



U.S. Department of Transportation  
Federal Highway Administration

# Communicating the Value of Preservation



Pennsylvania Association of Asphalt  
Material Applicators Conference  
October 26, 2023

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Denver, CO

*FHWA is the source of all images in this presentation unless otherwise noted.*

# Preservation

- FHWA definition\*:  
*Work that is planned and performed to improve or sustain the condition of the transportation facility in a state of good repair.*
- *Maximum benefit for least cost*
- *Keeping good roads good*

## FHWA P&M Program Areas



\*Guidance on Highway Preservation and Maintenance memo dated February 25, 2016



# Pavement Preservation

- PACT definition:

*Is a sum of strategic activities performed to preserve the investments in a roadway, enhance safety, extend pavement life, improving functional performance and resilience, and contributing to increased user satisfaction.*



# Program Area Collaboration Team (PACT) Membership

Jason Dietz (RC) leader

Antonio Nieves (HQ)

Morgan Kessler HR)

Dennis Bachman (IL)

Thomas Van (HQ)

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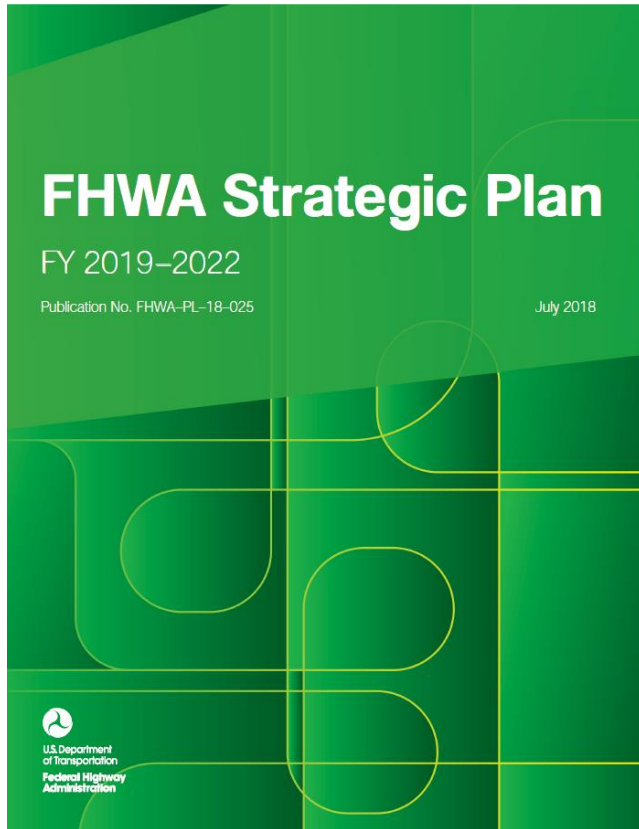
Matthew Strizich (MT)

Maryam Sakhaeifar (HR)

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Steve Cooper (RC)

# FHWA Pavement Preservation Program Linkages to FHWA Strategic Plan



The 2019-2022 FHWA Strategic Plan states:  
*The FHWA will continue to raise the awareness of proven strategies, such as performance-based practical design, and the **use of preservation techniques** to cost-effectively extend the service life of transportation assets that could further improve investment decision making.*

FHWA Strategic Framework - <https://www.fhwa.dot.gov/policy/fhwaplan.cfm>

# FHWA Pavement Preservation Program

## Role of FHWA

- To provide **policy and leadership** (including training and technology transfer) toward effective application of pavement preservation within an overall pavement management process.
- To **demonstrate** the economic, social and environmental **benefits** derived from proper implementation of preservation programs.
- To **conduct and sponsor research** to address pertinent pavement preservation questions and needs of national significance.



Guidelines for the Preservation  
of High-Traffic-Volume  
Roadways (R26)



**Pavement Preservation**  
*(When, Where, and How)*

# Pavement Preservation & Rehabilitation PACT Proposals

- Pavement Preservation in Urban Environments: Best Practices in Materials, Technologies, and Applications (**ongoing**)
- Recycled Asphalt Pavement (RAP) Materials for Pavement Preservation: Material Specification and Storage (**starting**)
- Develop Web-based Training for Combination Treatments and to Give an Overview of the Different Individual Treatments that Can be Placed Together to Preserve Asphalt Pavements (**starting**)
- NHI Course 131145 - Pavement Preservation: Design and Inspection (Chip Seal, Slurry Seal, Micro Surfacing, and Thin Asphalt Overlay Treatments) (**starting**)
- Regional Pavement Preservation Peer Exchanges on Design Policies and Inspection and other obstacles (**completed**)

