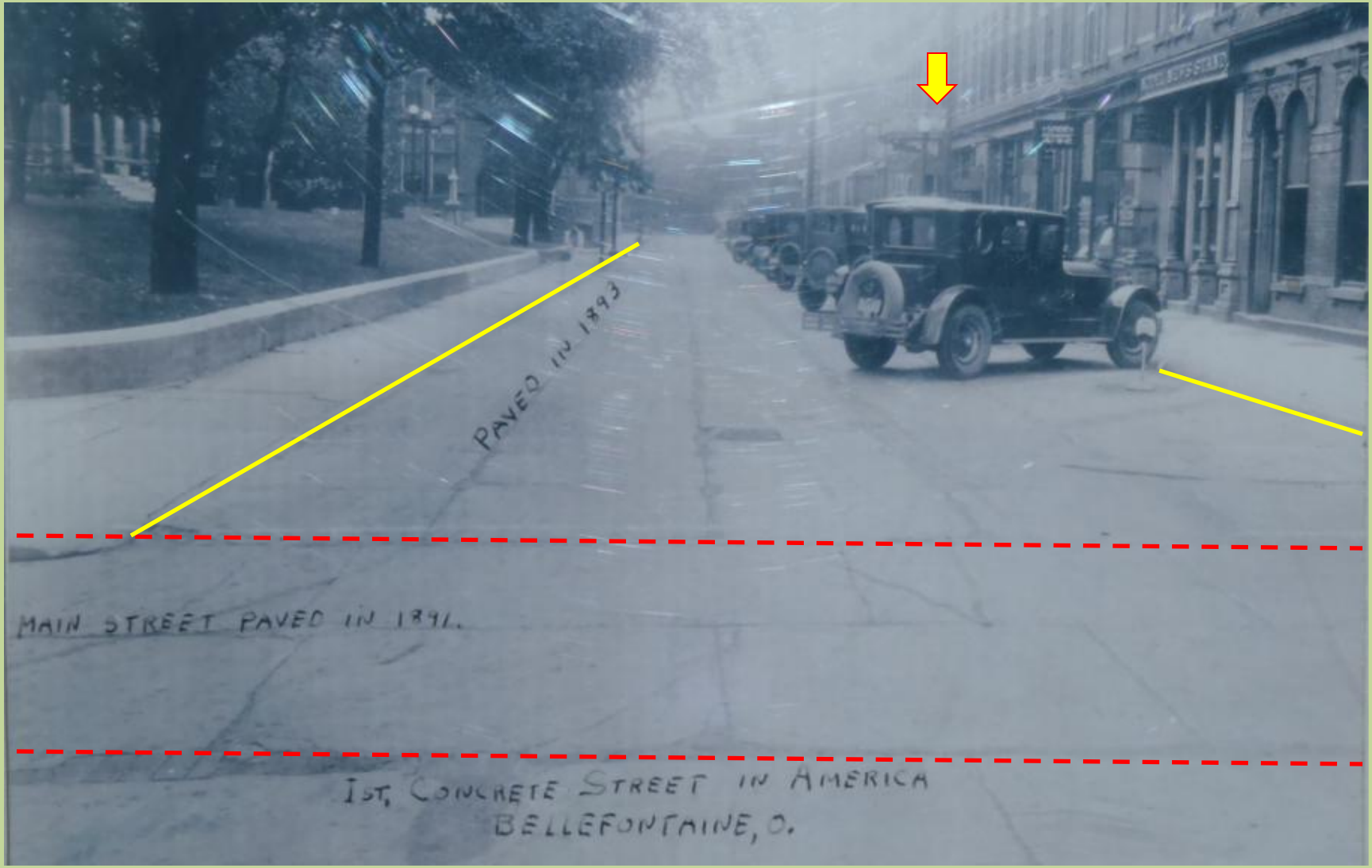
Updated Guide for Concrete Pavement Preservation

