Advancing Pavement Surface Evaluation to Support Engineering and Investment Decisions

American Association of State Highway & Transportation Officials (AASHTO) Expert Task Group (ETG) on Quantification of Cracking and Rutting

US Department of Transportation
Federal Highway Administration

Overview

- Why?
- How?
- What's next?

Pavement Management

"A systematic process that:

provides, analyzes, and summarizes,

pavement information,

for use in selecting and implementing

cost-effective

construction, rehabilitation, and maintenance"

Benefits of PMS

Define Objectives

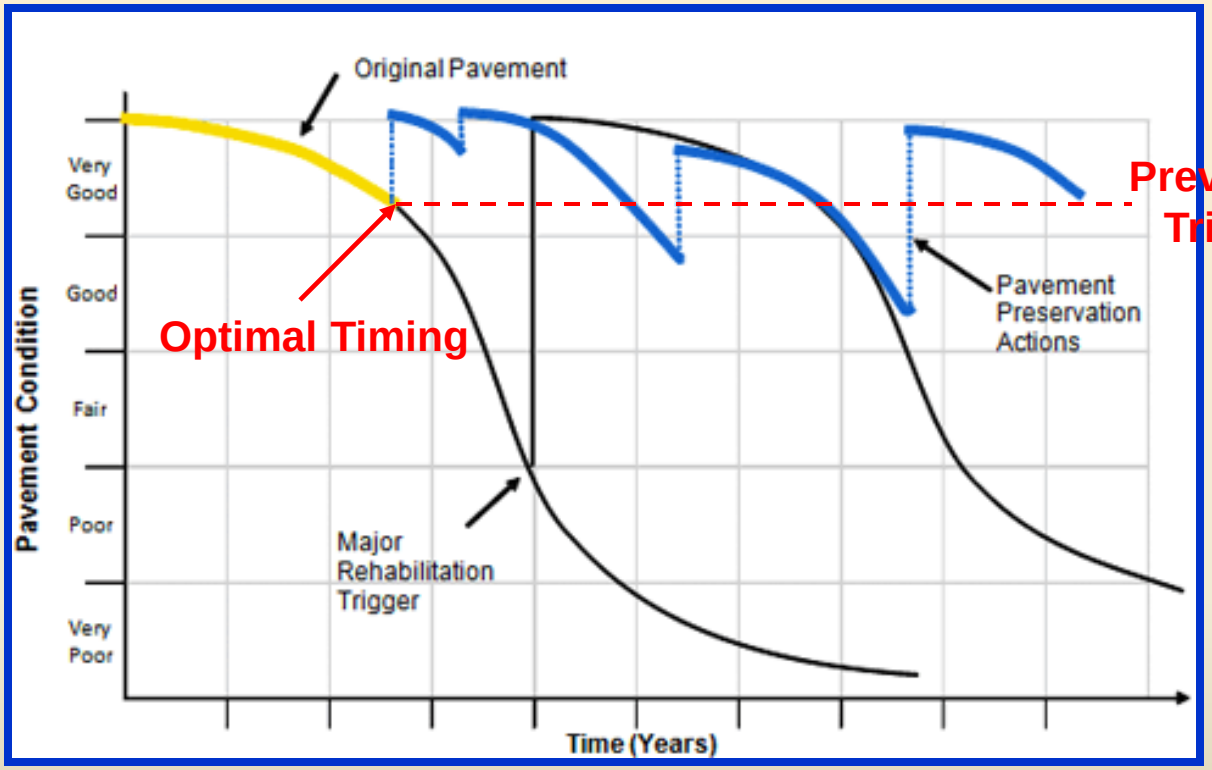
- **Organize Files?**
- **Help with Budgets?**
- **Help with M&R Recommendations?**
- **Documentation for Agency Administrators?**

As Yogi Berra aptly said:

“If you don’t know where you’re going, you might wind up someplace else”