# Pavement Preservation & Rehabilitation PACT Proposals (Cont.)

- Updating NHI Course 134214 - Leveraging Your Maintenance Management Systems (**starting**)
- NHI Course 131116 – Pavement Management Fundamentals WBT (**new**)
- 2023 Slurry Systems Virtual/In Person Workshop – Invitation to State and Local Agencies (**ongoing**)
- Cyclic Approaches to Pavement Preservation (**just chosen**)
- Pavement Preservation eCourse for Local & Tribal Technical Assistance Program (LTTAP) (**almost complete**)  
[https://www.fhwa.dot.gov/clas/online\\_training.aspx](https://www.fhwa.dot.gov/clas/online_training.aspx)



# Types of Distress

- Distress is typically described in terms of type, severity, and extent
  - ✓ Type – linked to causes of failure
  - ✓ Severity
    - ❖ High – consider repair or replacement
    - ❖ Medium – may be maintained or repaired
    - ❖ Low – may be maintained or preserved
  - ✓ Extent
    - ❖ Measuring determines if distress is isolated and localized, or widespread
    - ❖ If localized and moderate or high severity, repair and consider preservation
    - ❖ If widespread (depending on distress and severity level), consider preservation, rehabilitation, or reconstruction



# Common Pavement Surface Distress

Cracking

Surface Deformation

Disintegration

Surface Defects

Pavement Texture

Joint Defects

## KEY

A = asphalt distress

C = concrete distress

A/C = asphalt or concrete distress



U.S. Department of Transportation  
Federal Highway Administration

Source: Kevin Monaghan



# Learning Outcomes Pavement Preservation eCourse

- You should now be able to:
  - ✓ Describe the importance of identifying pavement distress
  - ✓ Use pavement distress criteria to recommend treatment options
  - ✓ Identify common pavement distresses and their underlying causes

Treatment	L&T Cracking			Block Cracking			Fatigue Cracking			Rutting			Potholes			Raveling			Surface Wear		
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
Crack Seal	I/O	I/O		O	O		I														
Patch			I/O			O	O	I/O					I/O	I/O	I			I			I
Rut Fill										I/O	I/O										
Fog Seal	O	O	I	O	O	I										E	O		E	O/E	
Chip Seal	O/E	O/E	I	O	O	I										O/E	O		O/E	O	
Slurry Seal	E	O/E	I	E	E	I										O/E	O		E	O	
Microsurface	E	O/E	I	E	E	I										O/E	O		E	O	
Thin Overlay		O/E	I/O		E	O	E	O	I							E	O		E	E	
Mill & Overlay		E	O/E		E	O	E	O	I	E	O	I/O	O	O	I			E			E
Surface Recycle			E	E	E	E	E	O	I	E	E	E				E	E	E	E	E	E

I = Isolated
O = Occasional
E = Extensive

# Need for Better Communications

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1. Network Improvements
2. Evaluating Projects
3. Taxpayer Communications

Additional Information: NCHRP Report 742



# Network Improvement

Amazing things happen when a road network is viewed holistically rather than as a series of one-offs: more durable roads, lower expenses, higher degrees of sustainability, **BETTER DRIVER SAFETY**, etc. It's just a matter of making the sound decisions guided by **AN ALIGNED** approach. This can be achieved in three steps, **THAT HAPPEN IN CYCLE**:



Assess Pavement  
Condition



Optimize  
Treatment Plan



Measure Progress

# Five Benefits of a Healthy Road Network



Driver safety

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Cut down on  
construction delays



