

# The Changing Role of Pavement Preservation in the United States



PAVEMENT PRESERVATION & RECYCLING SUMMIT

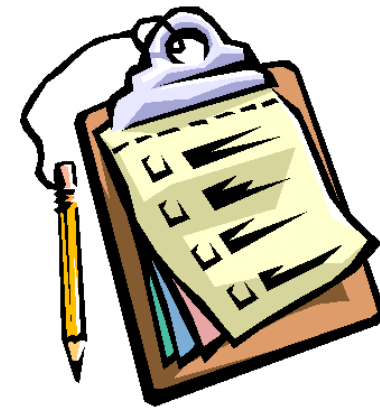
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applied pavement  
TECHNOLOGY

## Presentation Overview

- › Where we have been
- › Where we are now
- › Where we are going
- › Obstacles
- › Conclusions



PRESERVATION IN THE US

Where we have been

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# "Early" (Late 1980s/Early 1990s) National Initiatives

- › Strategic Highway Research Program (SHRP)
  - SPS-3 experiment
  - SPS-4 experiment
  - H-106 project on innovative maintenance materials
- › A 1999 post-SHRP survey documented state of the practice





## 1999 AASHTO Lead States Survey

- › 41 responding agencies: all used preventive treatments
- › 36 had preventive maintenance programs
- › 17 had programs in place for more than 10 years
- › 1 had been practicing preventive maintenance for the past 75 years

# 1999 AASHTO Lead States Survey: Research Needs

- › Need specific guidelines on the integration of pavement preservation and pavement management systems
- › Need preventive maintenance guidelines

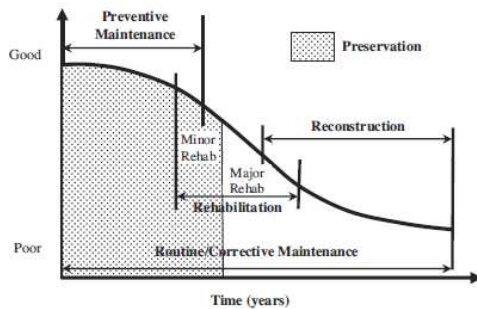


Table 3.2. Feasibility Matrix for Preliminary Identification of Candidate Preservation Treatments for HMA-Surfaced Pavements

