

# The Role of Pavement Preservation in Asset Management



Keith D. Herbold, P.E.  
Senior Pavement Engineer  
FHWA – Resource Center  
[keith.herbold@fhwa.dot.gov](mailto:keith.herbold@fhwa.dot.gov)  
708-283-3548



# PRESENTATION TOPICS

- ◆ FHWA Resource Center
- ◆ Pavement preservation
- ◆ Relationship to Asset Management
- ◆ FHWA efforts in pavement preservation
- ◆ Concluding remarks



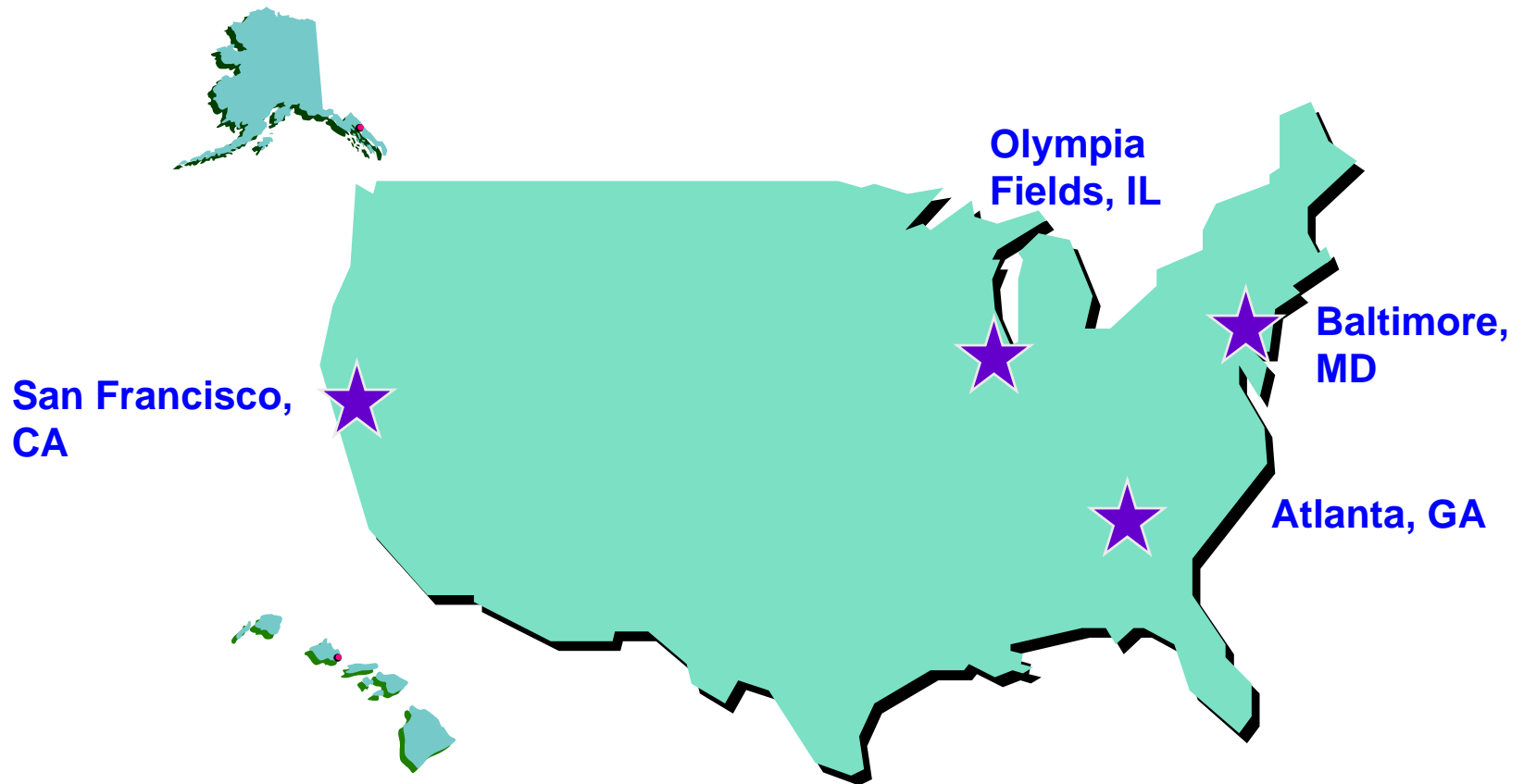
U.S. Department  
of Transportation

**Federal Highway  
Administration**

# The FHWA Resource Center

Atlanta - Baltimore – Olympia Fields - San Francisco

*Serving customers nationwide --*



**One Resource Center -  
Four Locations**

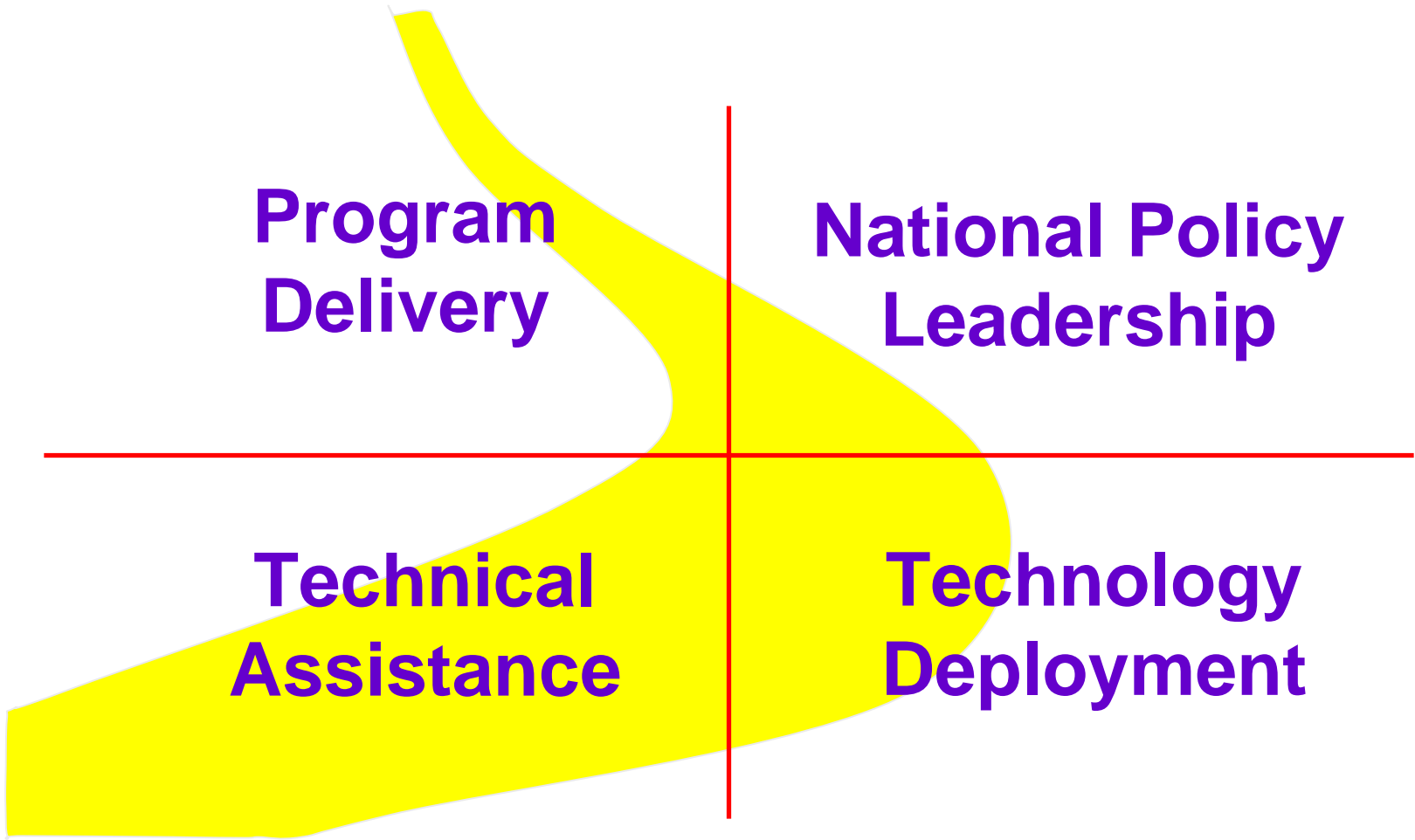
# ***FHWA Key Processes***

**Program  
Delivery**

**National Policy  
Leadership**

**Technical  
Assistance**

**Technology  
Deployment**





# Resource Center

Provides:

- Technical assistance
- Training
- Technology deployment

**No Program Authority**  
**No Project Approval**



# Technical Service Teams

- ◆ Air Quality
- ◆ Civil Rights
- ◆ Construction & Project Management
- ◆ Environment
- ◆ Finance
- ◆ Geotech & Hydraulics
- ◆ Operations
- ◆ Pavements & Materials
- ◆ Planning
- ◆ Safety & Highway Design
- ◆ Structures

# Technical Service Team Groupings

San  
Francisco

Baltimore

Environment  
Planning  
Air Quality  
Civil Rights

Geotech &  
Hydraulics  
Structures

Construction & P M  
Pavements & Materials  
Finance

Safety & Highway  
Design  
