



# Concrete Pavement Preservation

June 14<sup>th</sup>, 2022 Des Moines  
June 15<sup>th</sup>, 2022 Cedar Rapids

# Pavement Preservation Workshop Introduction



# About This Workshop

- Outgrowth of continued focus on pavement preservation
- Provide guidance on concrete pavement preservation activities
- Original version: 2008
- Updated version: 2014
- Current (2022) version presents updated technical information on:
  - Pavement evaluation equipment and technologies
  - Advances in preservation materials/procedures
  - Concrete overlays

# Today's Agenda

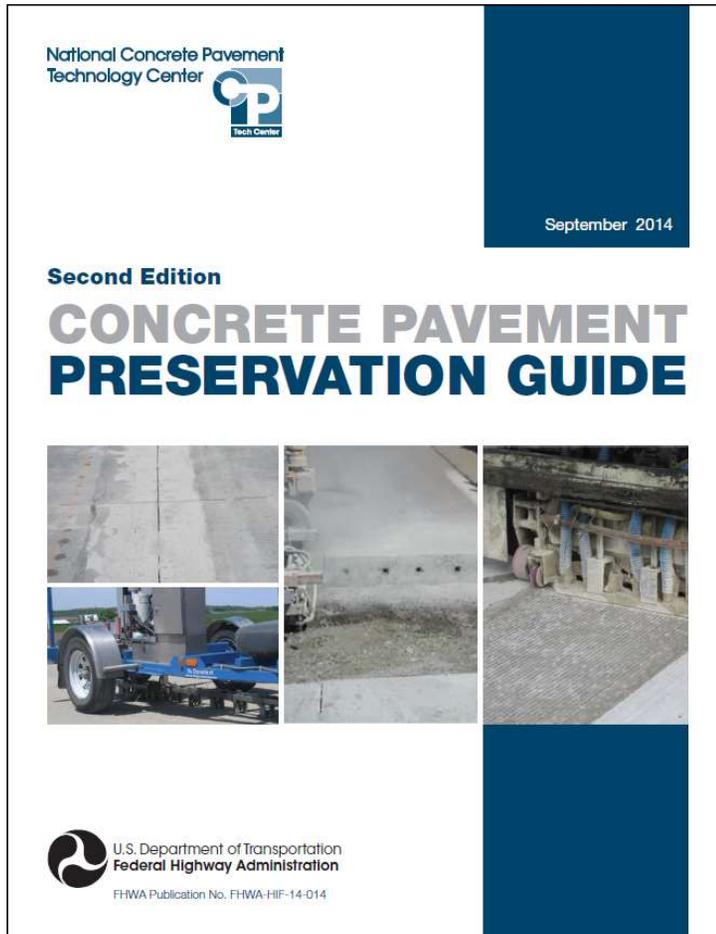
Time	Topic	
8:30 am – 9:00 am	Registration	
9:00 am – 9:45 am	Introduction to Pavement Preservation	Todd Hanson
9:45 am – 10:30 am	Concrete Pavement Evaluation	Jerod Gross
10:30 am – 11:15 am	Partial Depth Repair	Jerod Gross
11:15 am – 11:45 am	Full Depth Repair	Lee Shepard
11:45 am – 12:30 am	Lunch - provided	
12:30 am – 1:15 pm	Load Transfer Restoration	Todd Hanson
1:15 pm – 2:00 pm	Diamond Grinding and Grooving	Lee Shepard
2:00 pm – 2:30 pm	Joint Resealing and Crack Sealing	Jerod Gross
2:30 pm – 3:00 pm	Review and Discussion	Group

# Workshop Format

- Informal
- Presentation of “key points” and interactive discussions
- Questions are encouraged
- Share your experiences!
- Slide Handouts



