Purposes of a Pavement Evaluation

- What is out there?
- How is it performing?
- What issues are there?
- Any unknowns or missing information?

Pavement evaluation/data collection can be costly but sufficient information is required to make better decisions.
Key Pavement Evaluation Components

- Pavement Distress & Drainage Surveys
- Nondestructive Testing
- Surface Characteristics Testing
- Field Sampling and Testing

Which activity is most useful in identifying candidate preservation projects?
Pavement Distress and Drainage Surveys
Purposes of Distress Survey

- Document pavement condition
- Identify types of distress
- Group areas of similar performance
- Gain insight into causes of deterioration
- Identify additional testing needs
- Identify possible treatment alternatives
- Identify repair areas and quantities
Pavement Distress

- Fundamental performance indicator
- Characterized by:
  - Type
    - What?
  - Severity
    - How Bad?
  - Extent
    - How Much?
Example Distress Manuals
Common Concrete Pavement Distresses

- Corner Breaks
- D-Cracking or ASR
- Transverse Cracking
- Spalling
- Patch/Patch Deter.
- Joint Faulting
- Pumping

- Joint Seal Damage
- Blowup
- Map Cracking
- Punchout
- Scaling
- Longitudinal Cracking

Table 3.3 on p. 3.11
Transverse Cracking
Pumping
Joint Faulting
Corner Break
Joint Spalling
Joint Seal Damage
Blowup
D-Cracking
Longitudinal Cracking
Scaling
Drainage Survey

• Purposes:
  – Identify moisture-related distress
  – Document drainage conditions
  – Assess overall pavement drainability

• Things to look for:
  – Topography and cut/fill
  – Pavement/shoulder slopes
  – Condition and geometrics of ditches
  – Condition of drainage outlets or inlets
Topography and Condition of Ditch
Condition of Outlets
Closure—Distress and Drainage Surveys

- Provides fundamental information on pavement performance
- General indicator of pavement deficiencies and needs
- Drives the need for additional field testing
Additional Field Testing

• Nondestructive testing technologies
  – Deflection testing
  – Ground penetrating radar
  – Others (MIT Scan, MIRA, etc.)
• Surface characteristics
  – Roughness, friction, noise
• Field sampling and testing

Not required on all preservation projects
Deflection Testing

• For pavement preservation work, valuable tool for assessing:
  – Joint load transfer
  – Presence of voids
  – Structural adequacy
• Fast and produces repeatable results
• Commonly used in project-level analysis
Falling Weight Deflectometer

Fig. 3.4 on p. 3.19
Deflection Load Transfer

\[ d_L = 0.66 \text{ mm} \quad \text{(Loaded)} \]

\[ d_U = 0 \text{ mm} \quad \text{(Unloaded)} \]

\[ d_L = 0.33 \text{ mm} \quad \text{(Loaded)} \]

\[ d_U = 0.33 \text{ mm} \quad \text{(Unloaded)} \]

25.4 mm = 1 in

0\% Load transfer

100\% Load transfer

\[ LT = \frac{\text{Unloaded}}{\text{Loaded}} \]

Fig. 3.8 on p. 3.23
Other Pavement Evaluation Procedures

- Testing of surface characteristics
  - Roughness
  - Surface Friction
  - Noise
- Field sampling and testing
  - Characterize material properties
  - Diagnose causes (mechanisms) of distress
Post-Evaluation Questions

- What are the performance issues associated with the pavement?
- Can the problems be addressed through preservation?
- Is there a need for a structural solution, such as a concrete overlay, or perhaps even reconstruction?