11TH ARIZONA PAVEMENTS/MATERIALS CONFERENCE

November 19 – 20, 2014 Arizona State University Tempe Arizona

Session 4: Pavement Preservation

Multi Layered Pavement Preservation Systems

Jeff Smith – Cactus Asphalt jsmith@cactusasphalt.com

Considerations

- Pavement Condition
- Pre-maintenance Activity (If Any)
- Scrub Seal Type
- Chip Seal Type (Binder? Application Rate?) Aggregate Gradation (Pre Coat?)
- Slurry or Micro
- Overlay Type
- Climate (Binder Grading)
- Traffic (Amount, Trucks?)
- Performance Expectations
- Budget Issues

Considerations Continued

Initial Cost vs. Life Cycle Cost Individual Project Variables Construction Conditions Other Alternatives? Limitations Are you Reactive or Proactive?

Candidate for Multi Layer?



Good To Very Bad





Candidate for Multi Layer?



Candidate for Multi Layer?



Mandatory Pre-Maintenance







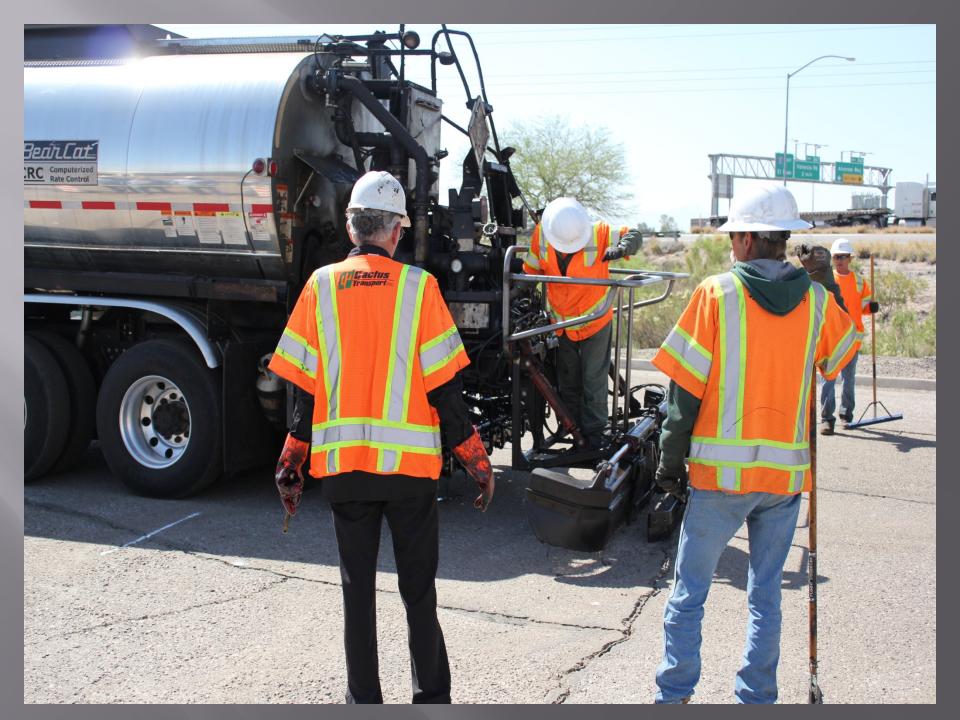


Types of Multi Layered Systems

Scrub Seal/Chip Seal Cape Seal Double Chip Seal Three Layer Cape Seal Two Layer Overlay System Other Uses

Scrub Seal/Chip Seal













Cape Seal











Double Chip Seal











Three Layer Cape Seal















Two Layer Overlay System

Better Known as "SAMI"