Improve local commerce  
and land values

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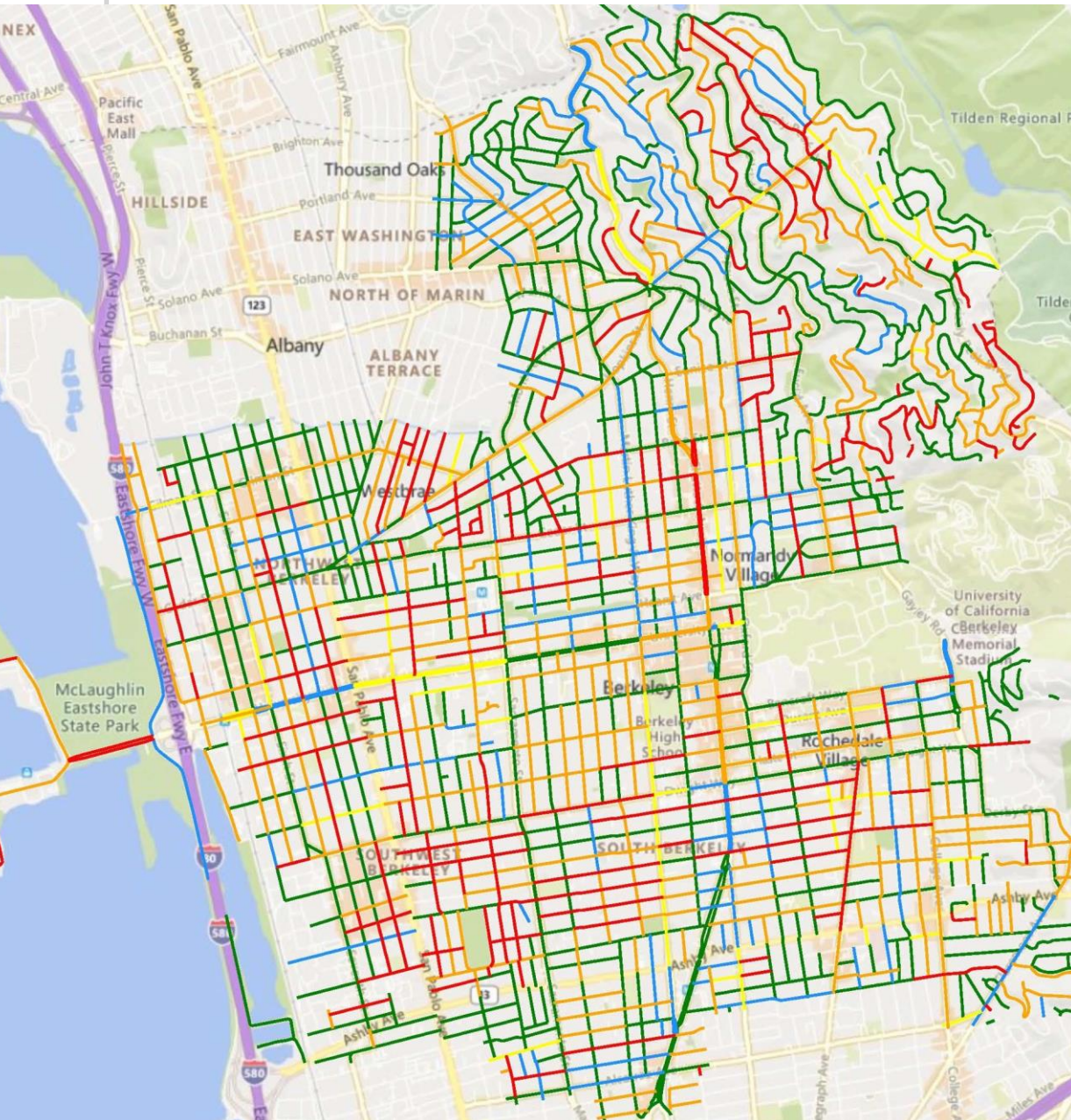
Help reduce  
greenhouse gas emissions

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Reduce wear &  
tear on cars





