ETG for Pavement Preservation

Rigid Pavement subgroup

Craig Hennings, Chair

ACPA-Southwest

Membership

- Delmar Salomon
- Steve Varnedoe
- Matt Zeller
- Tanya Komas
- Wouter Gulden
- John Roberts
- Matt Ross
- Anita Bush
- Craig Hennings
- Tammy Robinson
- Joe Huerta
- Steve Healow
- Dale Harrington
- Robert Hogan
- Peter Vacura
- Larry Galehouse
- Larry Scofield
- Kurt Smith

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Short and Long Term Goals

- Act as a Resource for agencies
- Review specifications
- Identify sources and validate national data – Survey DOTs
- Promote free webinars on CPR
- Improve participation with TCCC for training and promotion

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Short and Long Term Goals

- Educate stakeholders on Concrete Pavement Management
- Document and communicate the benefits of CPR
- Support the development of training in the area of concrete pavement preservation
- Promote participation in the Pooled Fund study on Accelerated Joint Deterioration
- Evaluation of Seal/No Seal concrete joint performance
- Increase industry presence and participation in AASHTO TSP2 Regional Partnerships
- Promote sustainability benefits of maintaining rigid pavements

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New Goals

- Partial Depth Repair Guide - National Concrete Pavement Tech Center
  - Our team members are actively supporting effort
- Development of a true PCCP PP curve to promote true LCCA costs of pavements

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Pavement Preservation Workshop

- National Concrete Pavement Tech Center
  - 1-2 day workshop on Concrete Pavement Preservation
  - FHWA funded

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Seal/No Seal Concrete Joint Performance

What is the best practice?

Sealing at new construction?

Sealing as Maintenance?

On-going Research Tasks with various states

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Pooled Fund study on Accelerated Joint Deterioration

- Made up of Mid-Western States
- Have to answer the “Why” questions of this new phenomena

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Accelerated Joint Deterioration

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Survey Status on the PCCP Preservation Trigger Values

- Survey sent via email to all 50 state DOTs in May 2010
- Quality of responses are very good
- Update to be provided this afternoon

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a Resource

Survey of State PMS Trigger Values Used for Management of Concrete Pavements

Craig Hennings
Chairman, ETG Rigid Pavement Preservation

Executive Director,
ACPA Southwest

October 5, 2011

2011

Survey of State DOT PMS Trigger Values for Concrete Pavement Preservation

Preliminary Draft Not for Distribution

The FHWA Pavement Preservation ETG Rigid Subcommittee conducted a survey of the state DOT PMS practices to determine the state-of-the-practice of concrete pavement preservation. Thirty eight states responded to the survey and 23 states (61%) used trigger values for managing concrete pavements within the PMS system. Recommendations for follow up activities are included.

FHWA ETG
Pavement Preservation
--Rigid Subcommittee--

Rigid Subcommittee
L. Scofield, C. Hennings, S. Varnedoe, S. Healow, D. Harrington
4/25/2011

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Defining Management of Concrete Pavements—Traditional Approach

- Pavement Preservation
- Preventive Maintenance
- Minor Rehabilitation
- Routine Maintenance
- Corrective Maintenance
- Major Rehabilitation
- Reconstruction