Operations

Olympia  
Fields

***Atlanta***






# Pavements & Materials Team - Atlanta

Primary Customers:  
Division Offices  
Headquarters

**Team Leader**  
**Monte Symons**



# Pavement & Materials TST Long Term Objectives

- ◆ Optimize pavement performance
- ◆ Optimize pavement resource allocation
- ◆ Improve quality assurance systems
- ◆ Improve pavement surface characteristics
- ◆ Improve environmental stewardship
- ◆ Technical capacity building



# Pavement and Materials On-Going Activities

- ◆ Materials and QC/QA
- ◆ Technical training and certification for technicians
- ◆ Superpave
- ◆ LTPP
- ◆ Knowledge building




# Pavement and Materials On-Going Activities cont.

- ◆ Pavement smoothness
- ◆ HIPERPAV software for PCCP analysis
- ◆ Pavement management systems
- ◆ Life Cycle Cost Analysis
- ◆ Pavement preservation



# Pavements & Materials Team - Available Training

- ◆ Highway materials engineering
- ◆ Hot-mix asphalt materials, characteristics and control
- ◆ Portland cement concrete materials
- ◆ Pavement subsurface drainage design
- ◆ AASHTO pavement overlay design
- ◆ Introduction to mechanistic design - new & rehabilitated pavements



# Pavements & Materials Team Available Training cont.

- ◆ Pavement smoothness - use of inertial profiler measurements for construction quality control
- ◆ Hot-mix asphalt pavement evaluation and rehabilitation
- ◆ Asphalt pavement recycling technologies
- ◆ Concrete pavement design details and construction practices