# What's your agency's road network consist of?

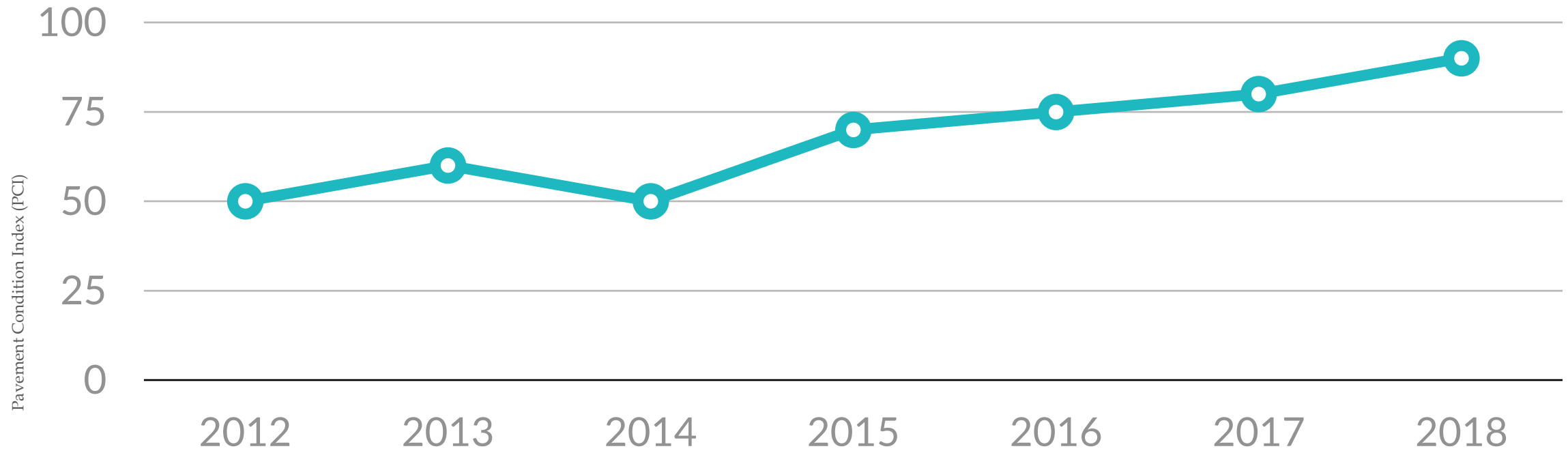
Total Lane Miles: ?

Factors Uniquely Impacting Your Network:

**EXAMPLES below. Consider what may be coming in the next few years**

- Rapid growth in the region
- Climate impacts: Heavy rains, floods, wind, snow, sunny, rising sea, etc.
- Truck traffic levels
- Regulation (ADA compliance, budgetary needs, etc)
- Funding changes
- Resident preferences / preconceived notions
- Sustainability requirements and/or goals

# How has the pavement changed over the years?





# The Average Road for Your Agency

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## Describe Pavement:

- PCI 40
- Reflective cracking
- Poor ride quality
- **Life Expectancy:** X-Y years before total reconstruction is needed.

\$XXX,XXX to reconstruct 1 mile

Add Cost estimate to reconstruct roads, if left to fail





# The Ideal Road for Your Agency

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## Describe Pavement:

- PCI 90
  - Smooth ride quality
  - Good drainage
  - **Life Expectancy:** If maintained properly, X-Y years before minor maintenance is required
- \$X,XXX to proactively maintain 1 mile

Include the cost of your next surface treatment, such as crack seal, or slurry seal to preserve the road.



# Network Goals

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- 90% of road segments in good or fair condition in the next 10 years
- Increase Average Network Condition by 10 points in the next 10 years
- Reduce the backlog by 50% over the next X years
- Eliminate any increase in the number “poor” over the next 10 years

## Others

- Reduce carbon emissions by X% in the next 5 years
- Reduce weather-related crashes by X%
- Reduce road-related resident complaints by X%

# Three Principles of Network Improvement

Proactively  
keep good  
roads in good  
shape.

Recycle and  
reuse assets  
you've already  
paid for.

Plan for the  
entire  
lifecycle of a  
road.

**GOAL: USE EVERY DOLLAR TO ITS FULLEST EXTENT.**





# Evaluating Projects

When evaluating projects, it's important to view treatment plans as an investment for the agency. By allocating dollars based on data and budgets, one can plan for the future, accomplish more, and reverse deterioration trends.