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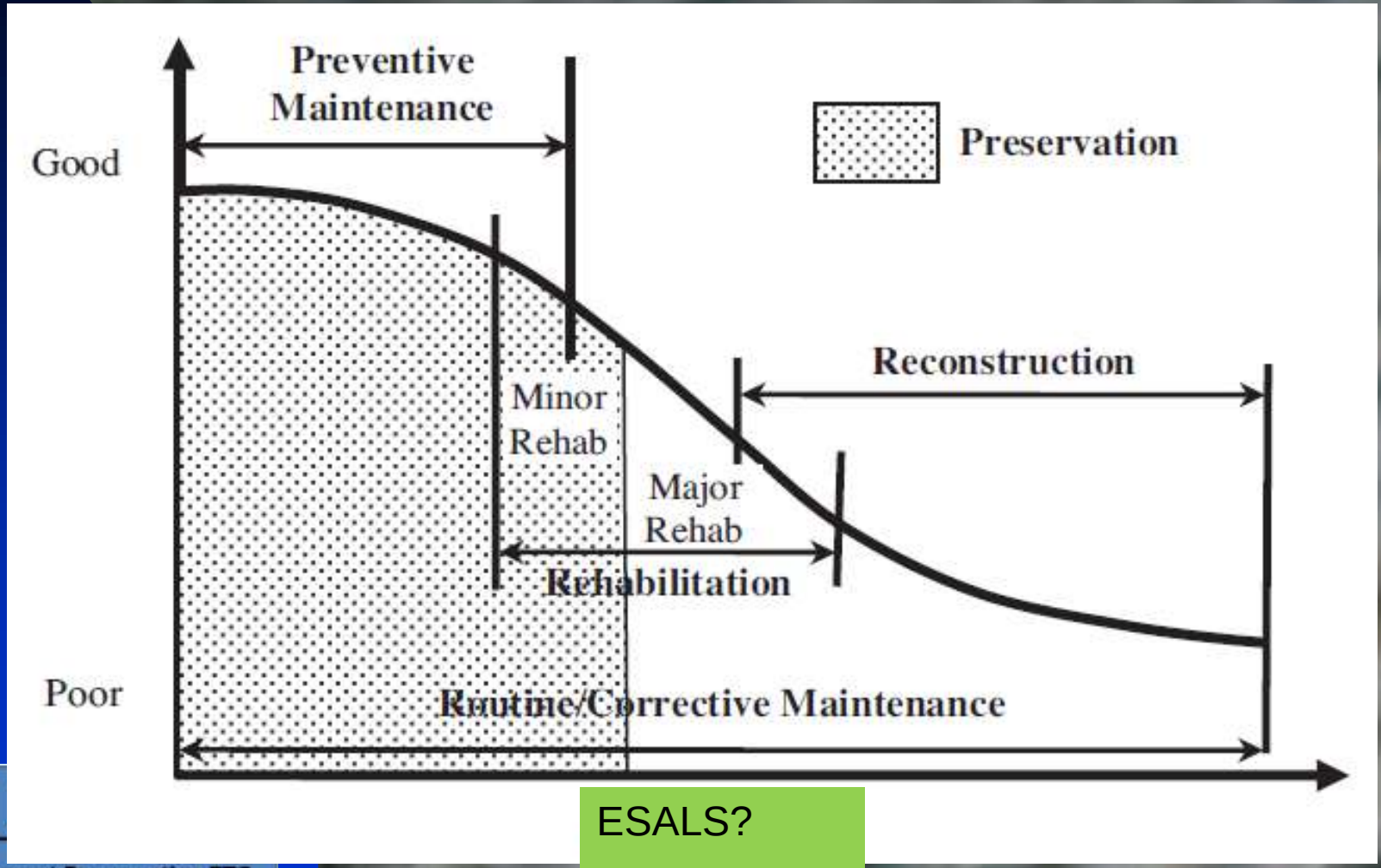
Traditional Pavement Management



ESALS?

Why?

- Closing the loop on Asset Management
  - Design
  - Use/Preservation
  - End of life
- Collect more data? No
  - Collect the right data

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Traditional Concrete Pavement Preservation

Treatment	Expected Performance	
	Treatment Life (yr)	Pavement Life Extension (yr)
Concrete joint resealing	2–8	5–6
Concrete crack sealing	4–7	NA
Diamond grinding	8–15	NA
Diamond grooving	10–15	NA
Partial-depth concrete patching	5–15	NA
Full-depth concrete patching	5–15	NA
Dowel bar retrofitting	10–15	NA
Ultra-thin bonded wearing course	6–10	NA
Thin HMA overlay	6–10	NA

?

Sources: Peshkin et al. 1999; Smith et al. 2008; Peshkin et al. 2007; Caltrans 2008; NDOR 2002.

Note: NA = Not available.