# Pavements & Materials Team Available Training cont.

- ◆ Construction of portland cement concrete pavements
- ◆ Portland cement concrete pavement evaluation and rehabilitation
- ◆ Pavement preservation - the preventive maintenance concept
- ◆ Pavement preservation - selecting pavements for preservation
- ◆ Life-cycle cost analysis



For further information -

[www.fhwa.dot.gov/resourcecenter](http://www.fhwa.dot.gov/resourcecenter)

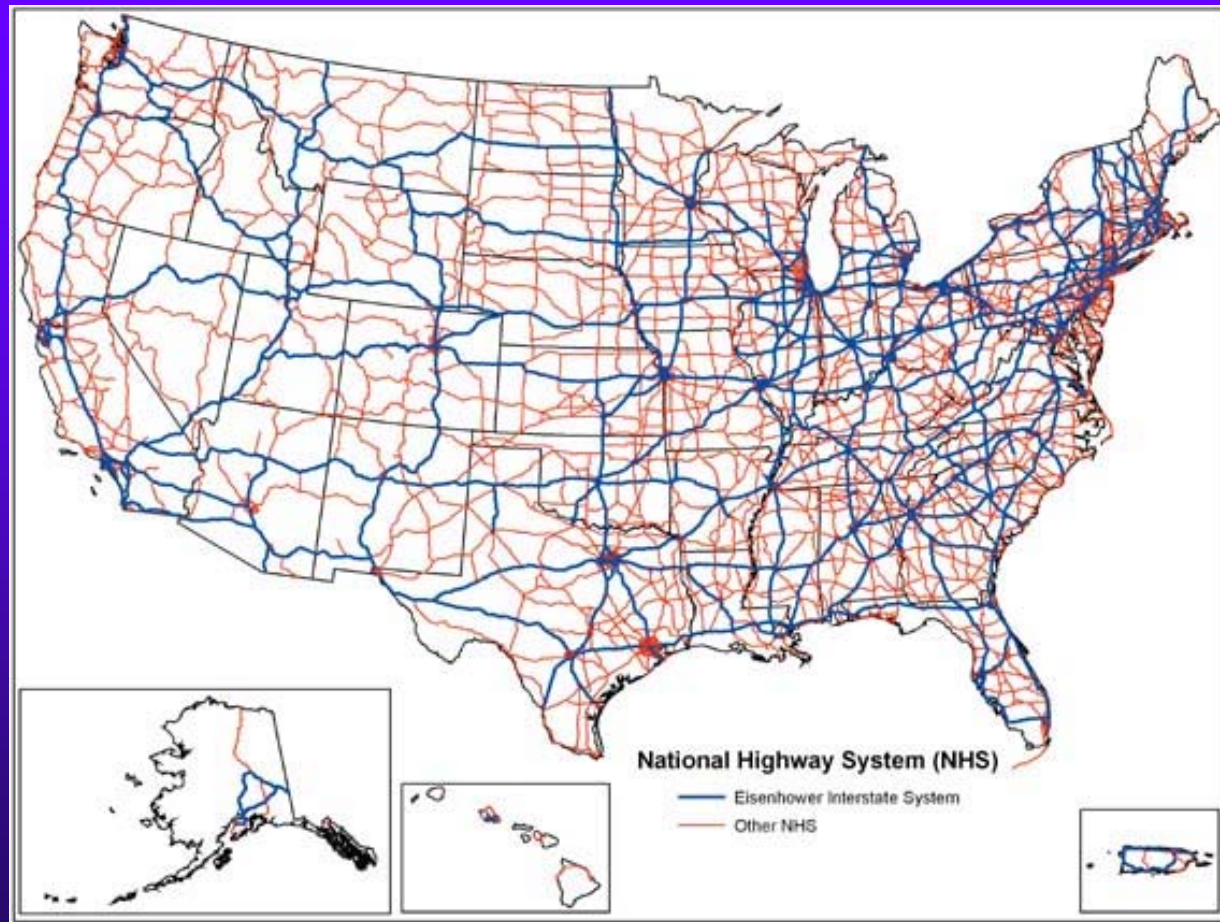




# PRESENTATION TOPICS

- ◆ FHWA Resource Center
- ◆ **Pavement preservation**
- ◆ Relationship to Asset Management
- ◆ FHWA efforts in pavement preservation
- ◆ Concluding remarks