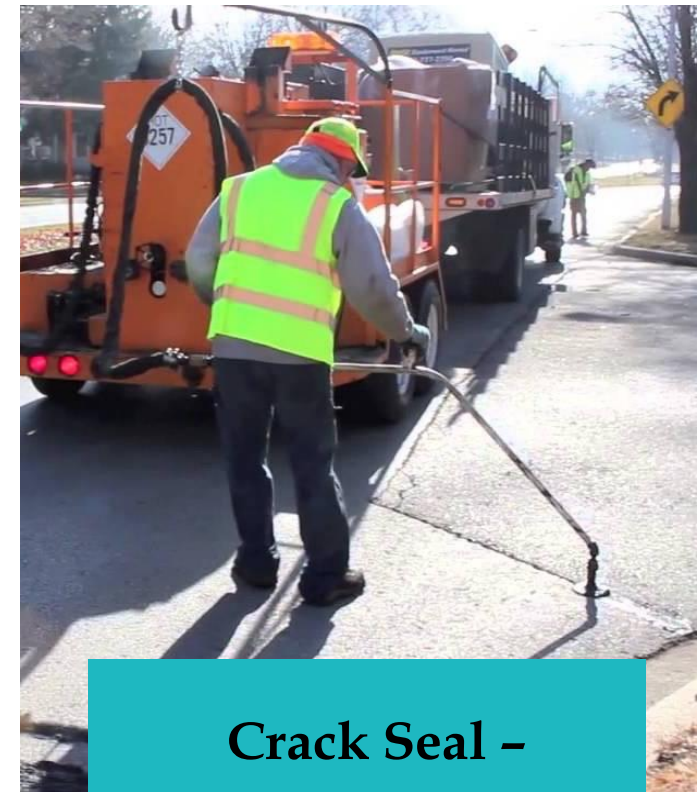
# A Look at Last Year's Projects



**Chip Seal –**  
County Line  
Road (x miles)  
\$XX,XXX



**3" Overlay –**  
SR 87 (4 miles)  
\$XX,XXX



**Crack Seal –**  
Foster Rd (7 miles)  
\$XX,XXX

# Upcoming Projects

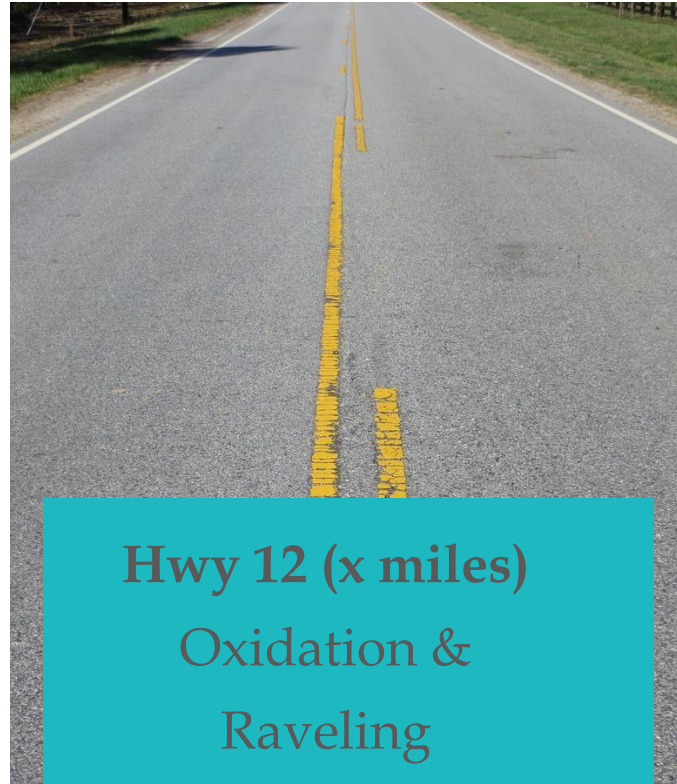


Pine Ln (x miles)

High rutting

Micro Surfacing

\$XX,XXX



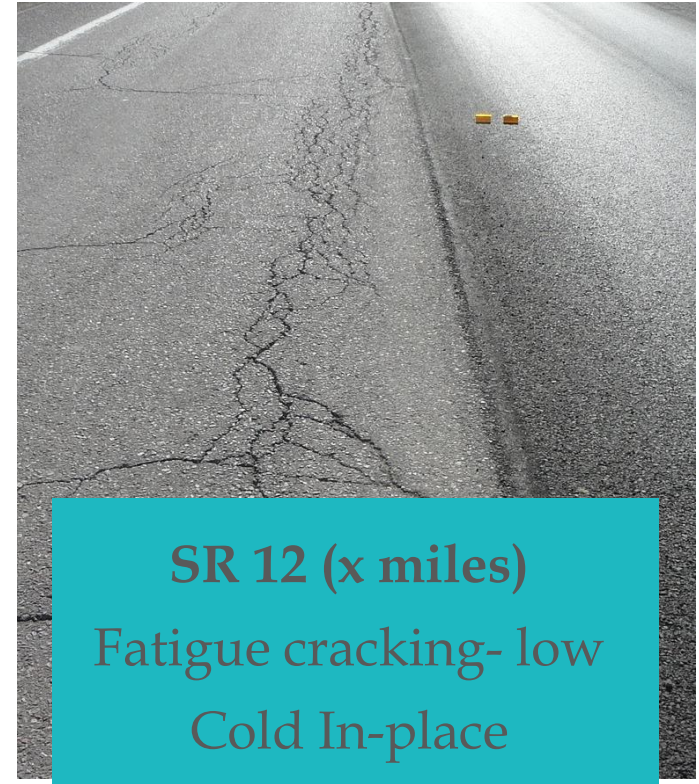
Hwy 12 (x miles)