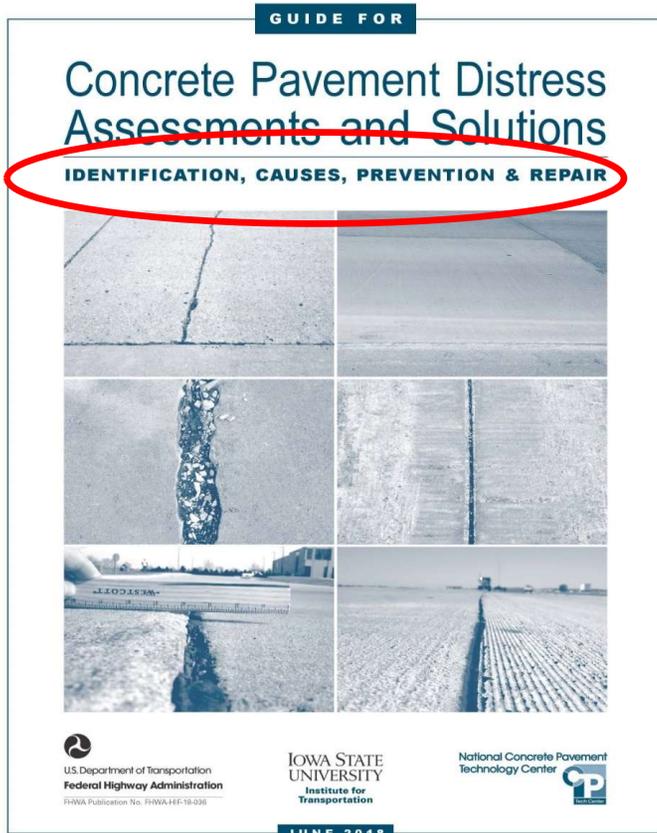
# Concrete Pavement Preservation Guide 2014



- Contains 12 Chapters on Preservation Techniques
- Focus on Repair Techniques - How to do it
- 2022 Guide should be out soon

[https://intrans.iastate.edu/app/uploads/2018/08/preservation\\_guide\\_2nd\\_ed\\_508\\_final.pdf](https://intrans.iastate.edu/app/uploads/2018/08/preservation_guide_2nd_ed_508_final.pdf)

# Distress Assessments & Solutions



## DIVISION 1 – FULL DEPTH CONCRETE PAVEMENTS

- Surface Defects
- Surface Delamination
- Material Related Cracks
- Transverse & Diagonal Cracking
- Longitudinal Cracking
- Corner Cracking
- Spalling
- Faulting
- Joint Warping and Curling
- Blowups
- Settlement and Heaves
- Subgrades & Base Support Conditions
- CRCP

**Google:  
CP Tech Center  
Distress Manual  
(pdf & ePub)**

## DIVISION 2 – CONCRETE OVERLAYS

- Concrete Overlays, BCOA, BCOC, UBCOA, UBCOC
- Laboratory & Field Testing

[https://intrans.iastate.edu/app/uploads/2019/01/concrete\\_pvmt\\_distress\\_assessments\\_and\\_solutions\\_guide\\_w\\_cvr.pdf](https://intrans.iastate.edu/app/uploads/2019/01/concrete_pvmt_distress_assessments_and_solutions_guide_w_cvr.pdf)