3,963,262 miles of Roads  
590,000 Bridges  
2.7 trillion vehicle-miles / year

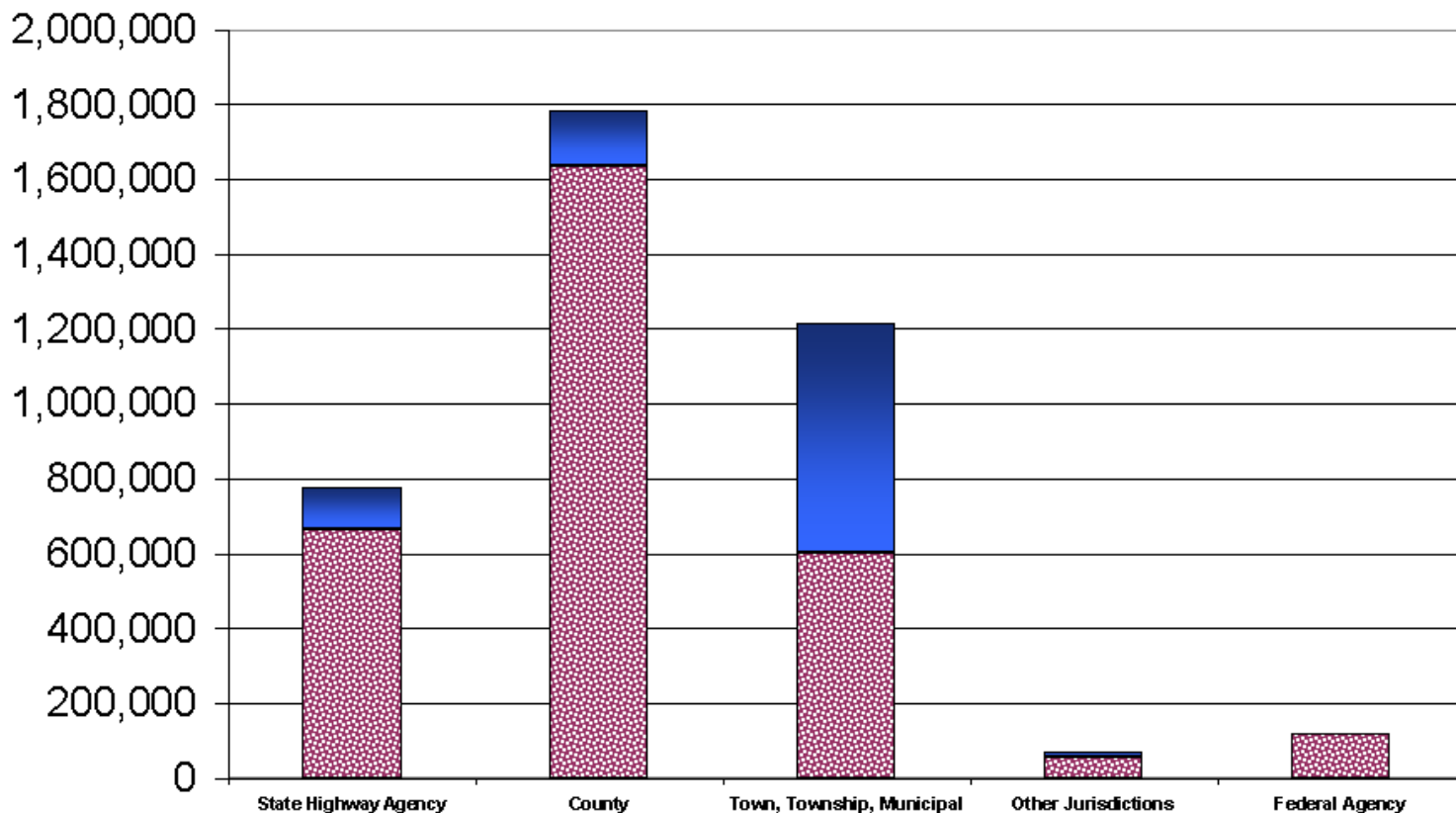


# 3,963,262 miles of Roads



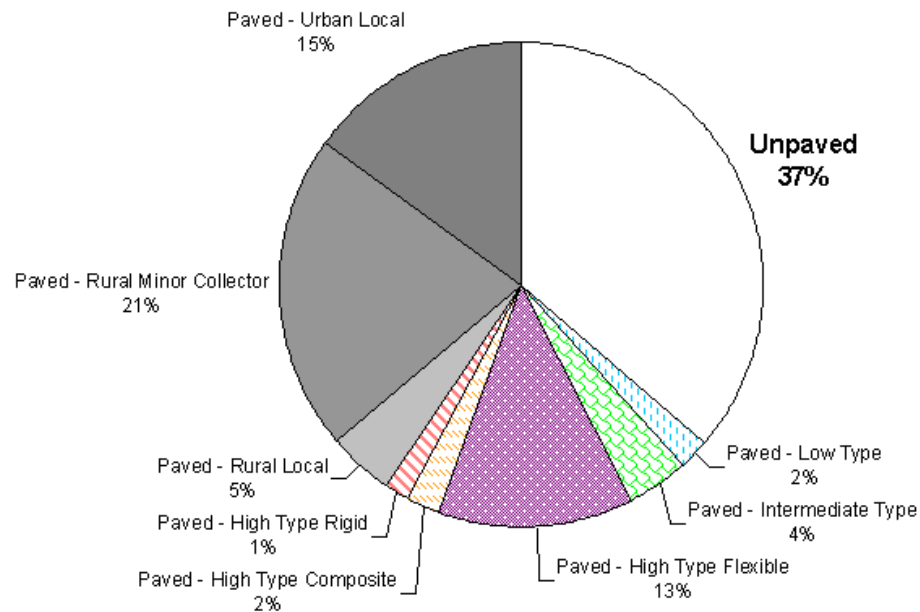
## U.S. Public Road Ownership (Centerline Miles)

Urban (Solid) vs. Rural (crosshatched)



# 2.5 Million Miles Paved Roads

**Paved vs. Unpaved Roadways-U.S. Total**  
2,523,468 miles vs. 1,438,727 miles





# Roads are an investment

- ◆ Public invested more than \$130 billion to construct the Interstate
- ◆ Think of the total investment in our transportation system. . . (over \$1.75 trillion)



# What is Pavement Preservation?

*Pavement Preservation* is the sum of all activities undertaken to provide and maintain serviceable roadways that

- Preserves the investment
- Enhances pavement performance
- Ensures cost-effectiveness
- Extends pavement life
- Reduces user delays
- Improves safety and mobility

# What is Pavement Preservation?

## Includes:

- ◆ Preventive maintenance
- ◆ Minor rehabilitation (non-structural)
- ◆ *Some routine maintenance*

## Does Not Include:

- ◆ New pavement construction
- ◆ Reconstruction
- ◆ Major rehabilitation (increase in structural capacity)
- ◆ Corrective maintenance



# What is Pavement Preservation?

Doing the *right* thing...