Oxidation &

Raveling

Fog Seal

\$XX,XXX



SR 12 (x miles)

Fatigue cracking- low

Cold In-place

Recycling

\$XX,XXX



## Project Profile

# Apple Creek Rd

## Proposed Treatment: Micro Surfacing

Micro surfacing extends the life of asphalt pavements in good condition by providing skid resistance, restricting moisture intrusion, protecting the structure from further oxidation and raveling, and restoring a uniform black appearance.



**Project Cost:** \$XX,XXX

**Timing:** 1 day in mid-August



**Current pavement condition:** light oxidation and raveling is beginning to impact ride quality. If left alone, cracks will form shortly, allowing moisture to penetrate the surface, creating more costly repairs in the future.



# Stats

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Reduces life-cycle cost by 20-45% compared to traditional resurfacing methods.



Reduces greenhouse gases by 44% or more, and energy use by 54% or more compared to traditional resurfacing methods.



Reduces raw materials by 35% or more compared to traditional methods.



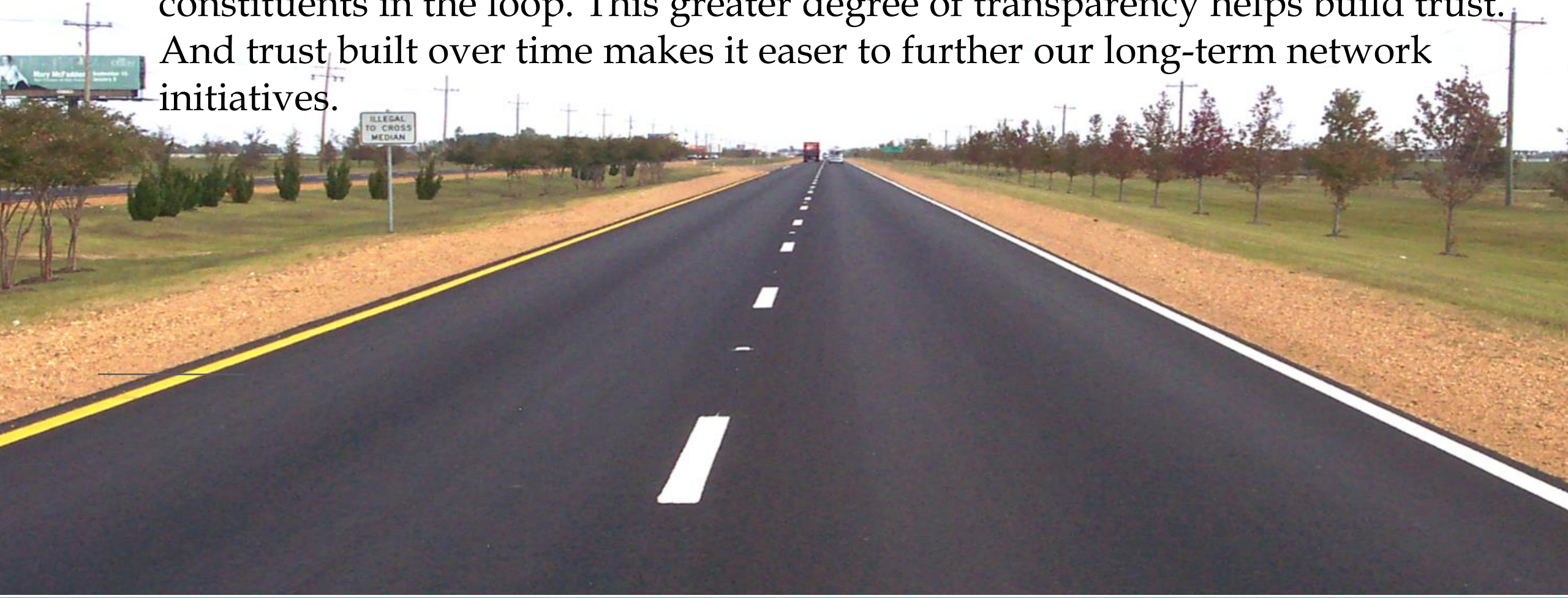
Return to traffic within 1 hour.