Pavement Management

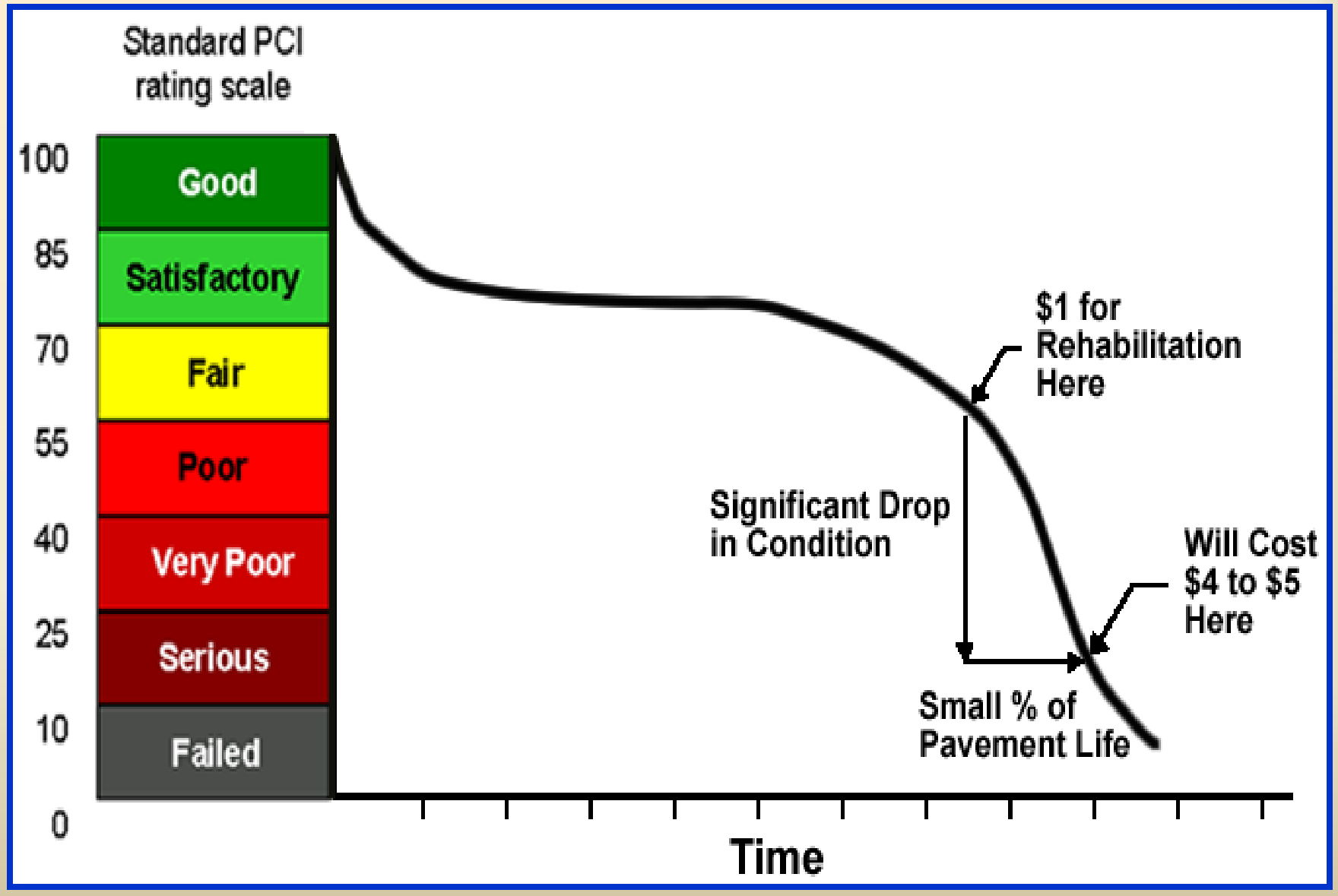
Concept of Pavement Preservation (P²)



Benefits of PMS

- **Potential Savings**
  - **Able to evaluate effectiveness of M & R over time.**
  - **Enables selection of cost-effective treatments.**

Impact of Timing on Cost

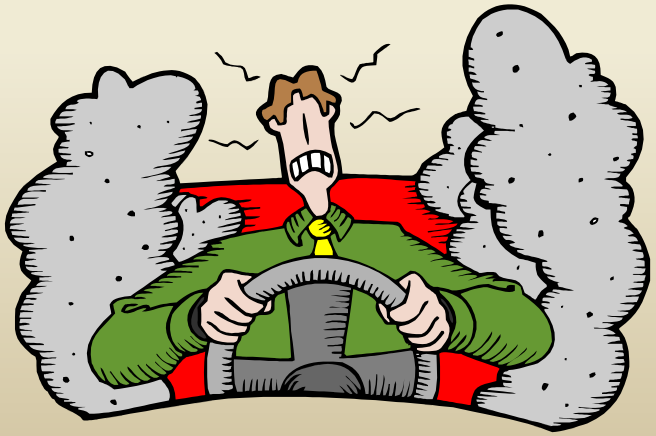


Why New Standards?

1. **Expiration of AASHTO Provisional Standards PP-38 and PP-44**
2. **Development of newer technology**
3. **Increasing need for precision and accuracy**
4. **National infrastructure funding support**

Evolution

Methodology	Fast	Safe	Repeatable
Walking			
Windshield	✓		
Semi-Automated	✓	✓	
Automated	✓	✓	✓