...at the *right* time...

...to the *right* pavement.

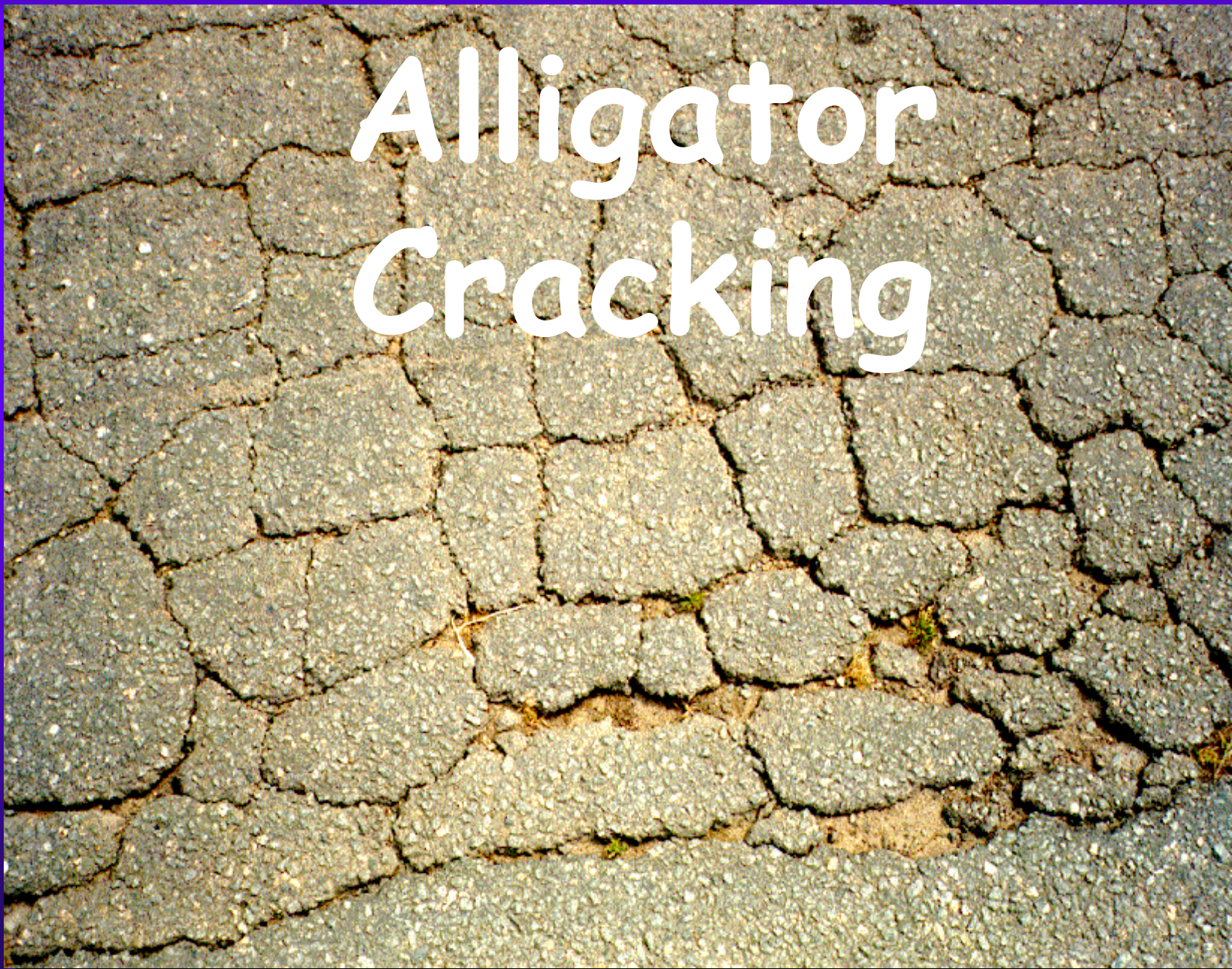


# Concept of Pavement Preservation





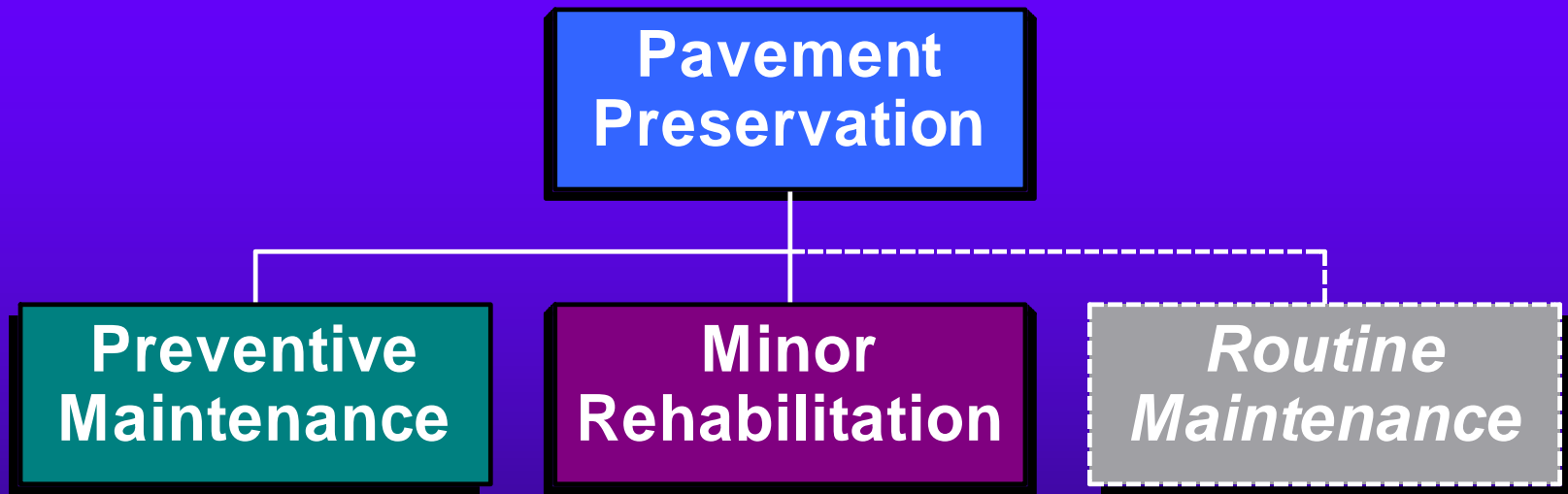
# Alligator Cracking





# Rutting

# Components of Pavement Preservation Program





# Preservation Activities

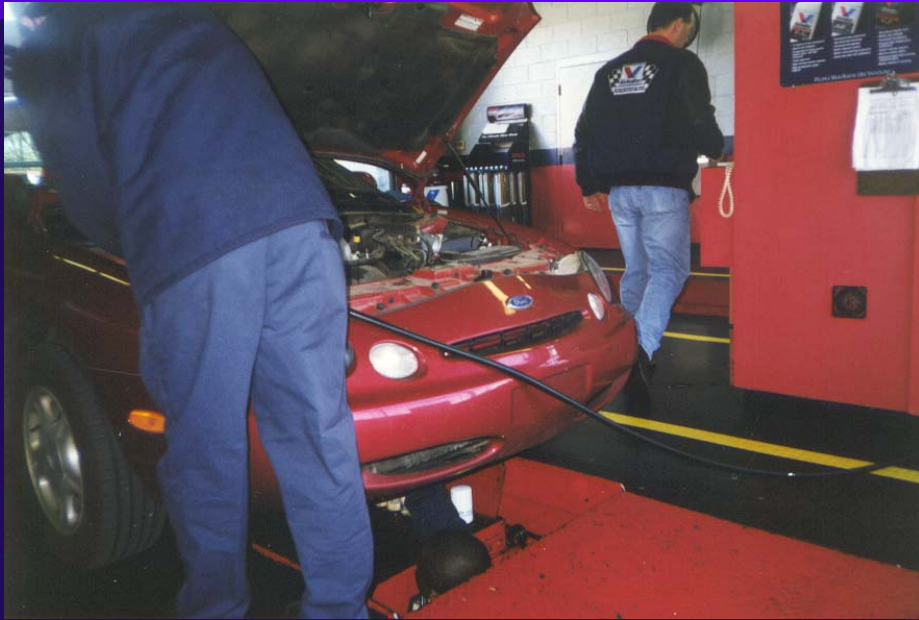
## Asphalt:

- ◆ Chip Seals
- ◆ Fog Seals
- ◆ Slurry Seals
- ◆ Surface Seals
- ◆ Micro-Surfacing
- ◆ Thin Overlays
- ◆ Profile Milling
- ◆ Crack Sealing

## PCC:

- ◆ Joint Resealing
- ◆ Crack Sealing
- ◆ Spall Repair
- ◆ Dowel Bar Retrofit
- ◆ Full and Partial Depth Repair
- ◆ Diamond Grinding

# Does Preservation Make Sense?





# Benefits

- ◆ **Improved Customer Satisfaction**
  - **Keeps them (and you) happy.**
- ◆ **Lowers User and Agency Costs in the Long-Term**
  - **Saves them (and you) money.**
- ◆ **Improved Safety**
  - **Keeps them (and you) safer.**



For more information...

Foundation for Pavement Preservation

[www.fp2.org](http://www.fp2.org)

National Center for Pavement  
Preservation

[www.pavementpreservation.org](http://www.pavementpreservation.org)





# PRESENTATION TOPICS

- ◆ FHWA Resource Center
- ◆ Pavement preservation
- ◆ **Relationship to Asset Management**
- ◆ FHWA efforts in pavement preservation
- ◆ Concluding remarks

# Pavement Preservation and Asset Management

- ◆ More Federal emphasis on maintaining the facilities we have constructed
- ◆ \$1.75 trillion dollar investment in transportation systems
- ◆ Part of the Federal-Aid program



# Pavement Preservation and Asset Management

## ◆ Asset Management Definition:

“A strategic approach to maximize the benefits from resources used to operate, expand, and preserve the transportation infrastructure.”





