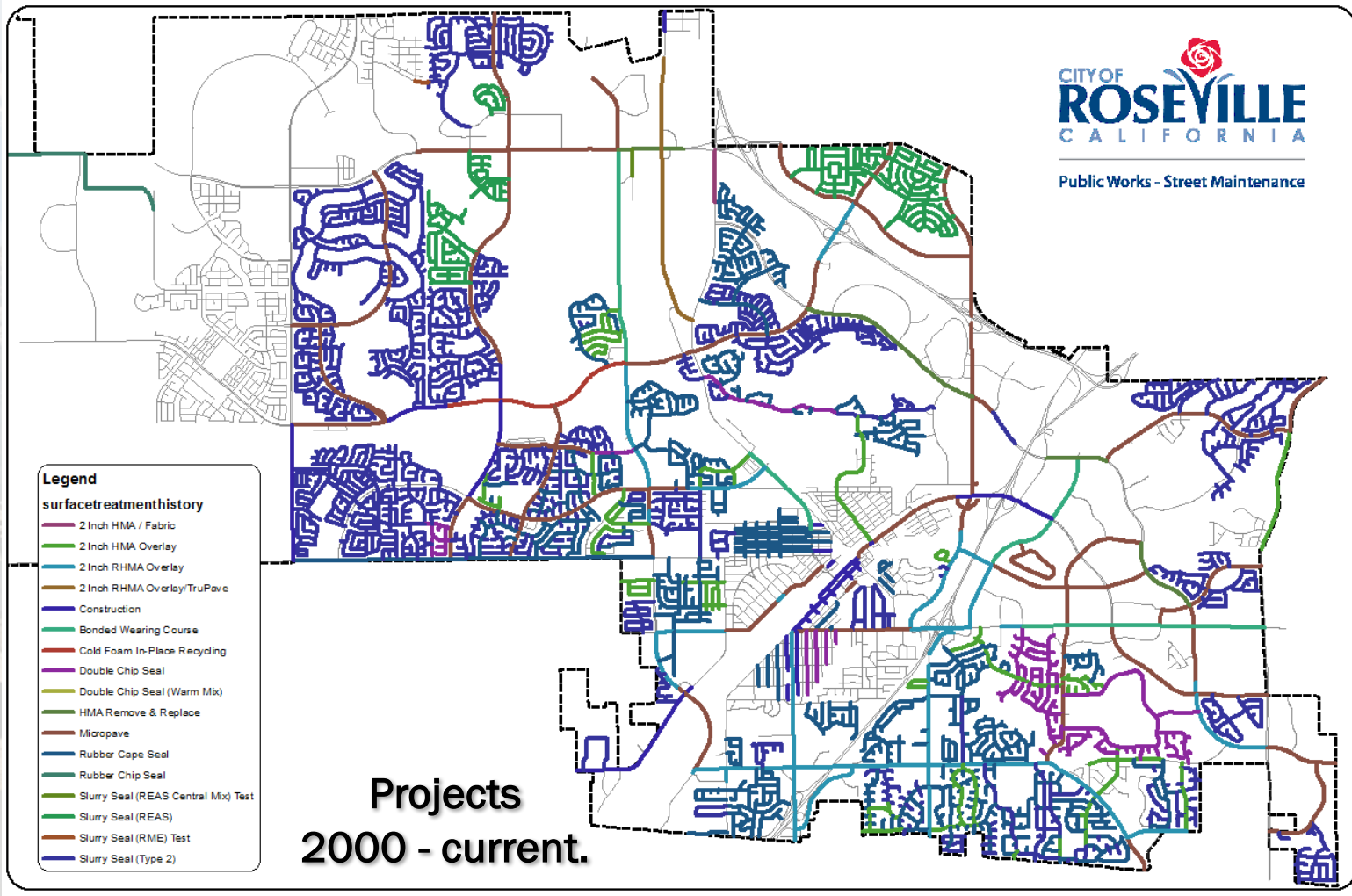
- Use your pavement management system (PCI & PQL) with age of the street to help determine the resurfacing layer.