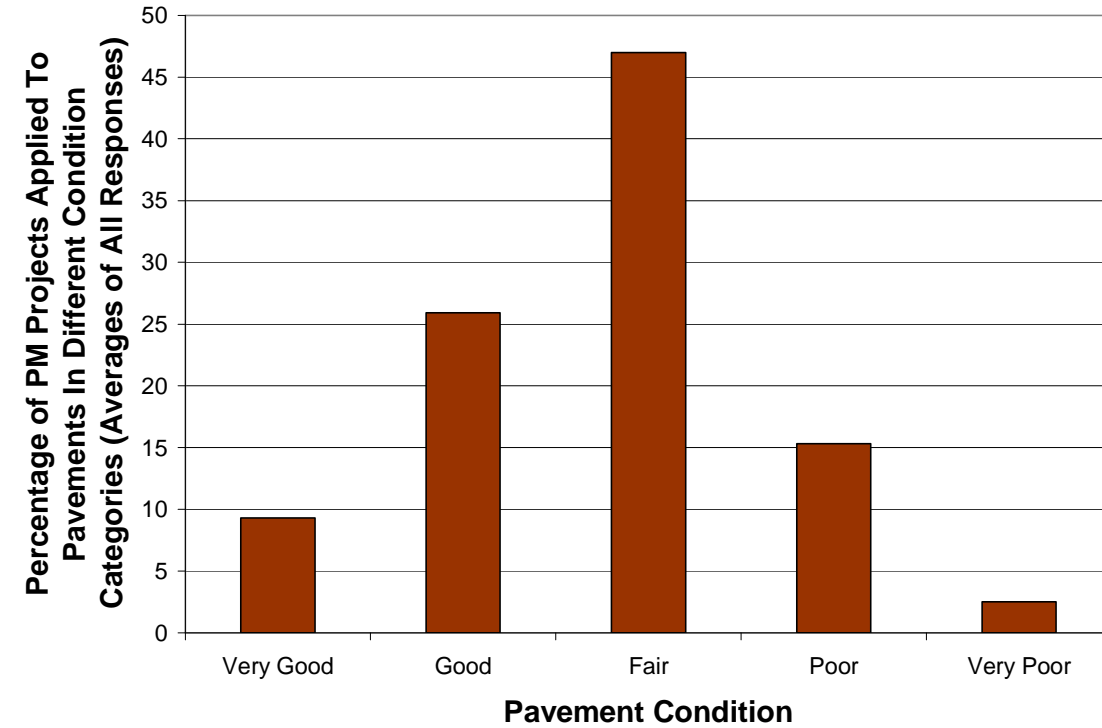
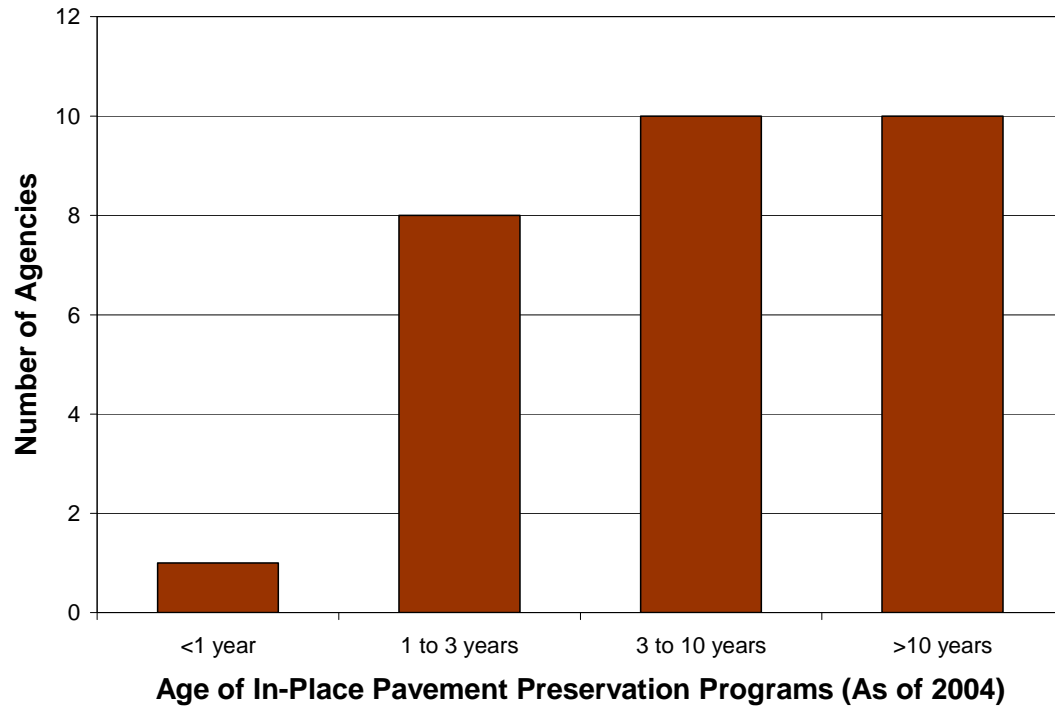
Preservation Treatment	Window of Opportunity PCI/ PCR	Age (yr)	Distress Types and Severity Levels (L = Low, M = Medium, H = High)						
			Surface Distress					Crack	
			Ravel/ Weather	Bleed/ Flush	Polish	Segre- gation	Water Bleed/ Pump <sup>a</sup>	Fatigue/ Long WP/ Slippage	Block
Crack fill	75-90	3-6 <sup>f</sup>						X X X	⊙ X
Crack seal	80-95	2-5 <sup>f</sup>						X X X	⊙ X
Slurry seal (Type III)	70-85	5-8	⊙ ⊙ ⊙	X	⊙	⊙ ⊙ X	⊙	⊙ X	● ⊙ ⊙
Microsurfacing: Single	70-85	5-8	⊙ ⊙ ⊙	X	⊙	● ⊙ ⊙	⊙	⊙ X	● ⊙ ⊙
Microsurfacing: Double	70-85	5-8	⊙ ⊙ ⊙	X	⊙	● ⊙ ⊙	⊙	⊙ X	● ⊙ ⊙
Chip seal: Single	70-85	5-8	⊙ ● ⊙	⊙	●	● ⊙ ⊙	⊙	⊙ X X	● ⊙ ⊙
Conventional	70-85	5-8	⊙ ⊙ ⊙	X	●	⊙ ⊙ ⊙	⊙	⊙ X	● ⊙ ⊙
Polymer modified	70-85	5-8	⊙ ⊙ ⊙	X	⊙	⊙ ⊙ ⊙	X	⊙ X	● ⊙ ⊙
Chip seal: Double	70-85	5-8	⊙ ⊙ ⊙	X	⊙	⊙ ⊙ ⊙	X	⊙ X	● ⊙ ⊙
Conventional	70-85	5-8	⊙ ⊙ ⊙	X	⊙	⊙ ⊙ ⊙	X	⊙ X	● ⊙ ⊙
Polymer modified	70-85	5-8	⊙ ⊙ ⊙	X	⊙	⊙ ⊙ ⊙	X	● ⊙ ⊙	● ● ⊙