# Motivation for Asset Management

- ◆ Funding constraints
- ◆ Aging system
- ◆ Increasing user demands
- ◆ Loss of senior experienced staff
- ◆ Public demands on government
  - Accountability
  - Return-on-investment



# The Federal Role

- ◆ Promote uniformity, quality and safety of highway construction and maintenance
- ◆ Develop, promote and provide new technologies and training
- ◆ Stewardship of the Federal-aid program and its investments



# Current Federal Efforts Uniformity

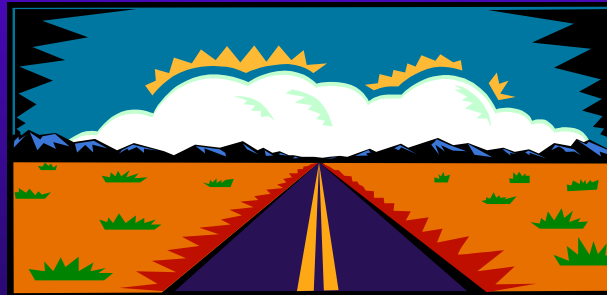
National specification website

[www.specs.fhwa.dot.gov](http://www.specs.fhwa.dot.gov)

# Pavement Preservation and Asset Management

## Three FHWA Asset Management Teams

Management Systems  
Construction and System Preservation  
Economic Analysis





# For more information...

Management systems

[www.fhwa.dot.gov/infrastructure/asstmgmt/manage.htm](http://www.fhwa.dot.gov/infrastructure/asstmgmt/manage.htm)

Economic analysis

[www.fhwa.dot.gov/infrastructure/asstmgmt/invest.htm](http://www.fhwa.dot.gov/infrastructure/asstmgmt/invest.htm)

System preservation

[www.fhwa.dot.gov/preservation](http://www.fhwa.dot.gov/preservation)

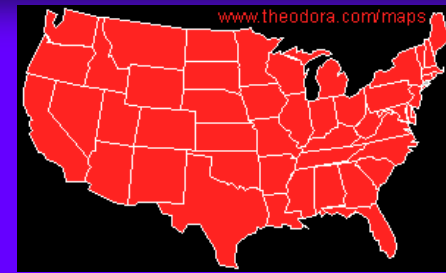




# PRESENTATION TOPICS

- ◆ FHWA Resource Center
- ◆ Pavement preservation
- ◆ Relationship to Asset Management
- ◆ **FHWA efforts in pavement preservation**
- ◆ Concluding remarks

# Working with the States



- ◆ AASHTO Committee on Highways
  - Subcommittee on Maintenance
  - Subcommittee on Construction
- ◆ Individual State Assistance
  - Provision of consultation services
  - Federal-aid through FHWA Division Offices
- ◆ TRB



# Working with the States cont.

- ◆ Midwest Pavement Preservation Partnership
- ◆ Southeast Pavement Preservation Partnership

# Working with Industry

## ◆ Foundation for Pavement Preservation

## ◆ Industry Associations

- AEMA
- ISSA
- ARRA
- ACPA
- IGGA
- others



# Outreach Activities

## ◆ Current Publications

- Magazine articles
  - TRNews – Sept/October Issue
  - Asphalt Magazine
  - Public Roads Magazine
- Checklists on Pavement Preservation
- State of the Practice CD-2
- Forum II CD
- Pavement Preservation Compendium
- Other material coming out soon

## ◆ Meetings/Presentations





# Technology Advancement

- ◆ National Center for Pavement Preservation
- ◆ Pavement Preservation ETG
- ◆ Research Efforts:
  - Chip Seal Best Practices – NCHRP synthesis study
  - Hot Pour Crack Sealant – pooled fund study
  - Slurry Seal/Microsurfacing – pooled fund study
- ◆ International Scan on Pavement Preservation



# Training



- ◆ The Preventive Maintenance (PM) Concept
  - NHI Course #131054 - *available*
- ◆ Selecting Pavements for PM
  - NHI Course #131058 - *available*
- ◆ Design and Construction of Quality PM Treatments
  - NHI Course #131103 – *available*
- ◆ Integrating PM into Pavement Management Systems
  - NHI #131104 – Mid 2004



# PRESENTATION TOPICS

- ◆ FHWA Resource Center
- ◆ Pavement preservation
- ◆ Relationship to Asset Management
- ◆ FHWA efforts in pavement preservation
- ◆ **Concluding remarks**



# Final Thoughts

- ◆ The National Center is in place!
- ◆ Necessary research is underway!
- ◆ **Dedicated funding is critical for success!**
- ◆ Educate yourself and others!
- ◆ Think both “Engineering” and “Economics”