Adds 6-8 years or more when applied for optimum preservation performance.

# Open Communication

When it comes to tax dollars and how they're spent, it's vital to keep constituents in the loop. This greater degree of transparency helps build trust. And trust built over time makes it easier to further our long-term network initiatives.



# Resident Awareness

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Proactive communication is critical for the longevity of a successful plan.

- **Reduce complaints**
- **Maintain efficient use of resources**
- **Uphold data-driven decisions**
- **Celebrate success**
- **Communicate the value of each project**
- **Lay the groundwork for future maintenance planning**



FREE

# Communication Tools

## Yard Signs



## Door Hangers



## Press Release



## Social Media Posts



Pavements					
Design & Analysis	Materials Quality Assurance	Sustainability	Pavement Management & Performance	Pavement & Materials	
Life Cycle Cost Analysis	Mechanistic Empirical Design Guide		Surface Characteristics, Smoothness	Pavement Preservation	Pavement Policy
Policy/Authority/Guides	Technical Documents	Training	Research	States Agreements	

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# Pavement Preservation

Federal Highway Administration (FHWA) [guidance](#) describes preservation as work that is planned and performed to improve or sustain the condition of the transportation facility in a state of good repair. A common mantra of pavement preservation is *keeping good roads good*. Constructing quality pavement preservation treatments when the pavement condition is still satisfactory can impede deterioration, extend service life, and improve functionality in a cost-effective manner while also enhancing safety and contributing to customer satisfaction.

Advancing effective application of pavement preservation involves integration of research, implementation, and deployment activities as well as considerations of pavement management and asset management. To that end, FHWA has refocused its Pavement Preservation Program as outlined in the [strategic plan](#) which prioritize these needs and identifies key Agency activities. Additional pavement preservation resources are provided below.

Policy/Authority/Guides

Technical Documents

Training

Research

States Agreements

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Email Notifications



# Pavements

## Design & Analysis

## Materials Quality Assurance

## Sustainability

## Pavement Management & Performance

## Pavement & Materials

Life Cycle Cost Analysis

Mechanistic Empirical Design Guide

Surface Characteristics, Smoothness

Pavement Preservation

Pavement Policy

Policy/Authority/Guides

Technical Documents

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Research

States Agreements

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## Pavement Preservation

### Technical Documents

- Every Day Counts (EDC-4) - How
  - [Fact Sheet](#)
  - [Implementation Plan](#)
  - [Summit Workbook](#)
- Every Day Counts (EDC-4) - When & Where
  - [Fact Sheet](#)
  - [EDC-4 Pavement Preservation When/Where Peer Exchange Report](#), FHWA-HIF-20-057 2018

### Techbriefs

- [TechBrief: The Use of Thin Asphalt Overlays for Pavement Preservation](#)
- [Oregon, Washington, Idaho, and Nevada EDC-4 Peer-to-Peer Exchanges](#)
- [New Hampshire, Massachusetts, Maine, and Vermont EDC-4 Peer-to-Peer Exchanges](#)
- [North Dakota, Montana, South Dakota, and Wyoming EDC-4 Peer-to-Peer Exchanges](#)
- [Minnesota, Missouri, Iowa, and Wisconsin EDC-4 Peer-to-Peer Exchanges](#)
- [Louisiana, Mississippi, and Arkansas EDC-4 Peer-to-Peer Exchanges](#)
- [Indiana, Illinois, Michigan, and Ohio EDC-4 Peer-to-Peer Exchanges](#)
- [Georgia, Alabama, and South Carolina EDC-4 Peer-to-Peer Exchanges](#)
- [Delaware, Maryland, New Jersey, and Pennsylvania EDC-4 Peer-to-Peer Exchanges](#)
- [Arizona, Texas, Utah and New Mexico EDC-4 Peer-to-Peer Exchanges](#)
- [Kentucky, Tennessee, and West Virginia EDC-4 Peer-to-Peer Exchanges](#)



