Concrete Pavement
Preservation / Repair

Joint Spall Repair – Partial Depth Repair

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PCCP Preservation Techniques (in the order of consideration)

- Full-depth repair
- Partial-depth repair
- Slab stabilization
- Retrofitting dowels
- Cross-stitching longitudinal cracks/joints
- Diamond grinding
- Joint & crack resealing
How do preventive treatments differ from routine/reactive treatments?

Same treatments ...different TIMING!
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(in the order of consideration)

• Full-depth repair
• **Partial-depth repair**
• Slab stabilization
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Partial Depth (Spall) Repairs
Application

- Candidates for joint spall repair
  - Spalling caused by incompressibles in joint
  - Localized areas of scaling
- Not candidates for joint spall repair
  - Spalling caused by dowel lockup
  - Spalling at working cracks
  - Spalling caused by durability distress
Partial Depth Repairs

- Repairs deterioration in the top 1/3 of the slab.
- Generally located at joints, but can be placed anywhere surface defects occur.
Vertical Edges can Enhance Performance

Keep Concrete out of the Joints
Milled Joint
Concrete Removal

Cold Milling

Transverse Milling (small head, moves along joint)

Longitudinal Milling (wide head, pick up & move over)

Fig. 5.2 on p. 5.8
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Vertical Edge – Added Time and Cost

Keep Concrete out of the Joints
Savings
Reducing
2 Steps to 1
Partial-Depth (Joint Spall) Patching Operations
Grout Recipe

- 2 Parts Type I Cement
- 1 Part Water
- 1 Part Sand
- Mixed to the consistency of thick cream or kool whip
- Placement immediately before concrete.
- Has a shelf life of 60 minutes.
3U18 Mix Design

- Cement Type 1
- Air
- Water
- Coarse Agg 80
- Sand
- Water/Cement
- Type E Water reducing and Accelerating

- 850 pounds
- 6.5%
- 295 pounds
- 1328 pounds
- 1328 pounds
- 0.35
Sample Mix Minnesota 3U18

Partial Depth Mix

- Small Aggregate 100% passing 3/8” sieve
- 850 lbs Type I Cement
- Type E Water Reducer and Accelerator
- 6.5% Air
- Maximum 1 inch slump
- Cure time of 12 hours
QUESTIONS
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