## 2004 NCHRP 20-07 (184) Study of Pavement Preservation Research Needs

- › 33 states and 2 provinces responded
- › Between 26 and 30 agencies claimed to have a pavement preservation program







## 2004 High Priority Research: Based on Reported Research Needs and Ongoing Research

- › Economic evaluation of treatment effectiveness
- › Development/enhancement of treatment selection guidelines
- › Integration of preventive maintenance and pavement management
- › Development of improved treatment timing guidelines
- › Tools to measure performance
- › Construction and monitoring of test sections
- › Treatment impact on performance



## 2008 Preservation Research, Development, and Implementation Roadmap

- › 38 pavement preservation topics identified: top-rated by importance and priority:
  - Performance-related specifications
  - Treatment lives and pavement life extension
  - Economic benefits of preservation
  - Model specifications and testing requirements
  - Performance and benefits of treatments, and performance models
  - Process for estimating remaining service life (RSL)
  - QA/QC guidelines for preservation
  - Quantifying benefits of preservation treatments
  - Triggers for timing of surface treatments

# PRESERVATION IN THE US

Where we are now

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- › We have a National Center for Pavement Preservation and regional partnerships in which all states are participating
- › FP2 advocates and lobbies in support of pavement preservation
- › Several states have their own preservation centers
- › Most states truly have a pavement preservation program, understand preventive maintenance
- › Both the concrete and hot-mix asphalt industries promote their own vision of preservation



## SHRP2 R26: Pavement Preservation on High-Volume Roadways

- › No consensus on what is high volume
- › Widespread aversion to preservation on these roadways for variety of reasons
- › At same time, for some agencies this is routine practice
- › Study resulted in guidelines for using preservation to use or modify



## SHRP2 R26 Implementation


- › Study of current practices led to FHWA and AASHTO support for implementation
- › As part of a large national implementation initiative of many research studies, 14 agencies received implementation funding
- › Goal is to encourage the practice of preservation on categories of roads often not considered for cost-effective preservation