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

Kurt Smith
Applied Pavement Technology

Dale Harrington
CP Tech Center

Why Preserve Concrete Pavement !
Bellefontaine, Ohio 1925



Bellefontaine, Ohio 2012

120 Years Old

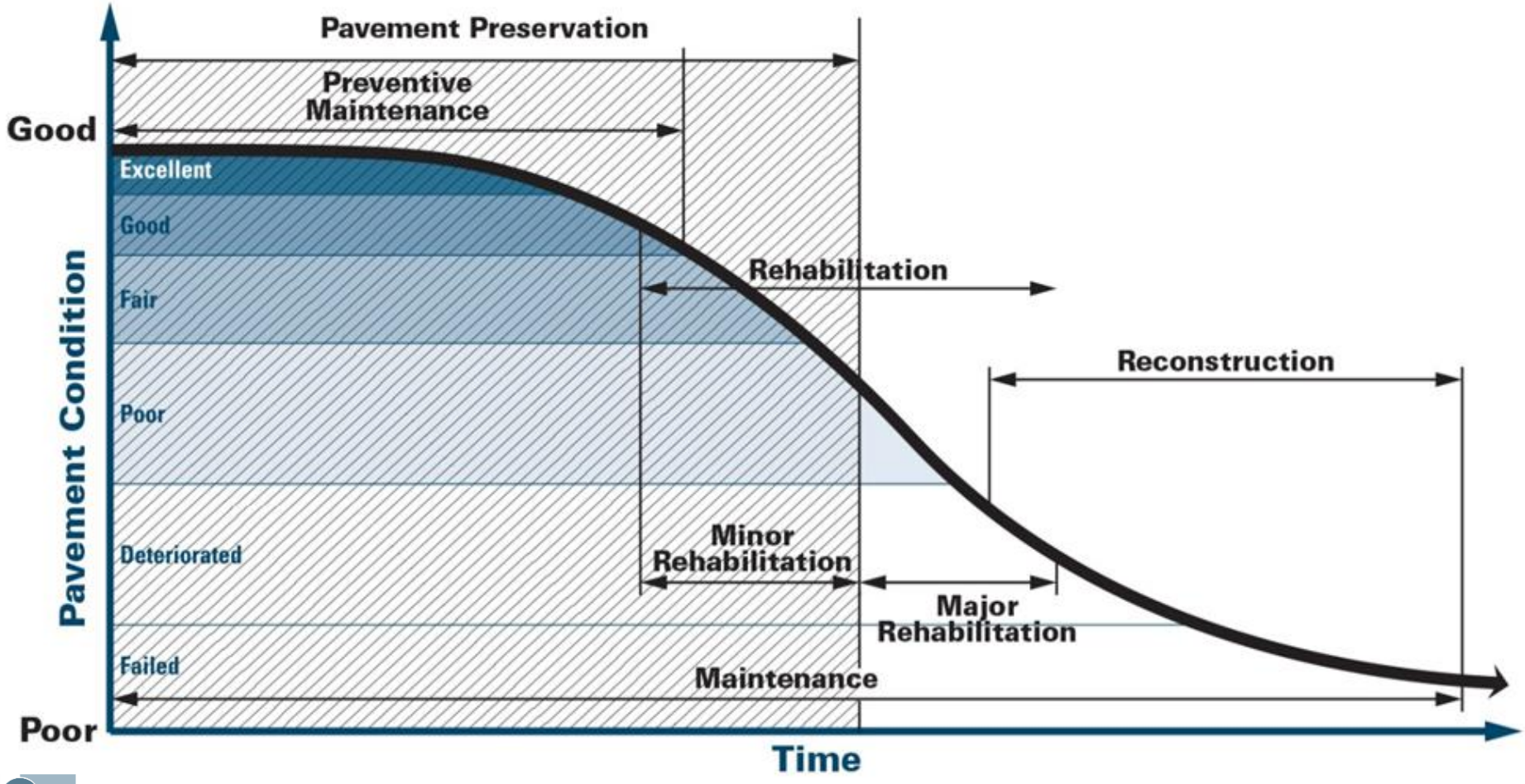
Outline

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

Introduction: Pavement Preservation

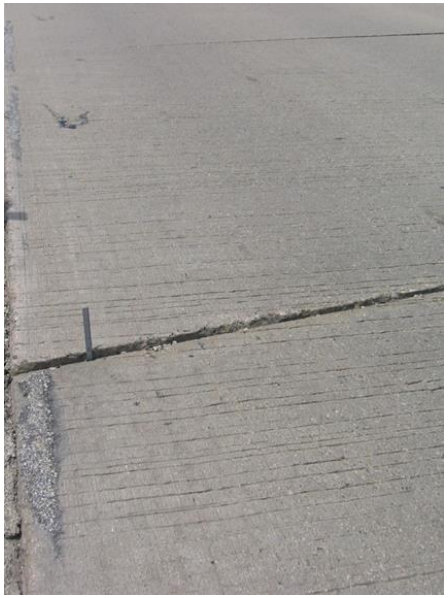
- Proactive means of managing pavement condition (before severe deterioration occurs)
- Focus on extending pavement life and restoring functional condition
- Benefits:
  - Cost savings
  - Improved pavement conditions
  - Increased functional performance (e.g., smoothness, safety, noise)
  - Reduced environmental impacts