How

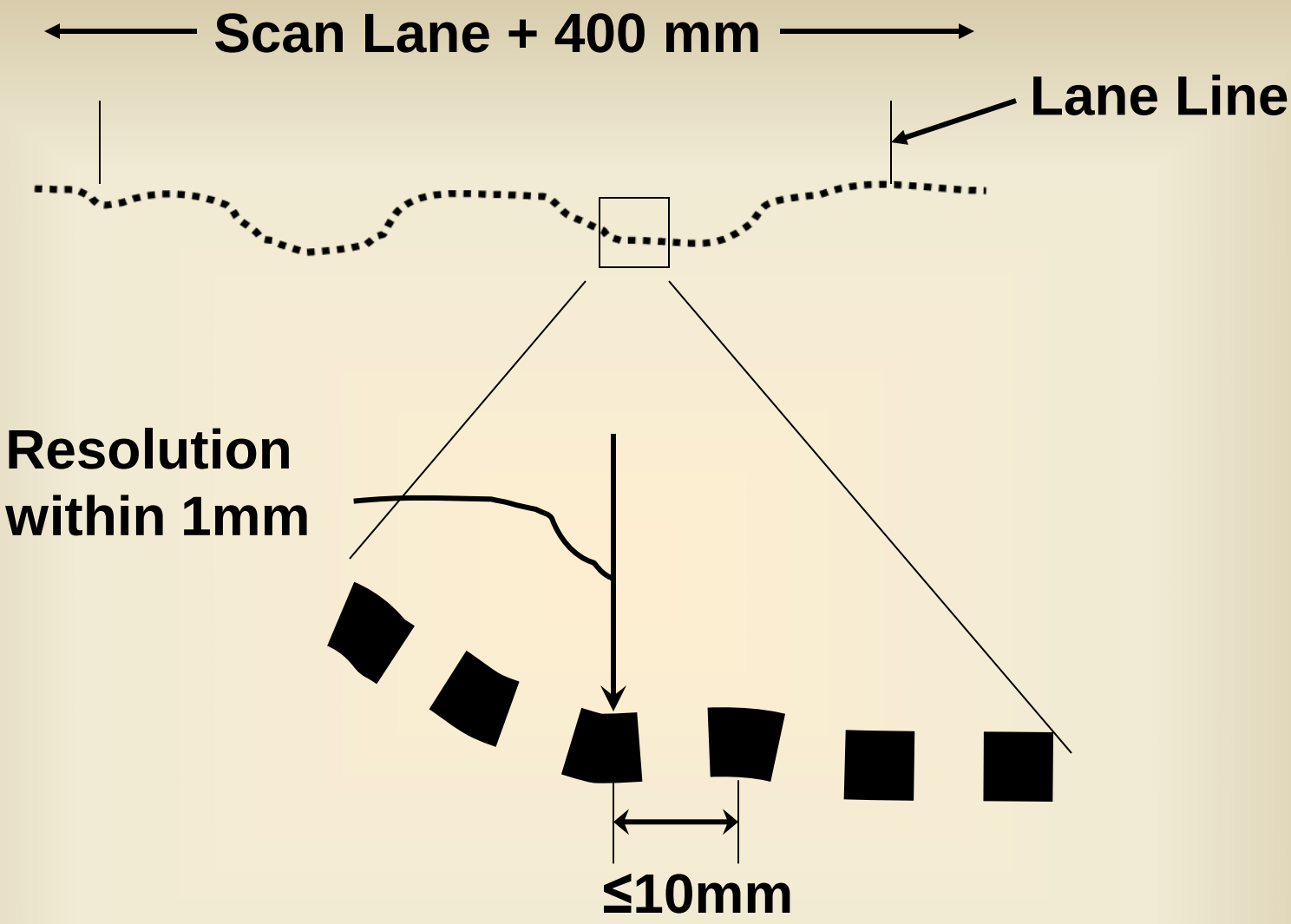
- Task group
  - States
  - Industry
  - FHWA
- Drafted Protocols
  - Transverse profile
  - ACP cracking

Transverse Profile

Standards for Transverse Profile

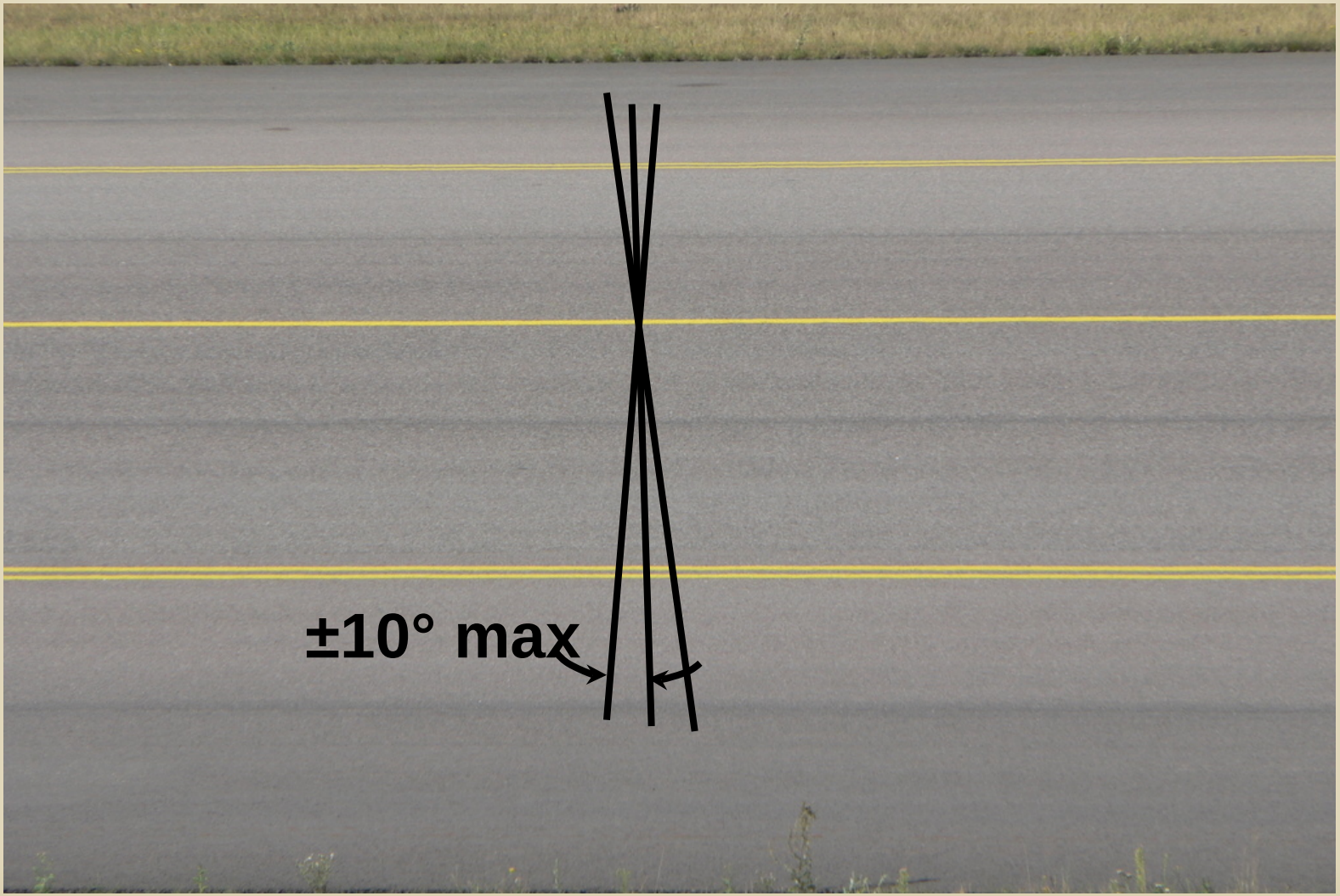
PP 70 - Collecting Transverse Pavement Profile