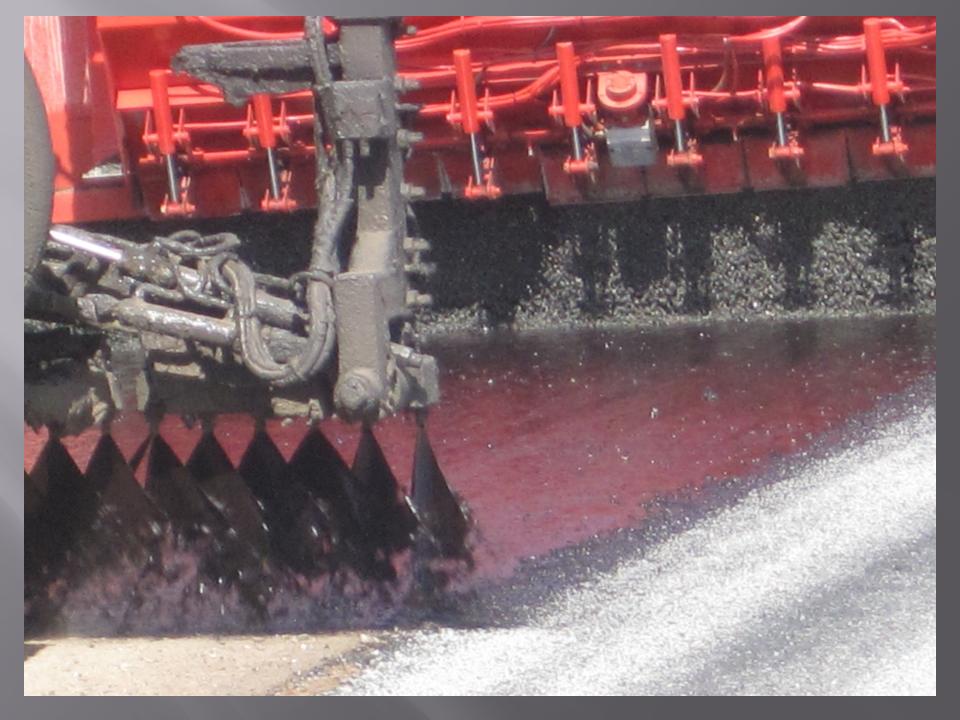
Other Multi Layer Usage

Dirt Road/Prepared Base Chip Seal Applications

Double Emulsion Chip Seal











Hot Applied Chip Seal







Projects

Scrub Seal/Chip Seal

Before – August 2004



After – December 2011 (7 Years)



7 Years of Performance, Now 10





Before – March 2003



After – June 2008 (5 years)



5 Years of Performance, Now 10





Double Chip Seal

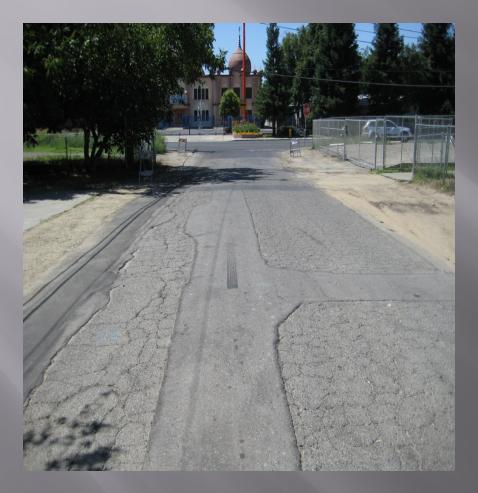
Before – June 2006



After – March 2010 (4 years)