Pavement Preservation Window



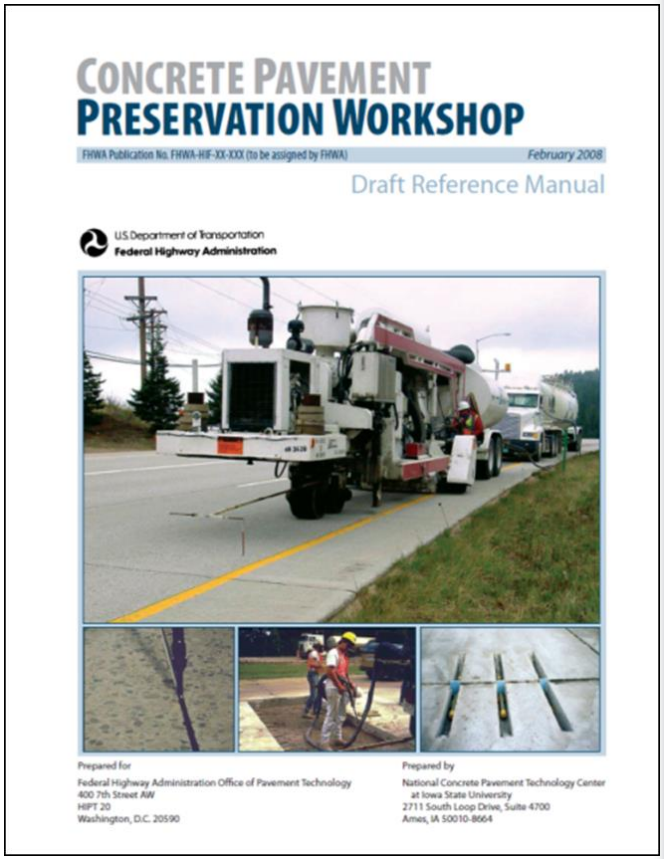
Favorable Characteristics for Preservation

- 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

Technical Committee

Name	Agency
Gina Ahlstrom	FHWA
Thomas Van	FHWA
John Roberts	IGGA
Larry Scofield	IGGA/ACPA
Vince Perez	CTS Cement
Wouter Gulden	Retired GA DOT & ACPA-S
Matt Ross	Penhall Company
Robert Hogan	Caltrans
Jim Tanner	Denton Concrete Services
John Donahue	MODOT
Larry Galehouse	National Preservation Center
Magdy Mikhail	TXDOT
Bret Andreasen	Contractor
Matt Zeller	Conc. Paving Assoc. of Minn
Gordon Smith	ICPA
Francis Todey	Iowa DOT
Kevin Merryman	Iowa DOT
Craig Hennings	SW Conc. Pvt. Assoc.
Paul Wiegand	SUDAS

Chapters/Topics in Guide

1. Introduction
2. Pavement Preservation Concepts
3. Concrete Pavement Evaluation
4. Slab Stabilization
5. Partial-Depth Repairs
6. Full-Depth Repairs
7. Retrofitted Edge Drains
8. Dowel Bar Retrofit
9. Diamond Grinding and Grooving
10. Joint Resealing and Crack Sealing
11. Concrete Overlays
12. Strategy Selection

Guide Highlights
—Treatment Commentary—

- **CommonTreatments**
  - 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

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—

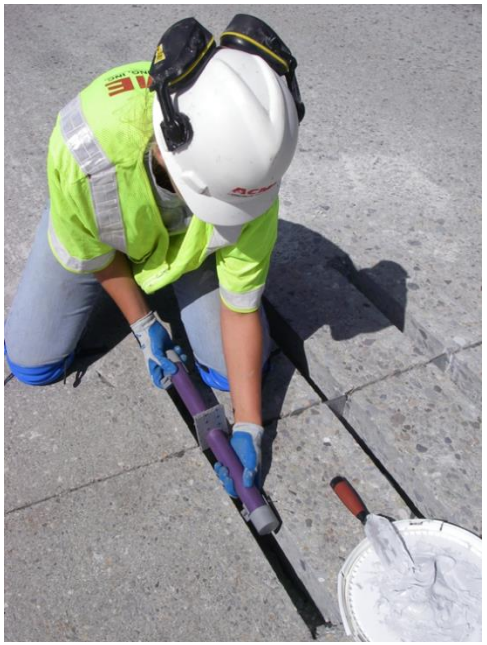
- Advantages
  - Better quality concrete
  - Controlled curing
  - Minimal weather impacts
  - Rapid opening
- Experience in CA, CO, MI, DE, MN, MO, TX, NJ, NY, IL, UT, VA
- Good performance to date