PP 69 - Determining Pavement Deformation Parameters and Cross-Slope from Collected Transverse Profiles



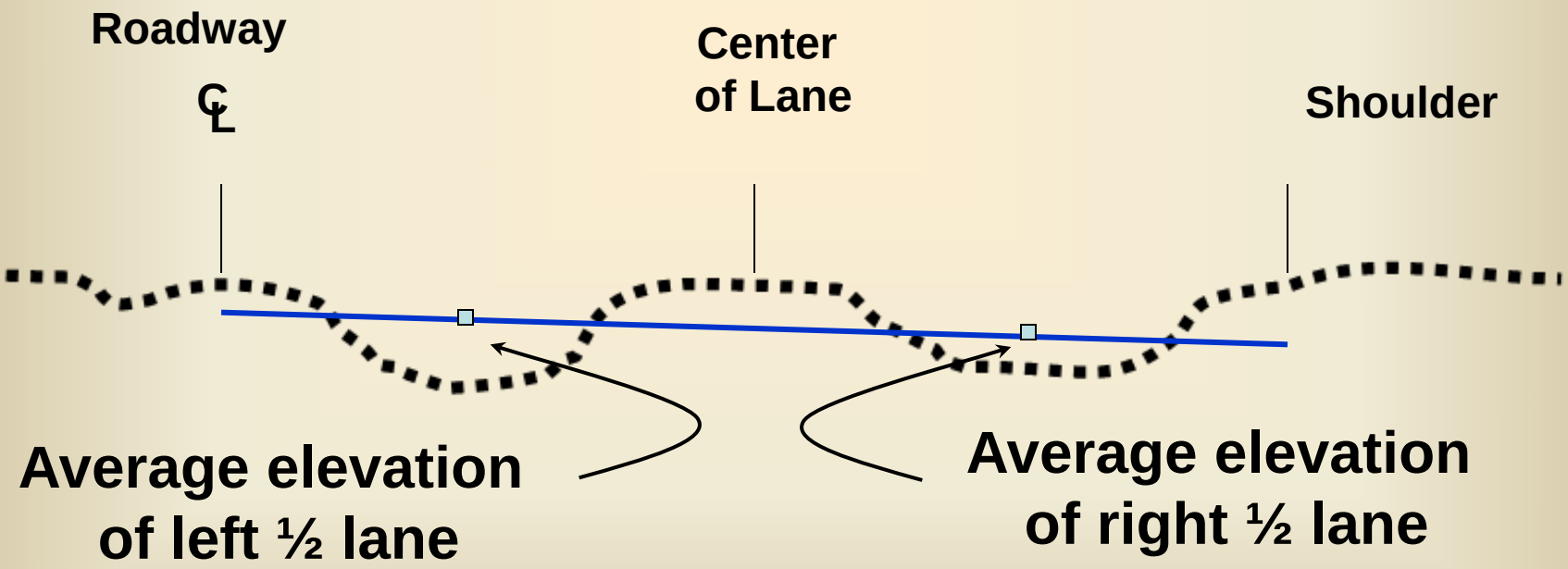
Data Standards - Recording Transverse Profile