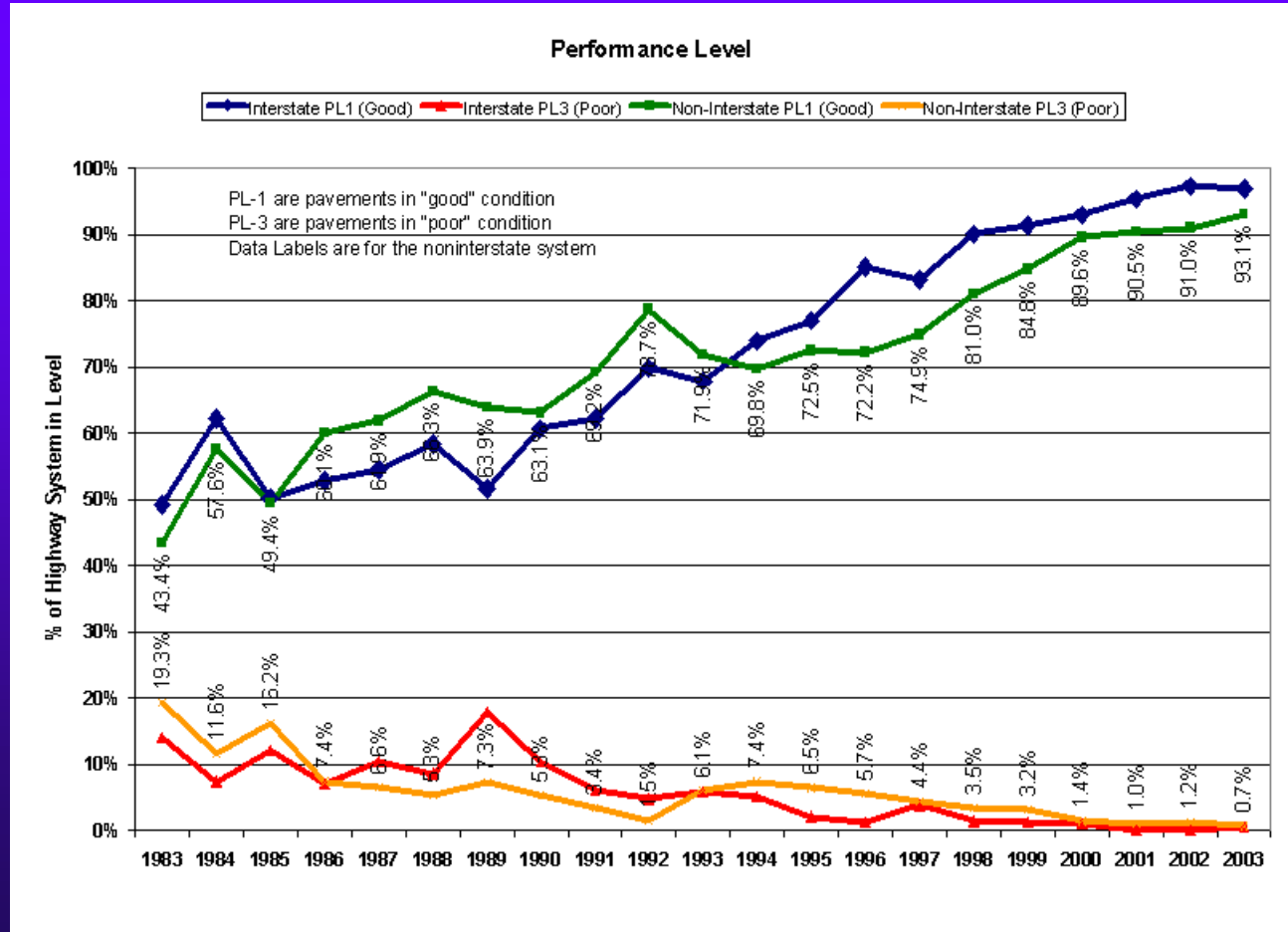




# Pavement Preservation is not new...

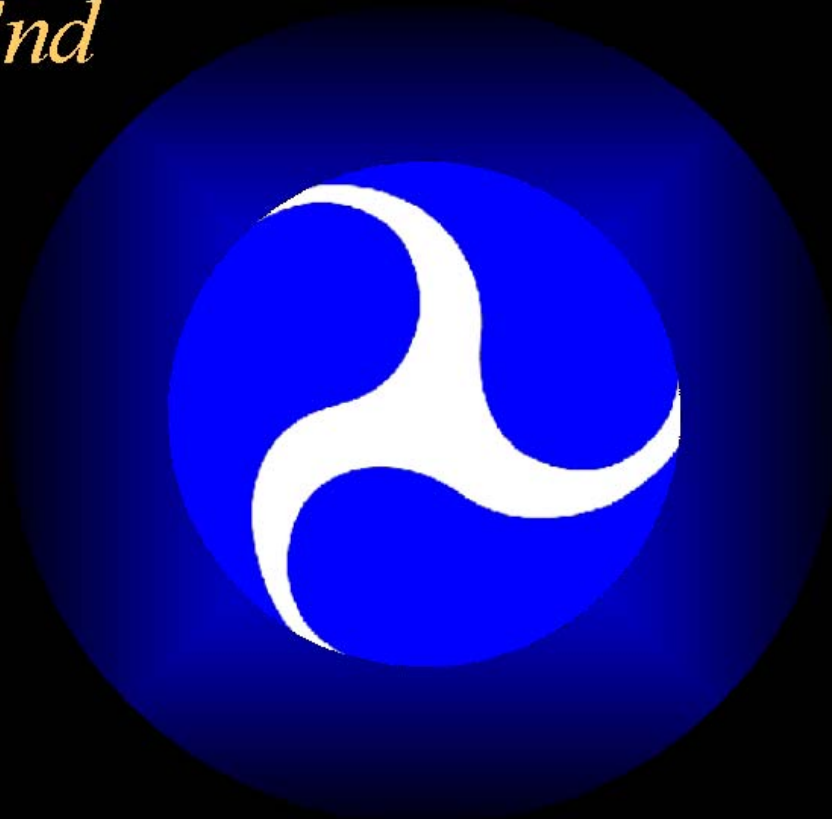
... it's just doing the "RIGHT" thing  
... to the "RIGHT" pavement  
... at the "RIGHT" time

# Preservation and Asset Management won't bring short-term glory, but they will bring long-term satisfaction!





*The End*



Questions?

# THANK YOU

*For more information contact:*

**Keith D. Herbold, P.E.**

**FHWA Resource Center**

**Tele: (708)283-3548**

**Cell: (708)955-5783**

**e-mail: [keith.herbold@fhwa.dot.gov](mailto:keith.herbold@fhwa.dot.gov)**

**[www.fhwa.dot.gov/resourcecenter](http://www.fhwa.dot.gov/resourcecenter)**