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Purpose of Survey

- Establish Estimate of Percent of Concrete Pavement in Each Network
- Establish State-of-the-Practice in States' Management of Concrete Pavements
- Review Distress Data Collection Procedures of Agencies
- Identify Opportunities to Improve Practice
  - Connection of Design to PMS (Closed Loop)

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Survey Approach

- FHWA Provided Data Base of State PMS Contacts
- Email Survey to the State Contacts
- Follow Up Emails for non-responding states
- Lose a Couple Surveys Here and There
- Prepare Draft Report
- Transmit Report to States & Full ETG for Comment
- Finalize Report

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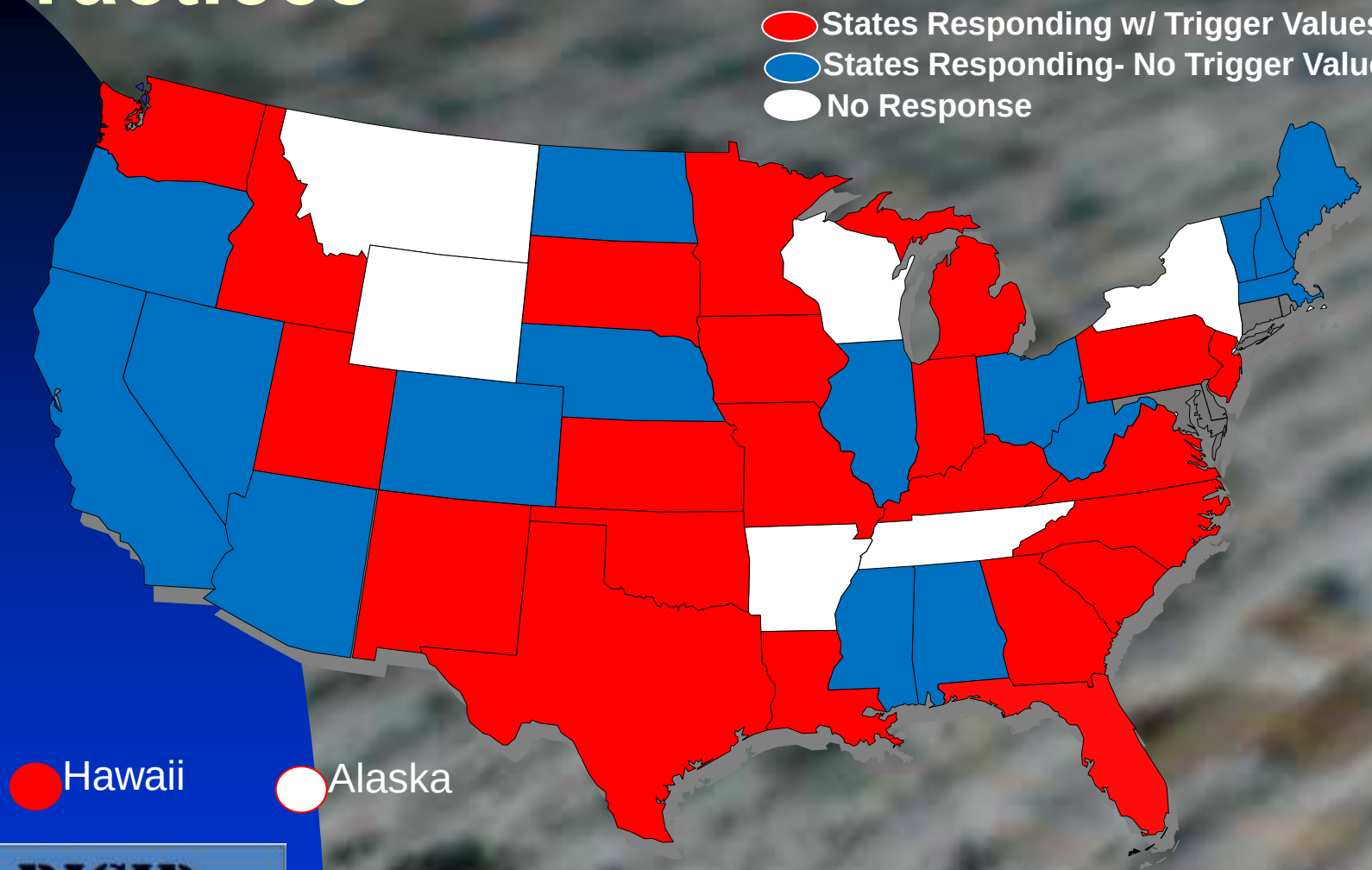
Results of Survey on State Practices