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

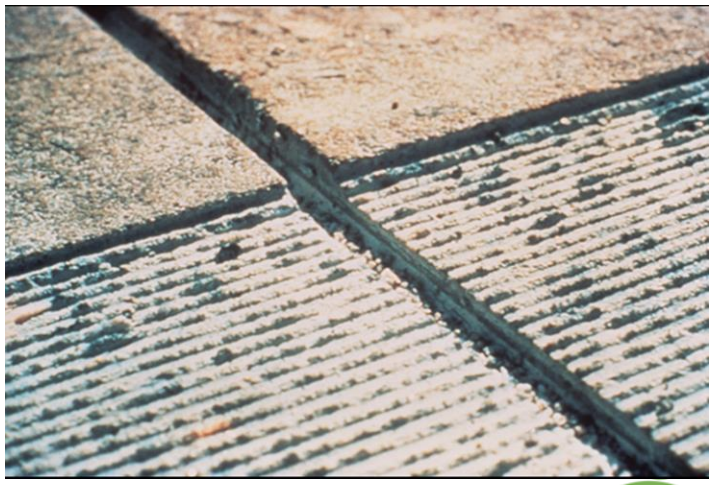


Guide Highlights
—Cross Stitching—

- 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—

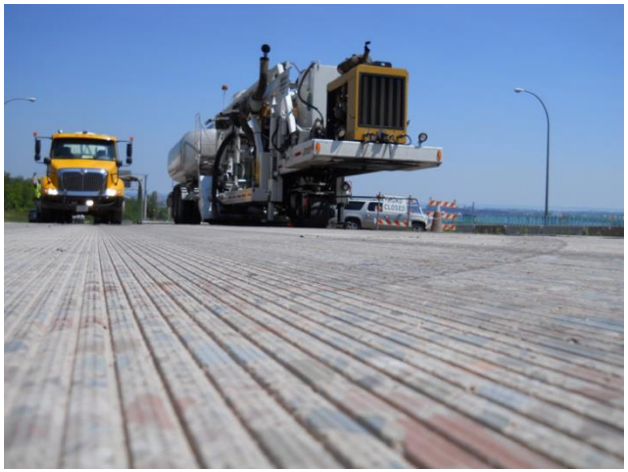
- Removal of thin layer of concrete to restore smoothness
- Boon to concrete pavement preservation
- Diamond grinding texturing “families”
  - Conventional
  - City street
  - Texture grind
  - NGCS



Guide Highlights

—Next Generation Concrete Surface (NGCS)—

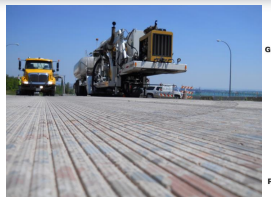
- Manufactured concrete pavement surface
- Uses conventional grinding equipment in two-phase operation
  - Flush grinding
  - Longitudinal grooving
- Low-noise surface
- New and rehabilitated pavements

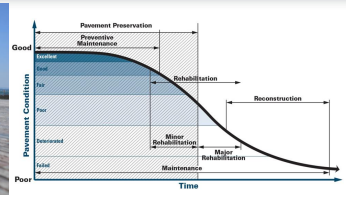


Guide Highlights
—Concrete Overlays—

- 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

Nine Months Goes By Soooo FAST

Panel Meeting Every Two Weeks

IGGA
International Grooving & Grinding Association
Your Pavement Preservation Resource since 1972

National Concrete Pavement Technology Center

GUIDE FOR

PARTIAL-DEPTH REPAIR OF CONCRETE PAVEMENTS

April 2012

IOWA STATE UNIVERSITY
Institute for Transportation

And Now Ready For Implementation

Thank You!

IGGA

International Grooving & Grinding Association

Your Pavement Preservation Resource since 1972