4 Years of Performance, Now 8 Years





Double Chip Seal

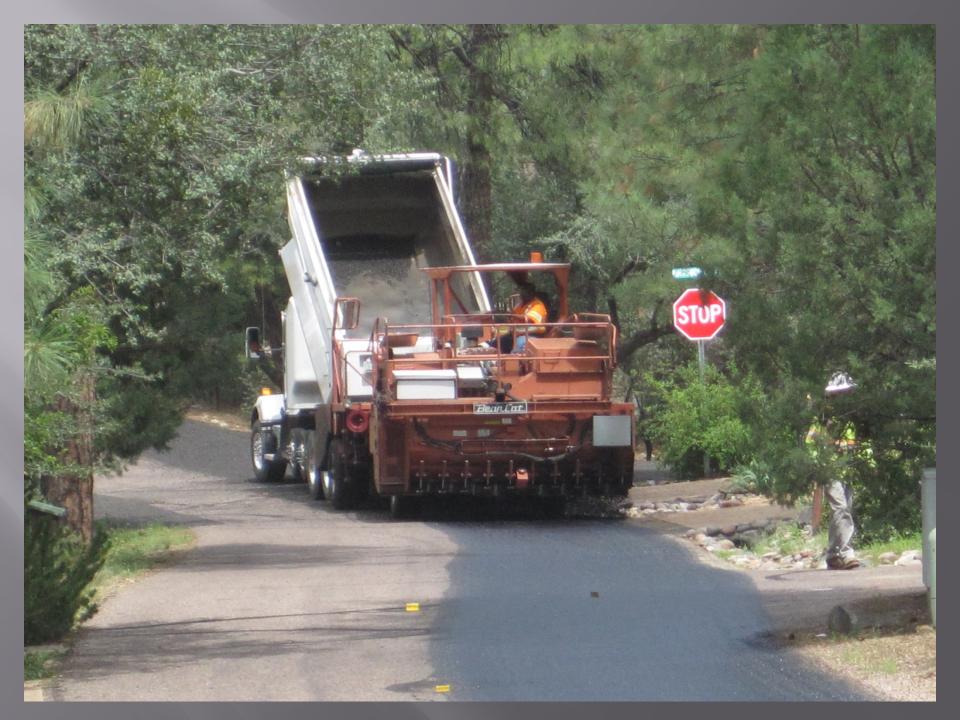
Extreme Phase Construction

Asphalt Rubber Chip Seal – Circa 1998 (16 Years Old)









Performance Expectations? Another 16 Years?



Triple Cape Seal

Before – February 2005



After – March 2013 (8 Years)



8 Years of Performance, Now 10 Years



Two Layer Overlay System

Before – September 2008







After – January 2013 (5 years)



5 Years of Performance, Nearly 7 Years





Sometimes We Try To Fix The Impossible!



Will This Work?



Not so Well! Performance After 4 Years



What About a Pavement Condition Matrix? For Arizona?

Might Look Something Like This Draft...

<u> </u>	0	
Pavement Condition Range	Qualified Treatments	Cost Range
100 - 90	Various Fog Seal Applications	\$0.50 - \$0.75 Per Square Yard
90 - 70	Crack Seal/Patching/Scrub Seal Various Fog Seal Applications Slurry Seal/Micro Surface	\$0.50 - \$2.00 Per Square Yard \$0.50 - \$0.75 Per Square Yard \$1.50 - \$3.75 Per Square Yard
70 - 50	Crack Seal/Patching/Scrub Seal Slurry Seal/Micro Surface PMRE/CRS-2P Chip Seal PG-TR Chip Seal Cape Seal (Various) Double Chip Seal (Various) Conventional Overlay	\$0.50 - \$2.00 Per Square Yard \$1.50 - \$3.75 Per Square Yard \$1.75 - \$3.00 Per Square Yard \$2.25 - \$3.25 Per Square Yard \$4.00 - \$6.00 Per Square Yard \$4.00 - \$7.50 Per Square Yard \$6.00 - \$10.00 Per Square Yard
50 - 30	Crack Seal/Patching/Scrub Seal Asphalt Rubber Chip/Cape Seal Double Chip Seal (Various) Hot in Place Recycling/Seal Three Layer Cape Seal (Various) SAMI/Rubber Modified Overlay Mill and Fill	\$0.50 - \$2.00 Per Square Yard \$3.75 - \$7.00 Per Square Yard \$4.00 - \$7.50 Per Square Yard \$6.00 - \$12.00 Per Square Yard \$8.00 - \$12.00 Per Square Yard \$8.00 - \$12.00 Per Square Yard \$12.00 - \$20.00 Per Square Yard
30 - 0	Crack Seal/Patching/Scrub Seal SAMI/Rubber Modified Overlay Cold in Place Recycling/Seal Reconstruction	\$0.50 - \$2.00 Per Square Yard \$12.00 - \$14.00 Per Square Yard \$12.00 - \$20.00 Per Square Yard \$45.00 - \$75.00 Per Square Yard



Let's Have Lunch!