Transverse Profile



Transverse Profile Analysis

1. Calculate Cross-slope



Transverse Profile Analysis

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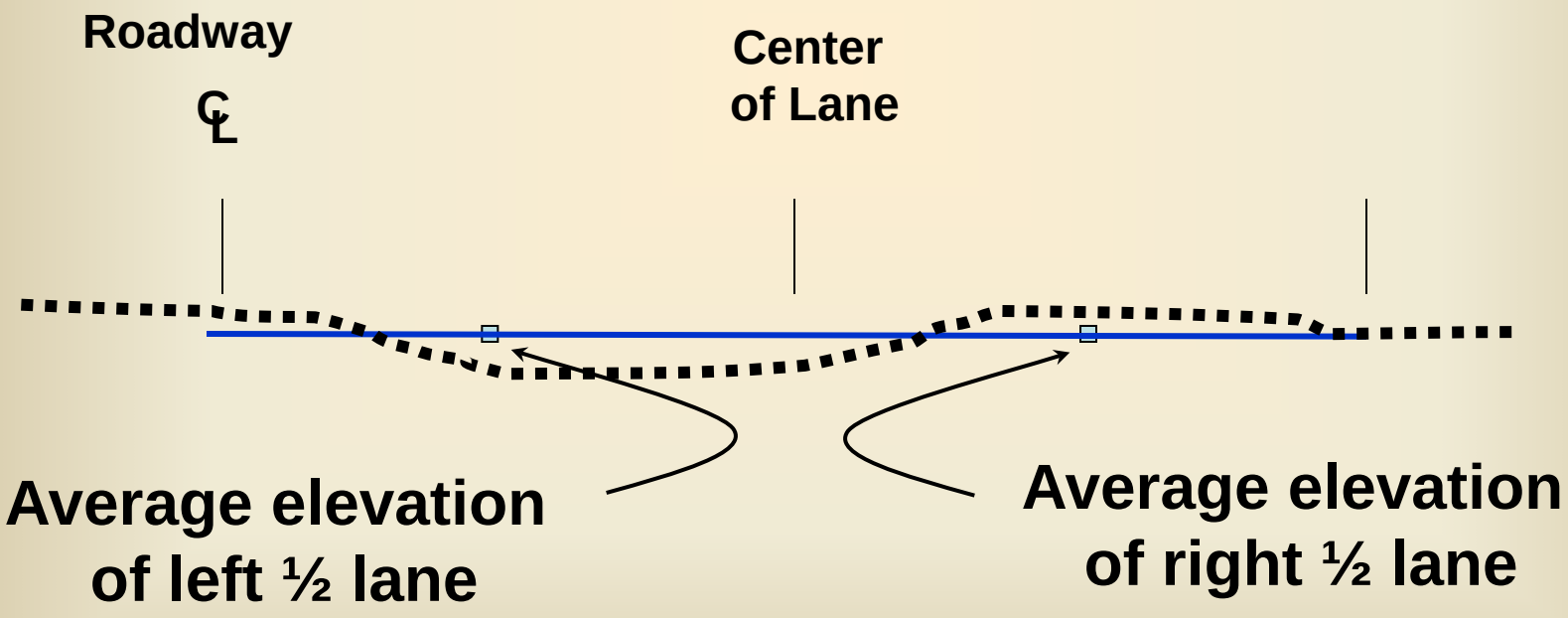
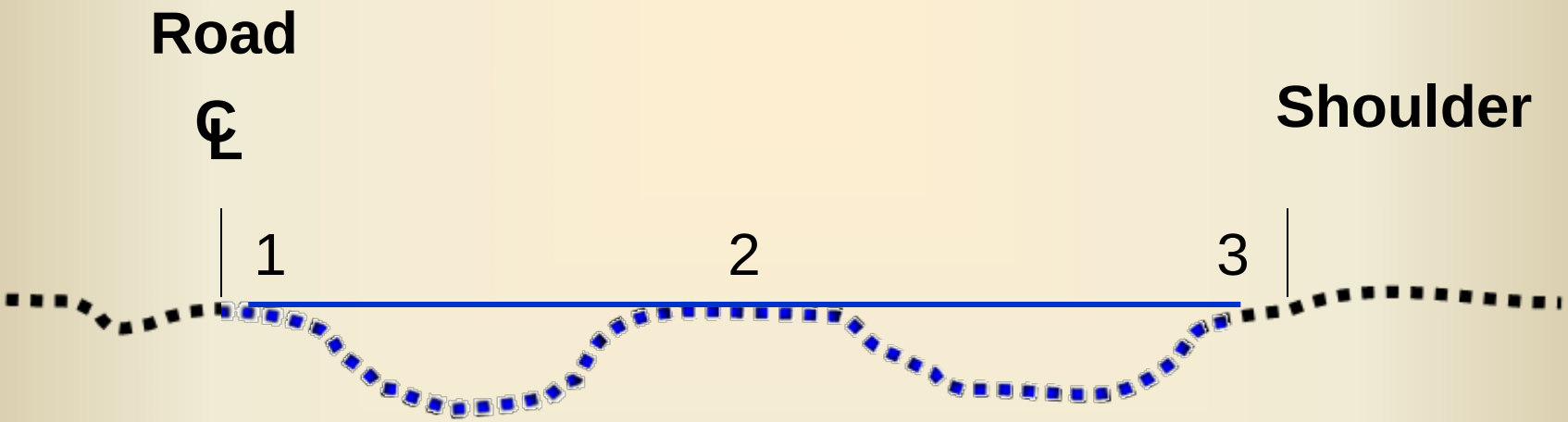