# SHRP2 R26 Implementation Status

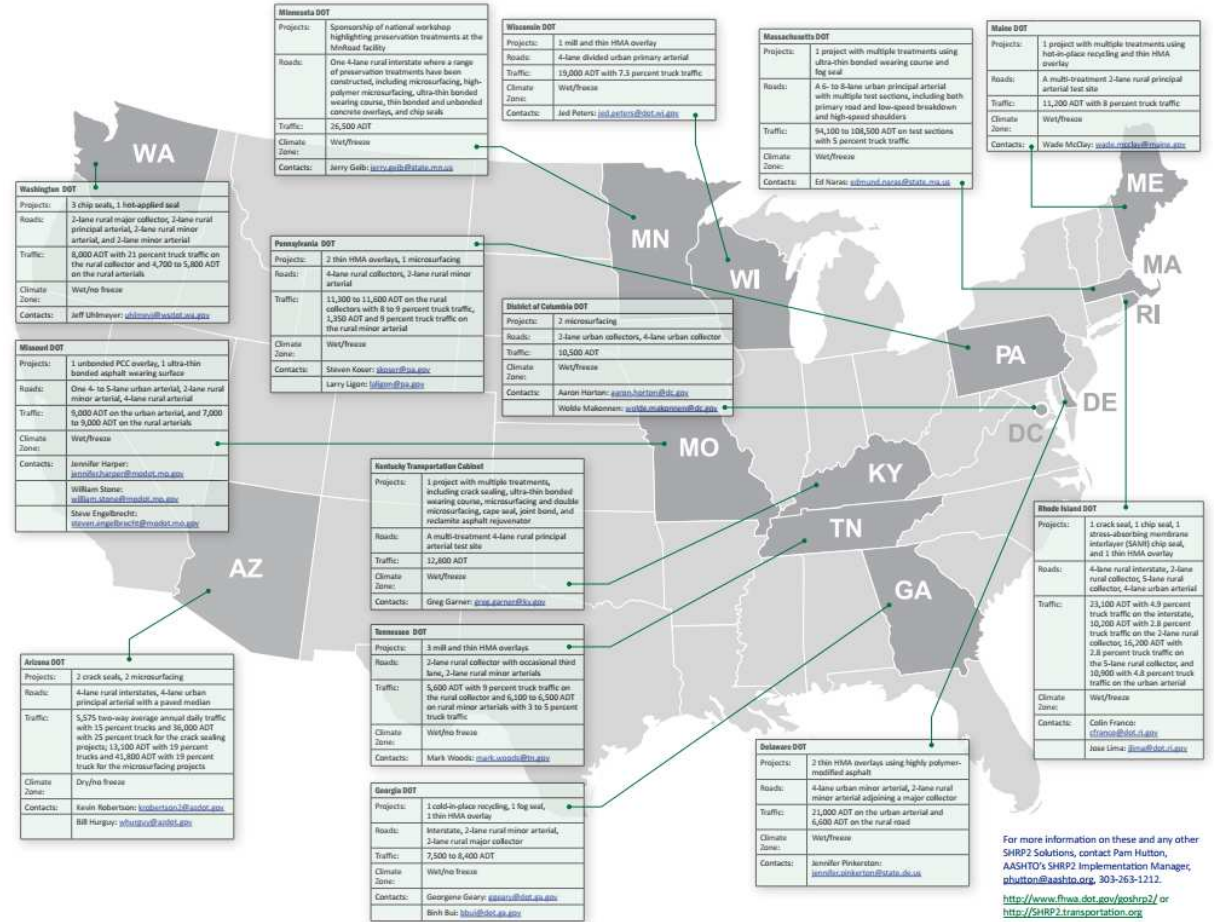
REPORT S2-R26-RR-1

## Preservation Approaches for High Traffic Volume Roadways

SHRP2 RENEWAL RESEARCH



TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES



For more information on these and any other SHRP2 Solutions, contact Pam Hutton, AASHTO's SHRP2 Implementation Manager, [phutton@ashito.org](mailto:phutton@ashito.org), 303-263-1212. <http://www.fhwa.dot.gov/shrp2/> or <http://SHRP2.transportation.org>