# Pavement Preservation Concepts

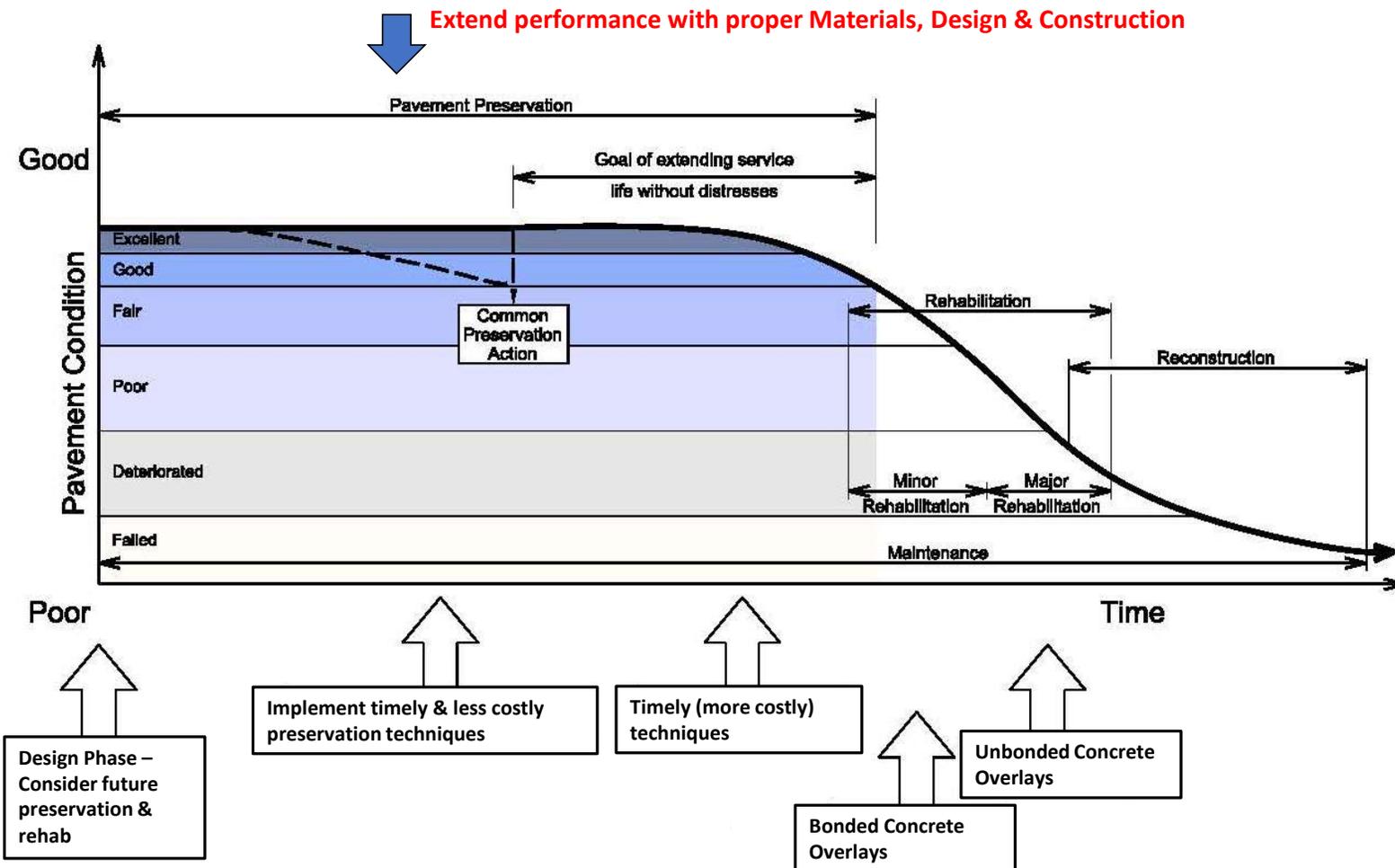
# What is Pavement Preservation?

- Network level, long-term strategy for enhancing pavement performance
- Concrete pavement preservation is a strategy of extending concrete pavement service life for as long as possible by arresting, greatly diminishing, or avoiding pavement deterioration processes.
- Goals accomplished with a collection of preventive maintenance treatments and a few minor rehabilitation and routine maintenance treatments

# What is *Preventive Maintenance*?

- Component of Pavement Preservation
- Cost effective treatments
- Applied to structurally sound pavements
- Maintain or improve functional condition
- Does not increase structural capacity

