Updated Guide for Concrete Pavement Preservation

North East Pavement Preservation Partnership Burlington, Vermont April 8, 2014

Kurt Smith
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Why Preserve Concrete Pavement!
Bellefontaine, Ohio 1925

Main Street paved in 1891.
1st Concrete Street in America
Bellefontaine, O.
Bellefontaine, Ohio 2012

120 Years Old

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Outline

• Introduction: Pavement Preservation
• Background: Concrete Pavement Preservation Guide
• Guide Contents and Highlights
• Status and Future Plans

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Introduction: Pavement Preservation

• Proactive means of managing pavement condition (before severe deterioration occurs)

• Focus on extending pavement life and restoring functional condition

• Benefits:
  – Cost savings
  – Improved pavement conditions
  – Increased functional performance (e.g., smoothness, safety, noise)
  – Reduced environmental impacts

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Favorable Characteristics for Preservation

- Few or limited structural problems
- No materials-related distress
- Pavements in overall relatively good condition
Background: Concrete Pavement Preservation Guide

- Original manual developed 2008
- CP Tech Center (FHWA sponsorship)
- Recommendations on:
  - Pavement evaluation
  - Treatment application, design, construction
- Numerous workshops held throughout U.S., 2008-2013
- Need for updates/new information
New Preservation Guide

• CP Tech Center (FHWA sponsorship)
• Initiated June 2013
• Goals:
  – Update 2008 Guide
  – Incorporate recent developments
  – Expand certain topics
  – Add chapter on concrete overlays
• External review by broad Technical Committee
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<tr>
<th>Name</th>
<th>Agency</th>
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<tr>
<td>Gina Ahlstrom</td>
<td>FHWA</td>
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<td>Thomas Van</td>
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<td>John Roberts</td>
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<td>Larry Scofield</td>
<td>IGGA/ACPA</td>
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<td>Vince Perez</td>
<td>CTS Cement</td>
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<td>Wouter Gulden</td>
<td>Retired GA DOT &amp; ACPA-S</td>
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<td>Matt Ross</td>
<td>Penhall Company</td>
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<td>Robert Hogan</td>
<td>Caltrans</td>
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<td>Jim Tanner</td>
<td>Denton Concrete Services</td>
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<td>John Donahue</td>
<td>MODOT</td>
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<td>Larry Galehouse</td>
<td>National Preservation Center</td>
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<td>Magdy Mikhail</td>
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<td>Bret Andreasen</td>
<td>Contractor</td>
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<td>Matt Zeller</td>
<td>Conc. Paving Assoc. of Minn</td>
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<td>Gordon Smith</td>
<td>ICPA</td>
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<td>Francis Todye</td>
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<td>Craig Hennings</td>
<td>SW Conc. Pvt. Assoc.</td>
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<td>Paul Wiegand</td>
<td>SUDAS</td>
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<td>Chapters/Topics in Guide</td>
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<td>------------------------------------------------</td>
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<tr>
<td>1. Introduction</td>
<td></td>
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<tr>
<td>2. Pavement Preservation Concepts</td>
<td></td>
</tr>
<tr>
<td>3. Concrete Pavement Evaluation</td>
<td></td>
</tr>
<tr>
<td>4. Slab Stabilization</td>
<td></td>
</tr>
<tr>
<td>5. Partial-Depth Repairs</td>
<td></td>
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<tr>
<td>6. Full-Depth Repairs</td>
<td></td>
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<tr>
<td>7. Retrofitted Edge Drains</td>
<td></td>
</tr>
<tr>
<td>8. Dowel Bar Retrofit</td>
<td></td>
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<tr>
<td>9. Diamond Grinding and Grooving</td>
<td></td>
</tr>
<tr>
<td>10. Joint Resealing and Crack Sealing</td>
<td></td>
</tr>
<tr>
<td>11. Concrete Overlays</td>
<td></td>
</tr>
<tr>
<td>12. Strategy Selection</td>
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</tbody>
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Guide Highlights
— Treatment Commentary —

• Common Treatments
  – Full-depth repairs
  – Dowel bar retrofit
  – Diamond grinding
  – Partial-depth repair
  – Joint sealing

• Growing Treatments
  – Cross stitching
  – Thin Concrete Overlays

• Less Common Treatments
  – Slab stabilization
  – Retrofitted edge drains

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Guide Highlights
—Partial-Depth Repairs—

• Removal and replacement of small, shallow areas of deteriorated concrete
• Expanded use as repair technique
• Greater use of milling for preparation
  – Productivity
  – Bonding
• New patching materials
Guide Highlights
—Full-Depth Repairs—

• “Workhorse” treatment
• Removal/replacement of concrete pavement at deteriorated joints/cracks
• Renewed focus on workmanship
  – Dowel bar installation
• Need for rapid opening times
  – Accelerated materials
  – Precast repairs
Guide Highlights
—Precast Concrete Repairs—

• Advantages
  – Better quality concrete
  – Controlled curing
  – Minimal weather impacts
  – Rapid opening

• Experience in CA, CO, MI, DE, MN, MO, TX, NJ, NY, IL, UT, VA

• Good performance to date
Guide Highlights
—Utility Cut Repairs—

- Opening street to gain access to utilities
- On-going issue of returning pavement to good condition
- Guidance on:
  - Sizing cuts
  - Creating/removing
  - Jointing
  - Backfilling
  - Embedded steel
  - Opening to traffic
Guide Highlights — Dowel Bar Retrofit —

- Installation of dowel bars in existing joints to improve load transfer
- Increased use on cracks
- Renewed focus on patching materials
  - Durability
  - Shrinkage

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Guide Highlights
—Cross Stitching—

• Accepted treatment for
  – Early longitudinal cracks in new construction
  – Longitudinal cracks in older pavements
  – Misaligned tie bars

• Advantages:
  – Quick and easy to install
  – Less intrusive

• Good performance
Guide Highlights
—Diamond Grinding—

• Removal of thin layer of concrete to restore smoothness
• Boon to concrete pavement preservation
• Diamond grinding texturing “families”
  – Conventional
  – City street
  – Texture grind
  – NGCS
Guide Highlights
—Next Generation Concrete Surface (NGCS)—

• Manufactured concrete pavement surface
• Uses conventional grinding equipment in two-phase operation
  – Flush grinding
  – Longitudinal grooving
• Low-noise surface
• New and rehabilitated pavements
Guide Highlights
—Concrete Overlays—

• Thin concrete overlays for preservation improvements
• Bonded or unbonded
• 2 to 4 inches thick
What’s New

- Increased Importance Placed on PMS
- Inclusion of Chapter on Concrete Overlays
- Updated Equipment Technologies: GPR MIT SCAN, MIRA, etc
- Incorporated new PDR Techniques
- Inclusion of FHWA ASR Initiatives
- Inclusion of Precast Repairs, Utility Cuts, and CRCP Guidelines
- Emphasis on Noise Surface: NGCS
Status and Future Plans

- **Guide Document**
  - Materials completed and undergoing final reviews/publication

- **Training Materials**
  - Anticipated completion in May 2014

- **Implementation Efforts (starting April 2014)**
  - Regional workshops
  - On-demand web-based training
  - Contact: Dale Harrington, CP Tech Center

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Nine Months Goes By Soooo FAST

Panel Meeting Every Two Weeks
And Now Ready For Implementation

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