Rating	Treatment
80-100	Slurry Seal/ Single Chip
50-79	Chip Seal / Cape Seal/ Multi Layers/ Overlay
0-49	Reconstruction

Treatments and Layers

- We have many tools in our resurfacing tool box to choose from:
- Slurry Seals (5-10 yrs.)
- Cape Seal (10-15 yrs.)
 - Residentials / Arterials
- Double Chip Seals (10-15 yrs.)
- Bonded Wearing Course (10-15 yrs.)
- Hot Mix Asphalt Overlay (HMA)
- Rubberized Hot Mix Asphalt Overlay (RHMA)





Legend

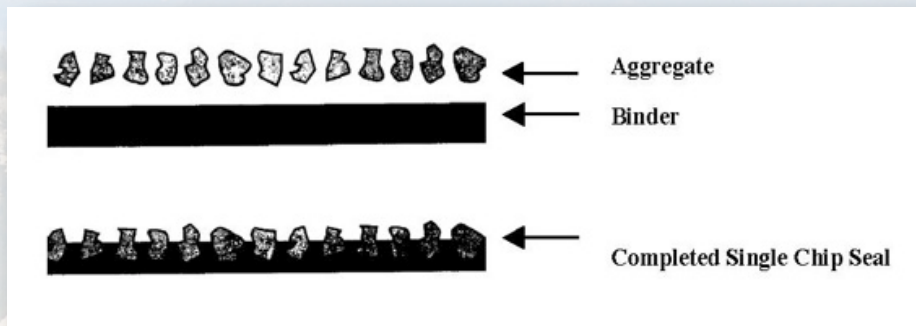
surfacetreatmenthistory

-  2 Inch HMA / Fabric
-  2 Inch HMA Overlay
-  2 Inch RHMA Overlay
-  2 Inch RHMA Overlay/TruPave
-  Construction
-  Bonded Wearing Course
-  Cold Foam In-Place Recycling
-  Double Chip Seal
-  Double Chip Seal (Warm Mix)
-  HMA Remove & Replace
-  Micropave
-  Rubber Cape Seal
-  Rubber Chip Seal
-  Slurry Seal (REAS Central Mix) Test
-  Slurry Seal (REAS)
-  Slurry Seal (RME) Test
-  Slurry Seal (Type 2)