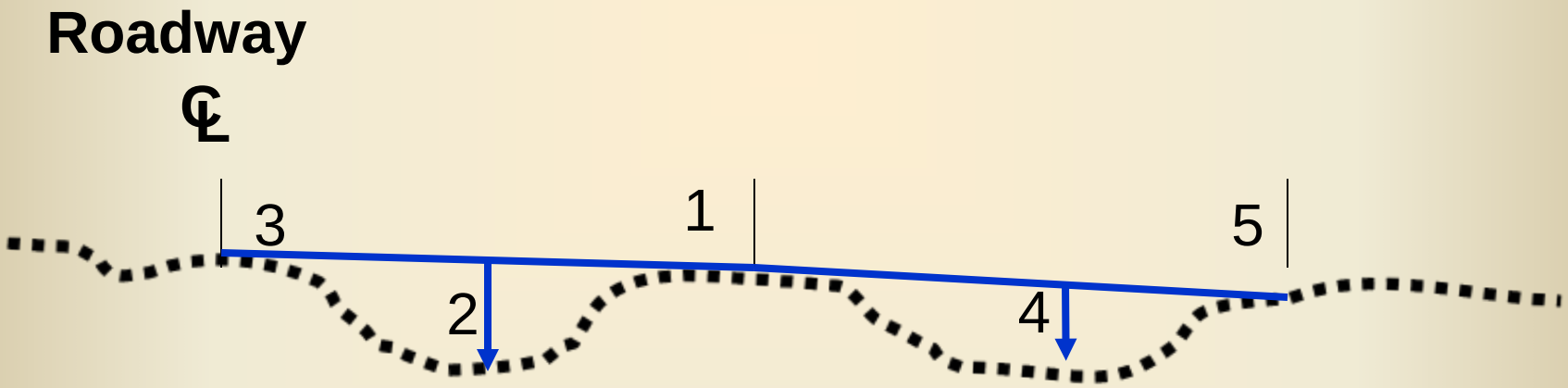
Transverse Profile Analysis

2. Calculate Percent Deformation:



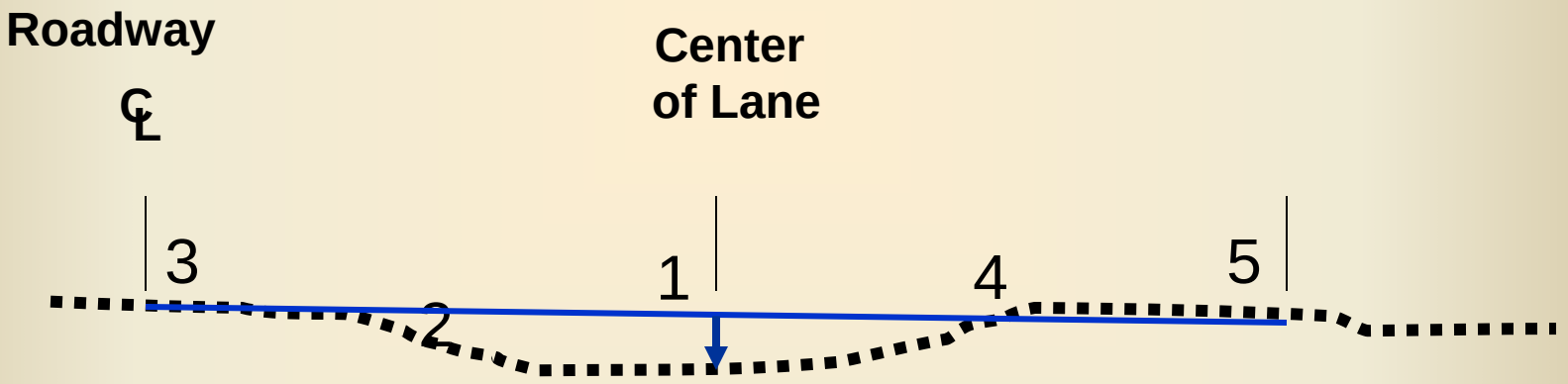
Transverse Profile Analysis

3. Calculate Rut Depths



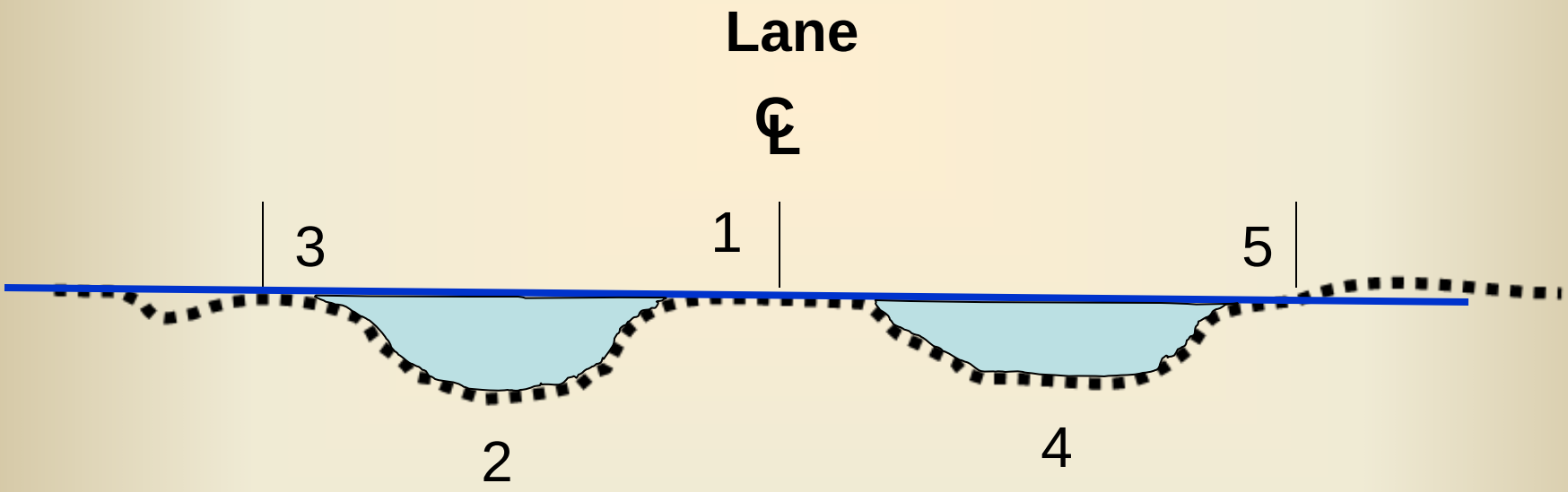
Transverse Profile Analysis

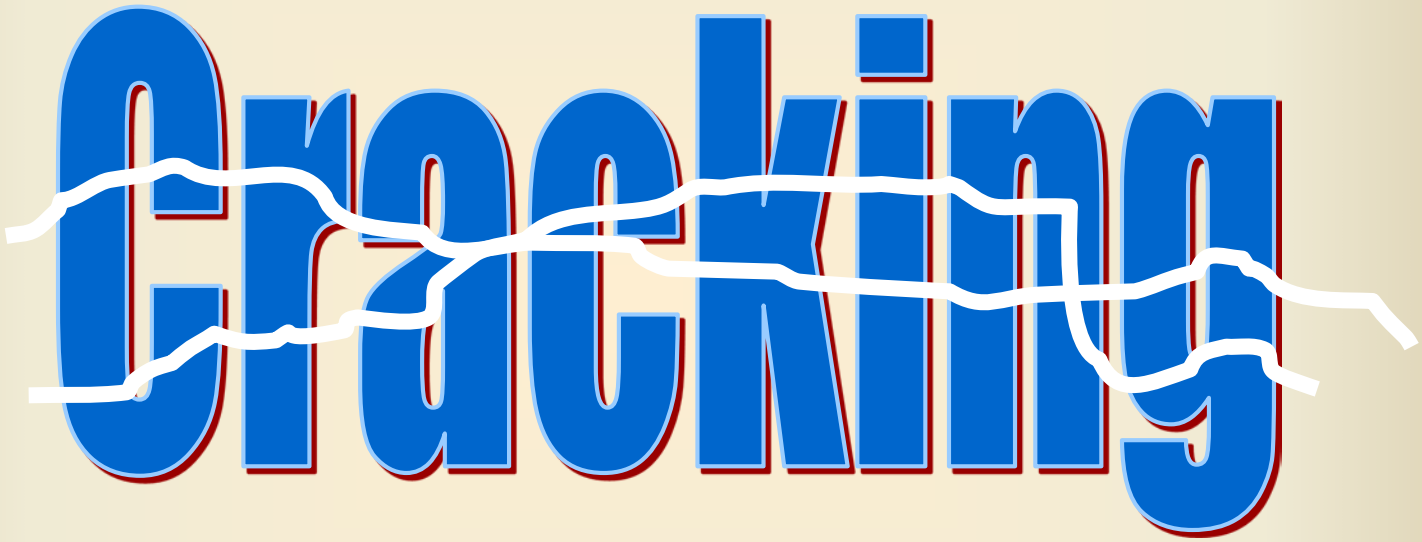
3. Calculate Rut Depths



Transverse Profile Analysis

4. Calculate Rut Area




Cracking

Standards for Cracking

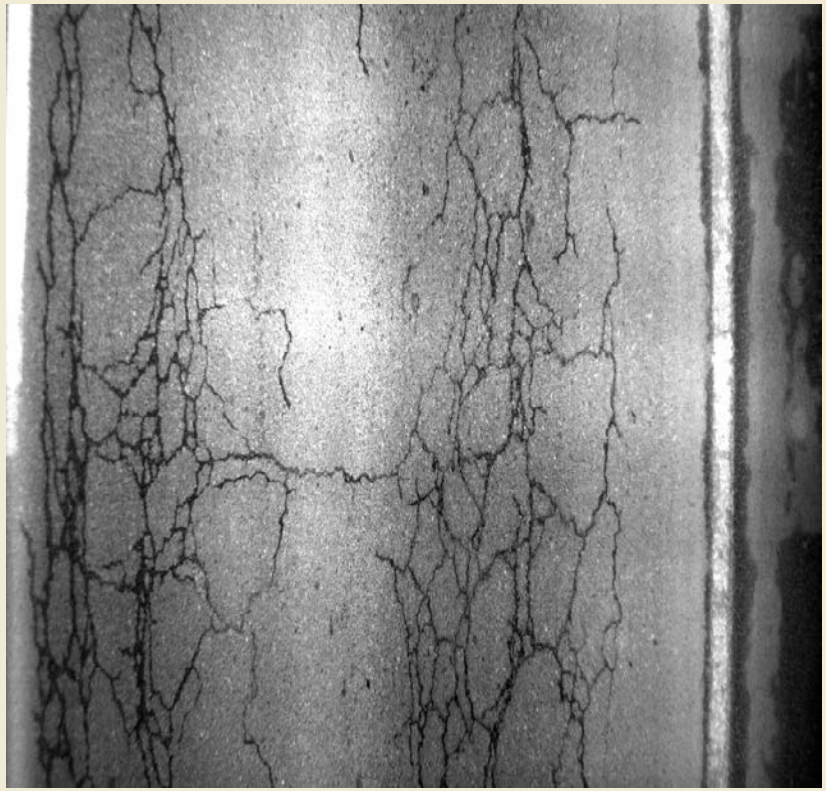
