Pilot Evaluation of the Cracking Protocol From LTPP MDS Workshop Surveys

September 18, 2014

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LTPP Study

• Conducting manual surveys over past 20 years
• Conduct Workshops Annually for all Raters
LTPP Study

• All ratings
  – Same Day
  – Same Section

• Reference Surveys
  – “Ground Truth”
  – Consensus of Instructors
  – Immediately before individual ratings
Fatigue Cracking

• Normally occurs in Wheel Paths.

• Develops into a characteristically chicken wire or alligator pattern in later stages.

• Must have a quantifiable area.
Fatigue Cracking

• Low severity has no or only a few connecting cracks. No spalling, no sealant, no pumping.

• Moderate severity has complete pattern. Cracks may be spalled, may be sealed, no pumping.

• High severity has moderate or severe spalling. Pieces may move under traffic, may be sealed, may have pumping.
Longitudinal & Transverse Cracking

- Longitudinal - Cracks predominantly parallel to the pavement centerline. Location is Significant (wp/nwp).
- Transverse - Cracks predominantly perpendicular to the pavement centerline

- Severities
  - Low: < 6mm wide or sealed cracks
  - Moderate: < 18mm or any crack with adjacent low severity random cracking.
  - High: > 18mm or any crack with adjacent moderate to high severity random cracking.
Standard for analyzing cracking

- Classifies into 3 types
  - Longitudinal
  - Transverse
  - Pattern
- Classifies by extent and severity
Pavement Cracking

Zones

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>(Shoulder)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.75m</td>
<td></td>
<td>0.75m</td>
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<tr>
<td></td>
<td>-0.875m</td>
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<td>-0.875m</td>
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File: 2BU00D10
Loc: 61/19/01931
Ultimate Objective

• “Precision and Bias” comparison
• Using “Ground truth” of workshop
Factors That Affect Variability

- Clarity of Distress Protocols
- Quantity
- Severity
- Environment
  - Temperature
  - Moisture,
  - Sunlight and
  - Angle of sun
- Rater proficiency
- Rater visual acuity
Initial Questions

• Section 8, “Data Reporting”
  – Says 22 values?
  – 3 sets of length and width for 5 zones = 30?

• For pattern cracking
  – Are we recording “width of the cracks?”
  – Or width of the pattern?

• When recording “average width”
  – How frequently should a measurement be taken?
LTPP Study Global Trends

• Individual rater variability
  – For any given distress type/severity combination
  – Is typically large
  – And increases as the distress quantity increases

• Total distress group means
  – Are generally close to the reference value
  – With less scatter than the individual severities
  – Showing significant differences in distinguishing severities

• For closely related distresses
  – Such as fatigue and longitudinal wheelpath cracking
  – Compensatory differences were observed

• Generating a composite score produced greater agreement
Pilot Study Observations

• “crack width” had more variability than “crack length”
• Unclear on how to note “random associated” cracking
  – Is this “pattern”?
  – Really?
• Unclear where/how to report width of pattern?
• Surveyors questioned,
  – Is this protocol truly documenting what agencies need?