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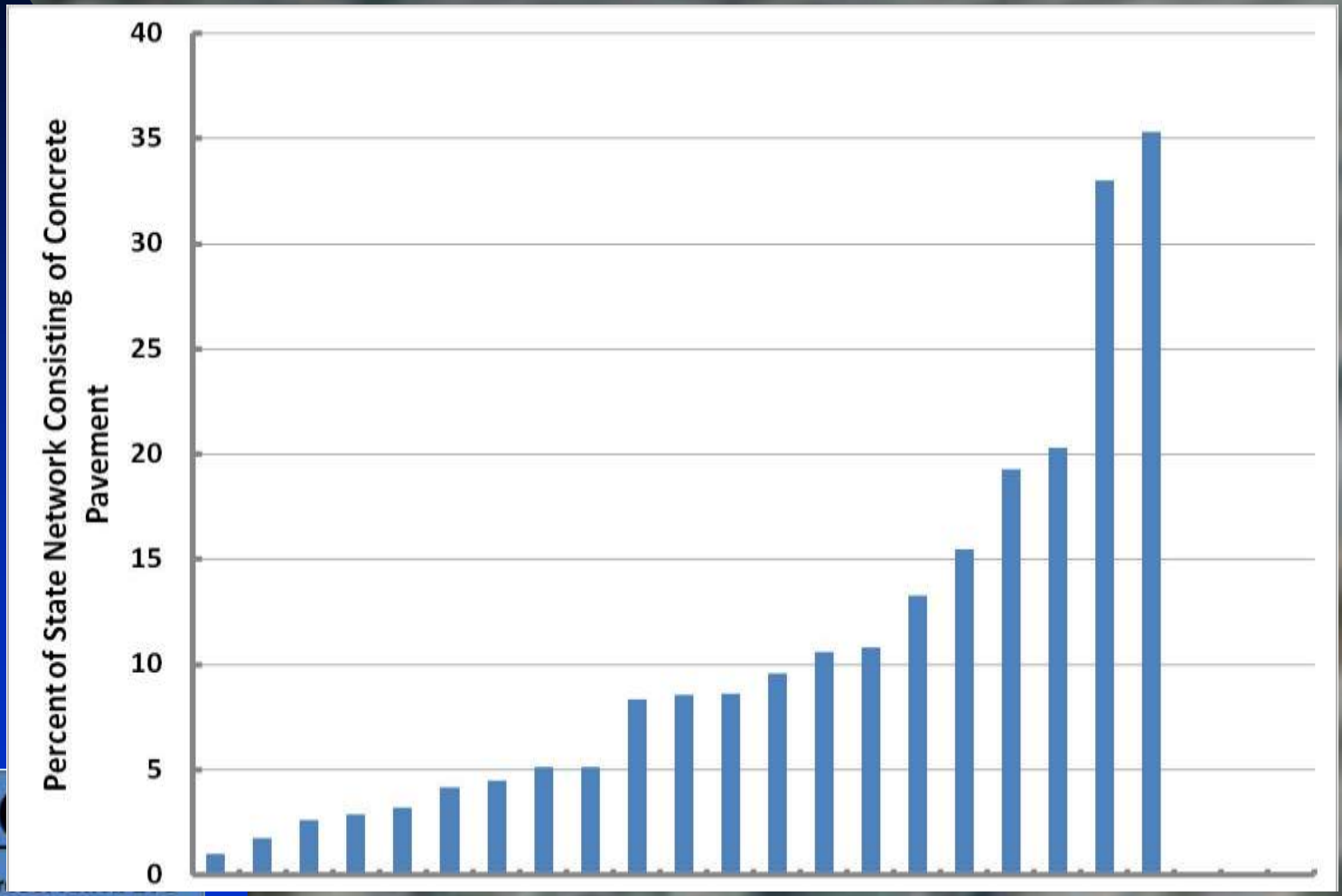