PP 68 – Collecting Images of Pavement Surfaces for Distress Detection

PP 67 - Quantifying Cracks in Asphalt Pavement Surfaces from Collected Images Utilizing Automated Methods

Standard for recording images

- Image Characteristics
- Detection Minimums
- Reporting

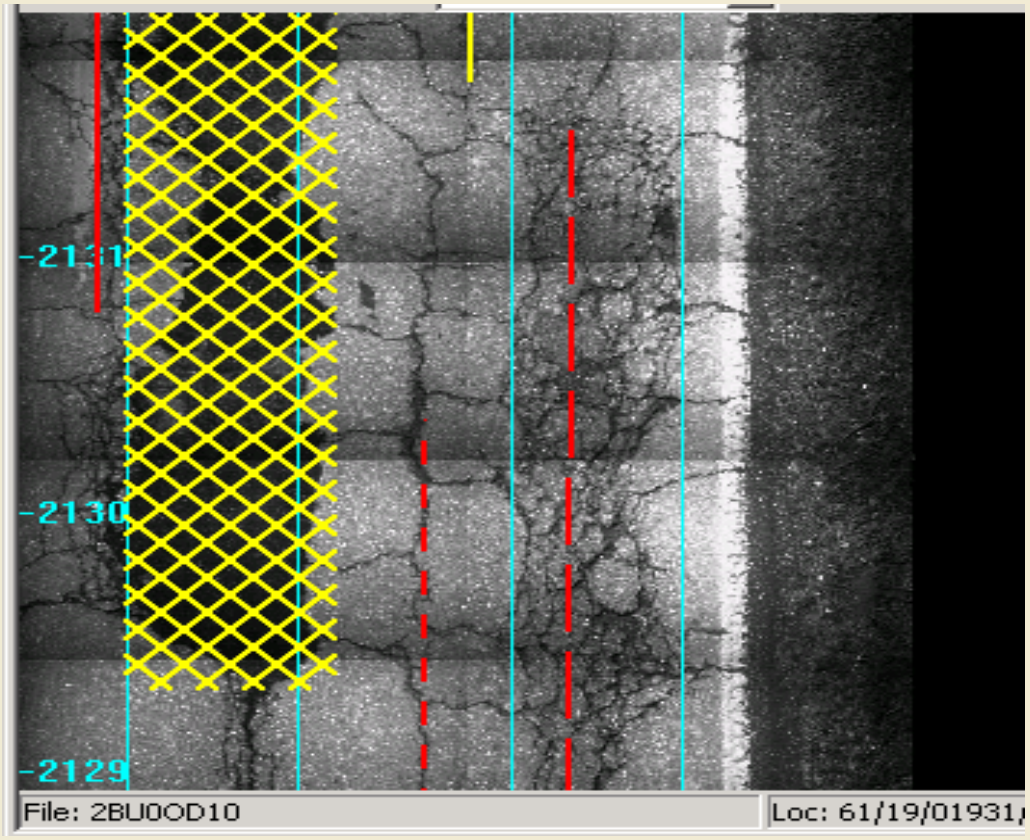
Pavement images



Standard for analyzing cracking

- Uses 5 zones
- Classifies into 3 types
  - Longitudinal
  - Transverse
  - Pattern
- Classifies by extent and severity

Pavement cracking



.75m .75m

←.875m→ ←.875m→

(Shoulder)

Zones 1 2 3 4 5 ⟶

Pooled Fund Study TPF-5(299)

Improving the Quality of Pavement Surface Distress and Transverse Profile Data Collection and Analysis

1. Preparation
2. Verification
3. Precision and Bias Studies
4. Implementation

Summary:

1. AASHTO Standards have been created
   a) ACP Cracking
   b) Transverse Profile
2. Pooled Fund Study TPF-5(299) Starting
3. Presenting Methodology
   to Pavement Community.
4. Seeking participation and input
   to help maintain/update standards.