Concrete Pavement Repair & Restoration

Purdue Road School
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American Concrete Pavement Association
Rehabilitation Strategies

Three categories:

- Restoration
- Resurfacing
- Reconstruction

Together, known as CPR³

Which is used depends on existing condition.
Rehabilitation Timing

Min. Acceptable Rating

Structural/Functional Condition

Age or Traffic

Restoration

Resurfacing

Reconstruction
Restoration Techniques

Concrete Pavements

- Full-depth repair
- Partial-depth repair
- Diamond grinding
- Joint & crack resealing
- Slab stabilization
- Retrofitting dowels
- Retrofitting concrete shoulders
- Cross-stitching long. cracks/joints
Partial Depth Repair (PDR)

- Repairs deterioration in the top 1/3 of the slab.
- Generally located at *joints*, but can be placed anywhere surface defects occur.
Field Training in Indiana to-date

IN LTAP in Danville, IN October 12, 2012
Field Training in Indiana to-date

INDOT Greenfield and LaPorte Districts
June 2013

APWA Training, Fishers, IN
March 2016
Candidates for PDR
Partial Depth Repair

Full Depth Repair
Finding Unsound Concrete

Sounding the pavement:

- Hammer
- Steel rod
- Steel chain

Unsound-Delaminated

Solid
Removal

- Sawing and chipping
- Carbide milling
  - Transverse
  - Longitudinal
Carbide-Milling

- Efficient
- Leaves rough surface
- Avoid hand work
Note V-shape Edge
Milling Distresses Joint
Cleaning

- Check removal by sounding before cleaning
- Air or Sandblast bottom and vertical faces
- Acceptable waterblast:
  - 100-200 MPa pressure
  - Waiting period to dry
Final Cleaning... Pre-placement

- Airblow to remove dust & debris
- Direct away from patches
  - Use 0.63 MPa minimum air pressure
  - Oil & moisture free air
  - Check with clean cloth
- Backpack blowers acceptable
Re-establish Joint

- Separates patch from adjacent lane
- Reforms joint reservoir
- Provides uniform sealing reservoir

Acceptable materials:
- Styrofoam
- Asphalt-impregnated fiberboard
- Fiberboard
Applying Bonding Agent

- Check patch area cleanliness first
- Clean again if necessary
- Apply agent uniformly
  - Scrub cementitious grout with wire brush
  - Apply epoxy with soft brush
  - Coat all surfaces (horizontal & vertical)
Placing Patch Material

- Mix in small quantities
- Place from wheelbarrows, buggies
- Slightly overfill the patch area
- Use small spud vibrators (<25 mm)
  - Hold at 15-30 degrees
  - Do not drag!!
Finishing

- Match surrounding elevation
- Work tool from center toward edges
- Seal saw runouts with grout or liquid epoxy
Completed Partial Depth Patch
Technical Publications

http://www.cptechcenter.org/
Additional Resources

2017 Indiana Concrete Pavement Workshop Presentations:

http://indianaconcretepavement.com/
THANK YOU

Questions?

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