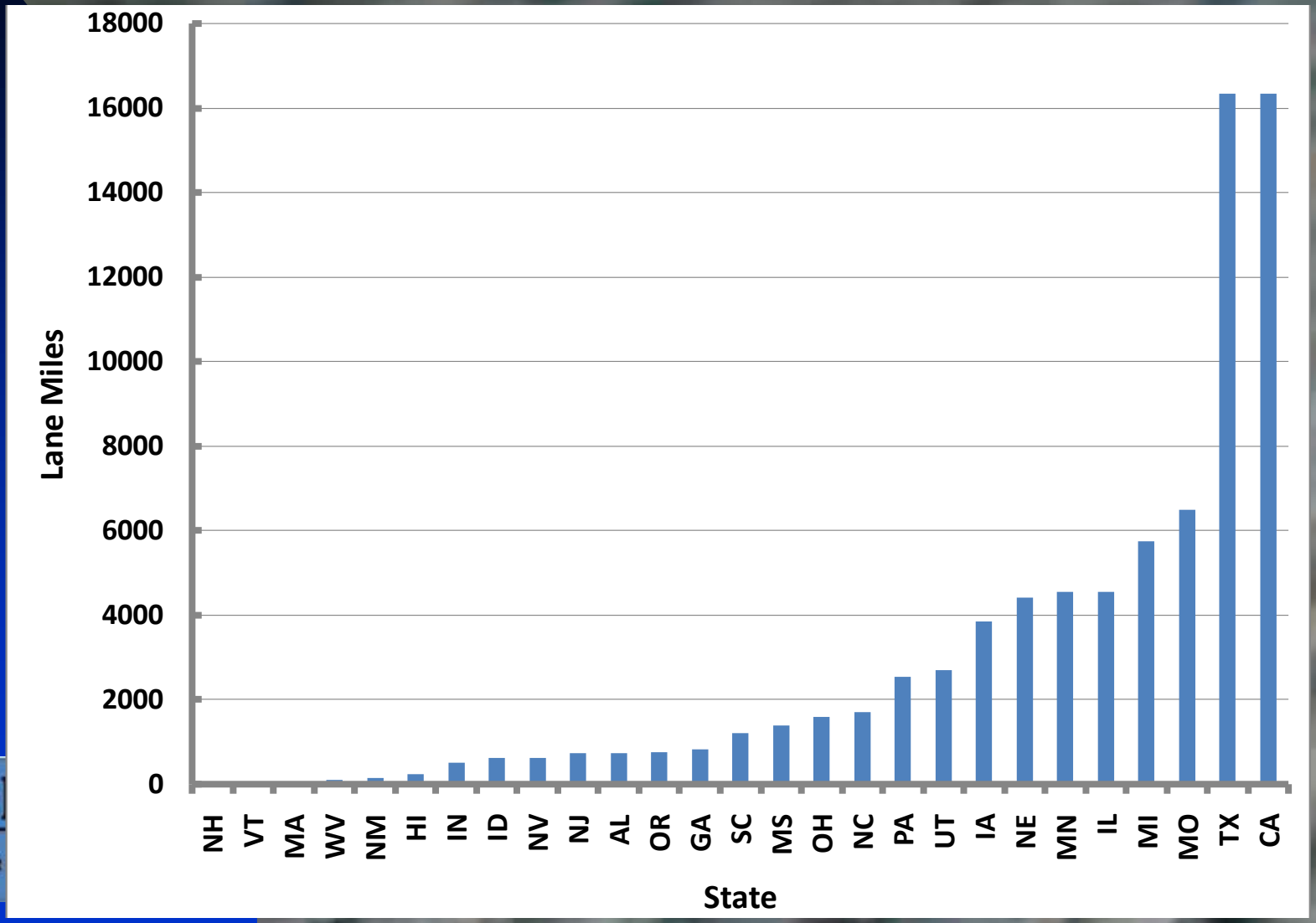
Results of Survey on State DOT Concrete Lane Miles as % of Network