# Maintenance vs. Preservation



**How do these treatments differ from routine/reactive treatments?**



*Similar treatments...  
different TIMING!*

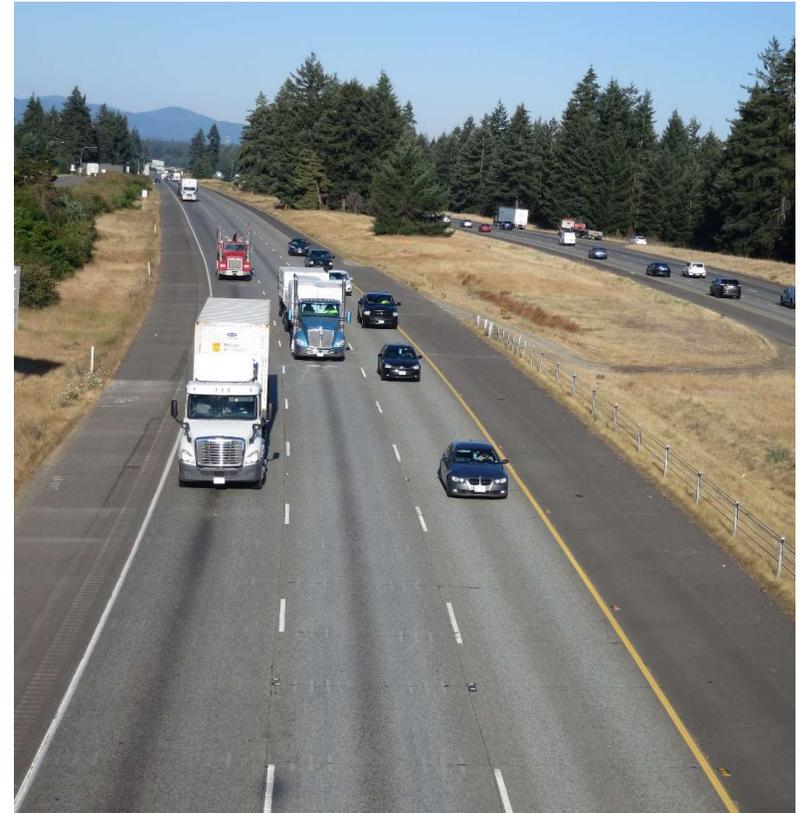
# Pavement Preservation Philosophy



Keeping good roads in good condition!

# Favorable Characteristics for Preservation

- Few or limited structural problems
- No materials-related distress
- Pavements in overall relatively good condition (minimal distress)



# Benefits of Pavement Preservation

- Higher customer satisfaction
  - Enhanced smoothness
  - Increased safety
  - Reduced traffic disruptions
- Improved network pavement condition
- Cost savings
- Enhanced sustainability
  - Positive economic, environmental, social impacts



# Concrete Pavement Preservation Treatments

- Slab stabilization
- Slab jacking
- Partial-depth repairs
- Full-depth repairs
- Retrofitted edge drains
- Dowel bar retrofit
- Cross stitching
- Diamond grinding
- Diamond grooving
- Joint resealing
- Crack sealing
- Thin concrete overlay

# Selection Factors for Pavement Preservation

- Existing pavement structure
- Existing pavement condition
- Current and future traffic
- Local climatic conditions
- Expected performance of the pavement
- Expected costs
- Construction considerations

# Use of Pavement Management Data in Preservation

- Help select suitable candidate pavements by “flagging” those pavements in “good” condition that would respond favorably to preservation
- Help identify feasible treatments through an agency’s historical tracking of the past performance of pavements with preservation treatments.
- Help select an appropriate treatment by knowing the performance impacts of the selected pavement preservation treatments.

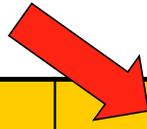
# Typical Performance of Selected Preservation Treatments

Treatment	Typical Range of Performance
Partial-depth concrete patching	10 to 20+ years
Full-depth concrete patching	20+ years
Dowel bar retrofit	15 to 20+ years
Cross-stitching	10 to 20+ years
Diamond grinding	15 to 25+ years
Joint resealing	8 to 16+ years

Table 2.5 on p. 14

# Trigger/Limit Values for Preservation (JPCP)

Start Programming



Performance Indicator	Trigger Value	Limit Value	Repair
Trans. Cracking	1.5-2.5% of slabs cracked	5-15% of slabs cracked	Partial, Full, Dowel Bar Repairs
Joint Deterioration	2.0-4.0% of joints	15-20% of joints	Partial-Depth Repair
Joint Faulting	1/8 inch	3/8 – 1/2 inches*	Dowel Bar Retrofit
Roughness	90 in/mi	170 in/mi*	Diamond Grinding

\* CP Tech Center

Values Adapted from Table 3.2 Preservation Guide



# Questions Preservation Concepts?