PRESERVATION IN THE US

Where we are going

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## Driving Forces

- › Ongoing funding challenges
- › Continued emphasis on conserving scarce resources
- › Increased focus on life-cycle assessments rather than initial costs
- › Sustainability
- › Greater attention to system performance (MAP-21) and accountability



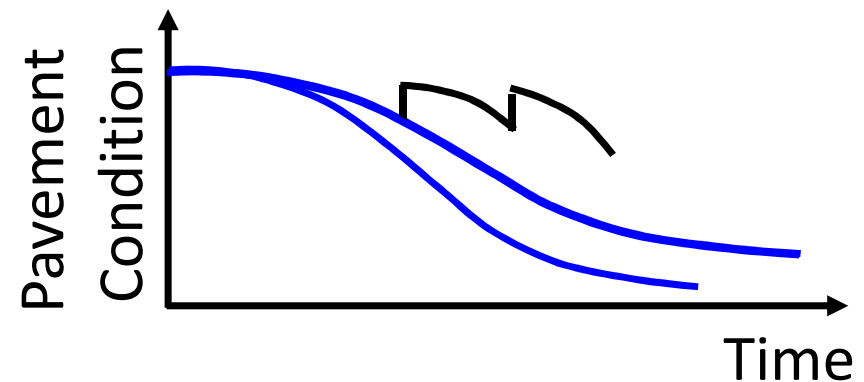
## Short Term

- › Regional and national studies of the effects of pavement preservation, both on test tracks and in-service pavements
- › Important progress on materials specifications, treatment performance, and guidelines
- › More widespread use of pavement preservation, from state agencies to cities, counties, and even private owners



## Long Term

- › Emphasis on life-cycle assessments, which will force the consideration of cost-effective approaches (MAP-21)
- › Consideration of preservation in the design process



PRESERVATION IN THE US

Obstacles

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## Obstacles

- › Industry intent on retaining market share
- › Managers reluctant to try "new" ideas
- › Highly publicized failures
- › Lack of data to support change



# SOME CONCLUDING THOUGHTS

- › We are slowly evolving from a treatment-based mentality to a program-based concept of pavement preservation
- › The conservative nature of many decision-makers requires that we continue to document performance and benefits of preservation
- › It does not seem possible that we will ever have too much information
- › The goal is a future in which we always select the right treatment for a pavement at any given time



# Thank You!

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## Links to Resources

- › *Pavement Preservation in the United States: 1999 Survey by the Lead States Team on Pavement Preservation –*  
<http://www.mdt.mt.gov/publications/docs/brochures/research/toolbox/FHWA/ppsurvey.PDF>
- › *Pavement Preservation: Practices, Research Plans, and Initiatives –*  
<http://maintenance.transportation.org/Documents/NCHRP20-07184FinalReport.pdf>
- › *Transportation System Preservation Research, Development, and Implementation Roadmap –*  
[https://www.tsp2.org/files/2011/03/Roadmap\\_Report\\_Complete.pdf](https://www.tsp2.org/files/2011/03/Roadmap_Report_Complete.pdf)





## More Resources

- › *Guidelines for the Preservation of High-Traffic-Volume Roadways and Preservation Approaches for High-Traffic-Volume Roadways – [http://www.fhwa.dot.gov/goshrp2/Solutions/Renewal/R26/Guidelines for the Preservation of HighTrafficVolume Roadways](http://www.fhwa.dot.gov/goshrp2/Solutions/Renewal/R26/Guidelines%20for%20the%20Preservation%20of%20HighTrafficVolume%20Roadways)*
- › National Center for Pavement Preservation – <https://www.pavementpreservation.org/>
- › FP2 – [www.fp2.org](http://www.fp2.org)
- › SHRP2 Renewal Solutions – <http://www.fhwa.dot.gov/goshrp2/Solutions/Renewal/List>