Concrete Lane Miles by State DOT



Pavement

So What Did We Learn

- Lots of Ways of Doing PMS (Triggers)
- About 60% of States Appear to be Managing Concrete Preservation with Triggers
- No Consistent Methodology
- Most States Use Composite Statistics

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Is Joint Sealant Cost Effective?

FHWA Sealant Effectiveness Study

CONCRETE PAVEMENT
CPTP
TECHNOLOGY PROGRAM

TechBrief

The Concrete Pavement Technology Program (CPTP) is an integrated, national effort to improve the long-term performance and cost-effectiveness of concrete pavements. Managed by the Federal Highway Administration through partnerships with State highway agencies, industry, and academia, CPTP's primary goals are to reduce congestion, improve safety, lower costs, improve performance, and foster innovation. The program was designed to produce user-friendly software, procedures, methods, guidelines, and other tools for use in materials selection, mixture proportioning, and the design, construction, and rehabilitation of concrete pavements.

www.tfhrc.gov/pavement/concrete

U.S. Department of Transportation
Federal Highway Administration

Performance of Sealed and Unsealed Concrete Pavement Joints

This TechBrief presents the results of a nationwide study of the effects of transverse joint sealing on performance of jointed plain concrete pavement (JPCP). This study was conducted to assess whether JPCP designs with unsealed transverse joints performed differently from JPCP designs with sealed transverse joints. Distress and deflection data were collected from 117 test sections at 26 experimental joint sealing projects located in 11 states. Performance of the pavement test sections with unsealed joints was compared with the performance of pavement test sections with one or more types of sealed joints.

BACKGROUND

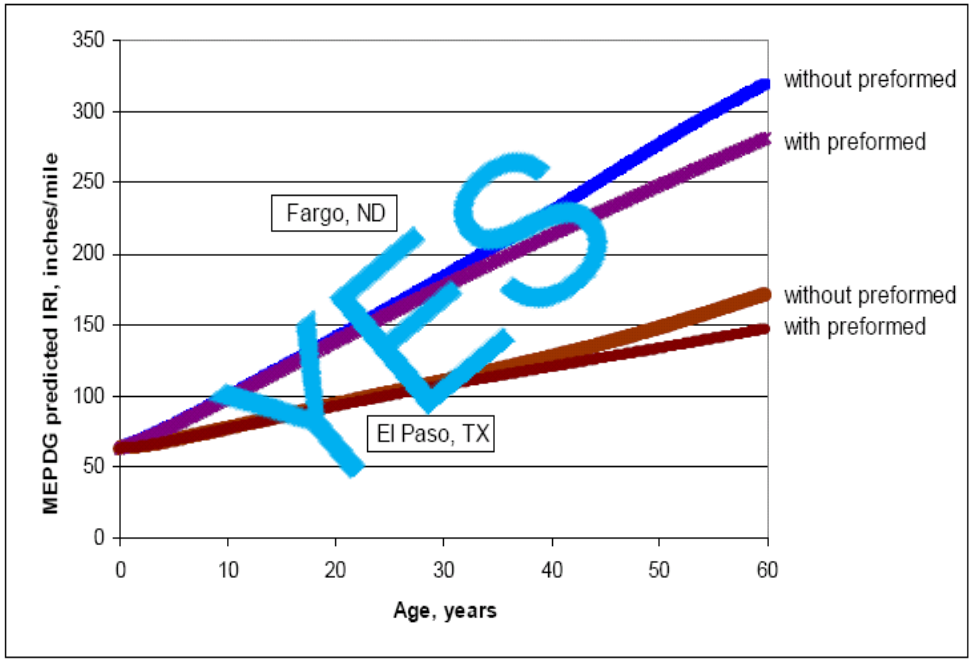
The sealing of transverse joints in JPCP has been standard practice throughout much of the United States for many years. Its widespread use is due to the common belief that sealing joints improves concrete pavement performance in two ways: by reducing water infiltration into the pavement structure, thereby reducing the occurrence of moisture-related distresses such as pumping and faulting, and by preventing the infiltration of incompressibles (i.e., sand and small stones) into the joints, thereby reducing the likelihood of pressure-related joint distresses such as joint spalling and blowups. Transverse joints in jointed concrete pavement (JCP) are typically created by sawing a narrow slot cut to force controlled cracking, followed by a second, wider saw cut to produce a reservoir for the joint sealant material. This traditional approach of sawing and sealing transverse contraction joints is estimated to account for between 2 and 7 percent of the initial construction cost of a JCP. Moreover, these sealed transverse joints require resealing one or more times over the service life of the pavement, leading to additional costs in terms of labor, materials, operations, and lane closures.