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## Tech Brief



U.S. Department of Transportation  
Federal Highway Administration

### PAVEMENT PRESERVATION HOW

The fourth round of Every Day Counts (EDC-4) innovations promoted quality construction and materials practices that apply to both flexible and rigid pavements. For flexible pavements, these include using improved specifications for thin asphalt surfacings such as chip seals, scrub seals, slurry seals, micro surfacing, and ultrathin bonded wearing courses; following improved construction practices; and using the right equipment to place these treatments. Rigid pavement treatments include the rapid retrofitting of dowel bars to reduce future faulting; the use of new, fast-setting partial- and full-depth patching materials to create a long-lasting surface; advanced pavement removal techniques to accelerate patching construction times; and advancements in diamond grinding that contribute to smoother and quieter pavement surfaces with enhanced friction.

### BACKGROUND

Regional peer-to-peer exchanges between states were initiated to exchange knowledge on "How" to effectively implement pavement preservation. Adoption of a comprehensive pavement preservation program will ultimately result in an improved pavement condition and safety rating for the overall network, reduced agency and user delay costs, and decreased environmental impact. In order to achieve these objectives, an understanding of the concepts, capabilities, and applications relevant to constructing pavement preservation treatments with quality materials must be implemented via a technology program aimed at transportation agencies, contractors, consultants, and Federal Highway Administration (FHWA) staff.

## PAVEMENT PRESERVATION HOW: NEW HAMPSHIRE, MASSACHUSETTS, MAINE, AND VERMONT EDC-4 PEER-TO-PEER EXCHANGES

### INTRODUCTION

On October 10th, 2018, an FHWA-sponsored EDC-4 "How" Pavement Preservation State Peer-to-Peer Exchange was conducted in Concord, New Hampshire, with four FHWA representatives; six department of transportation (DOT) representatives from New Hampshire, two from Massachusetts, three from Maine, and two from Vermont; and two local agency representatives. Larry Galehouse with the National Center for Pavement Preservation and Larry Scofield with the International Grooving & Grinding Association and American Concrete Pavement Association facilitated the day-and-a-half-long meeting. New Hampshire was the host state and provided meeting room facilities. Antonio Nieves of the FHWA provided the meeting background and kicked off the meeting.



The meeting format consisted of each of the states and local governments identifying their current procedures, issues, and successes for each of the topics discussed. Table 1 indicates the discussion topics.

Table 1. List of pavement preservation treatments discussed

Asphalt pavement preservation treatments	Concrete pavement preservation treatments
Asphalt rubber (AR) chip seal	Diamond grinding
Micro surfacing	Partial-depth repair
Hot in-place recycling (HIR)	Joint sealing
Chip seal	—
Cold in-place recycling (CIR)	—
Ultrathin bonded wearing course	—
Surface spray rejuvenators	—
Crack seal	—

### SUMMARY OF IMPORTANT ISSUES OR SUCCESSES

#### Asphalt Concrete Pavement Preservation

**Asphalt rubber (AR) chip sealing:** Although three of the four states have used this treatment, only two states use it regularly, with one of these states having employed this treatment continuously since 2004 as part of its preservation program. The two states that use AR chip seals consider project selection very important and use the treatment on pavements in good condition. If there are cracks in the road, frost heave and rutting can become a problem.

A major advantage of an AR chip seal is that it can be swept immediately and opened to traffic very quickly. The state specifies at least a minimum of two pneumatic rollers are required, and it was noted that monitoring roller speed is important. One state achieves an 8- to 10-year service life from this treatment, and that is the preservation cycle the state uses for this treatment. The state also precoats its chips, which have a top size of 3/8 in. Additional chip seals or asphalt concrete (AC) overlays can be placed at a later date if needed.





## MPPPP Skill Share Webinar Series - Chip Seal Best Practices and Innovations

Listen in as a panel of preservation practitioners share their experience with chip seals. Learn more about the emulsions used, hot applied chip seals, and construction challenges. Curious about how chip sealing may be able to help your agency? Share your agency's perspective, join us for an open discussion.

We all learn better together.



Register for this free webinar at:

<https://attendee.gotowebinar.com/register/8981353469352697178>







U.S. Department of Transportation  
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# Questions?

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