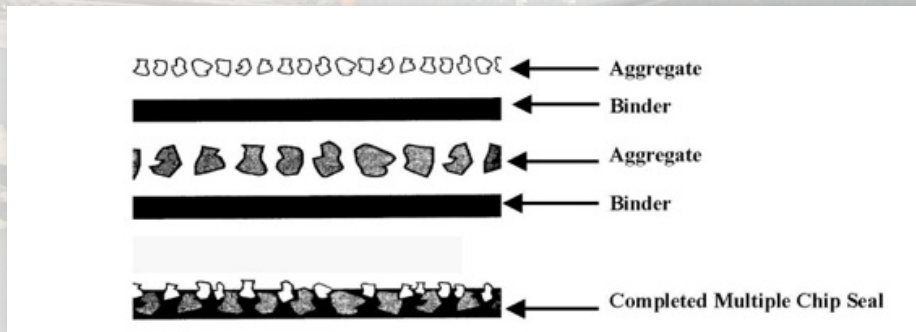


Chip Seals

No ADA Upgrades necessary



Single Chip Seal



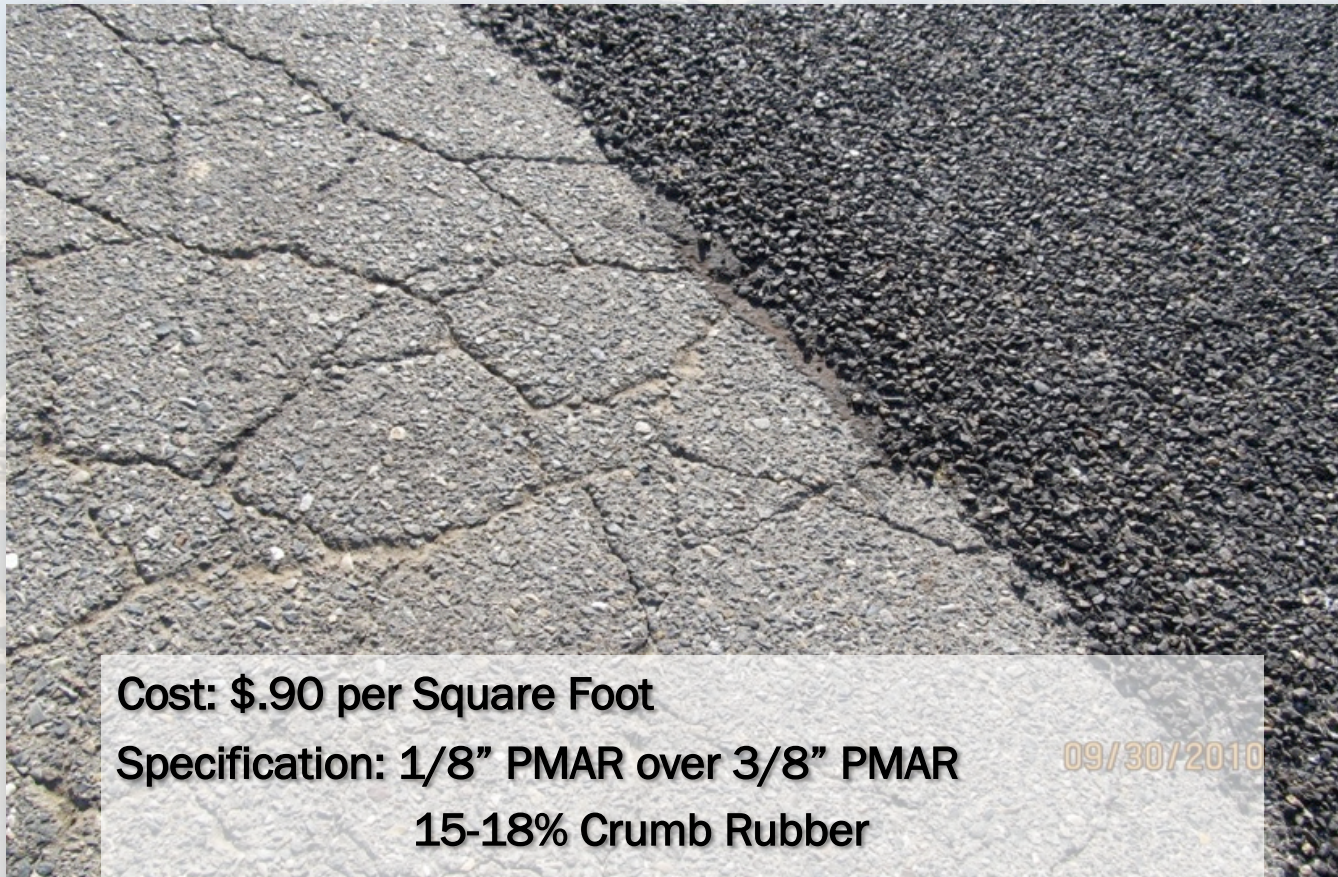
Double Chip Seal

Double Chip Seal (Warm Mix Rubber)

Double chip seal is the placement of asphalt coated rock over a liquid rubber asphalt membrane. 3/8" rock 1st layer covered with 1/8" rock



Double Chip Seal (Warm Mix Rubber)



Cost: \$.90 per Square Foot

Specification: 1/8" PMAR over 3/8" PMAR

15-18% Crumb Rubber

09/30/2010

Chip with Fabric



Cape Seal (Rubber)

Cape seal is a single chip seal with a slurry seal on top.



Cape Seal Issues



Cape Seal (Rubber)



1 Year after treatment

Cape Seal over Fabric



Double Chip Seal with Rubber



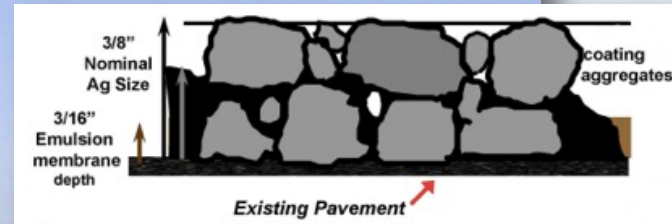
Before



After

Bonded Wearing Course

A thin lift ($\frac{1}{2}$ -1 inch) of asphalt, aggregate, and polymers placed over an emulsion membrane.



Bonded Wearing Course

Cost: \$1.50 per Square Foot

Specification: 1/2" HMA



Bonded Wearing Course



4 Years after treatment

Combinations for more value and more benefits.

Example 1 : Hot Applied Binder Chip Seal...



Seals, wearing surface,
long term preservation...



Combinations for more benefits.

...combined with micro surfacing

“Johnny can rollerblade.”

and the finish product provides smooth ride and extended pavement life



Example 2 : Type III micro surface...



Improves ride
Fixes surface deficiencies
Rut fill capable

...combined with Type II micro surface...

Finish
surface

Smooth ride

Quick
Application

Night time
possible



Example 3:

- Micro
- Chip
- Slurry

Seals,
wearing
surface,
long term
preservation



Recap

- Step 1. Show the value of preservation to help them sell it
- Step 2. Show products work through data and studies
- Step 3. Build trust and confidence in the products
- Step 4. Show added value by combining technologies for more benefit

All of these things will help your local engineer be better able to communicate the value of our products.

Contributions and Tools

- ✓ NCHRP Report 742
Communicating the Value of
Preservation: A Playbook
- ✓ Caltrans Maintenance Technical Advisory
Guide
- ✓ Metropolitan Transportation Commission
- Street Pavement Condition Index

Thank you

Questions?



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