Recently, several State departments of transportation (DOTs) have been questioning conventional transverse joint sawing and sealing practices. These agencies contend that the benefits derived from sealing do not offset the costs associated with the placement and continued upkeep of the sealant over the life of the pavement. As a result, they have been experimenting with different sawing and sealing alternatives, for example:

- Narrow unsealed joints, consisting of single saw cuts that are left unsealed.
- Narrow filled joints, consisting of single saw cuts that are filled with sealant that adheres to the sides and bottom of the saw cut.
- Narrow sealed joints, consisting of single saw cuts that contain a narrow backer rod and sealant material.

NO

AASHTO New Design Guide



Potential Follow Up Activities

- Develop Best Practices Reports from Selected States
- Research What Parameters Should be Used to Manage Concrete Pavement Preservation
- Establish Life Extension of Each Concrete Preservation Treatment
- Engage TSP2 Partnerships in Identifying Opportunities and Solutions
- FHWA Facilitate State Showcases at TSP2
- Compare Survey Results to FHWA Pavement Preservation State Appraisals and FHWA PMS Research Review
- Compare State/Federal PMS Curves to LTPP Concrete Performance Curves
- Develop Procedures for Accounting for Strategy Cost Increases Over Time
- Provide Update to FHWA PMS Database
- What to Do With Final Report?

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Sources: Peshkin et al. 1999; Smith et al. 2008; Peshkin et al. 2007; Caltrans 2008; NDOR 2002.

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What about cost effectiveness?

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Is Sealant Cost Effective?

FHWA Sealant Effectiveness Study

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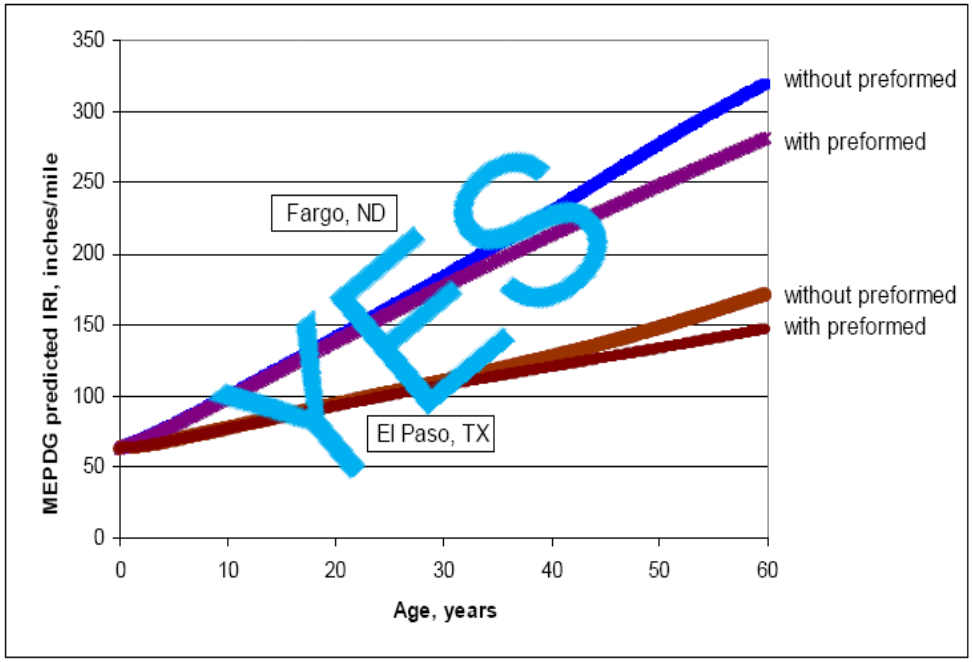

Preservation

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Questions?

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