

CONCRETE PAVEMENT ROAD MAP

Long-Term Plan for Concrete Pavement
Research and Technology—The Concrete
Pavement Road Map:
Volume I, Background and Summary

FHWA PUBLICATION NUMBER FHWA-HRT-05-052

SEPTEMBER 2005



Long-Term Plan for Concrete Pavement
Research and Technology—The Concrete
Pavement Road Map: Volume II, Tracks

FHWA PUBLICATION NUMBER HRT-05-053

SEPTEMBER 2005



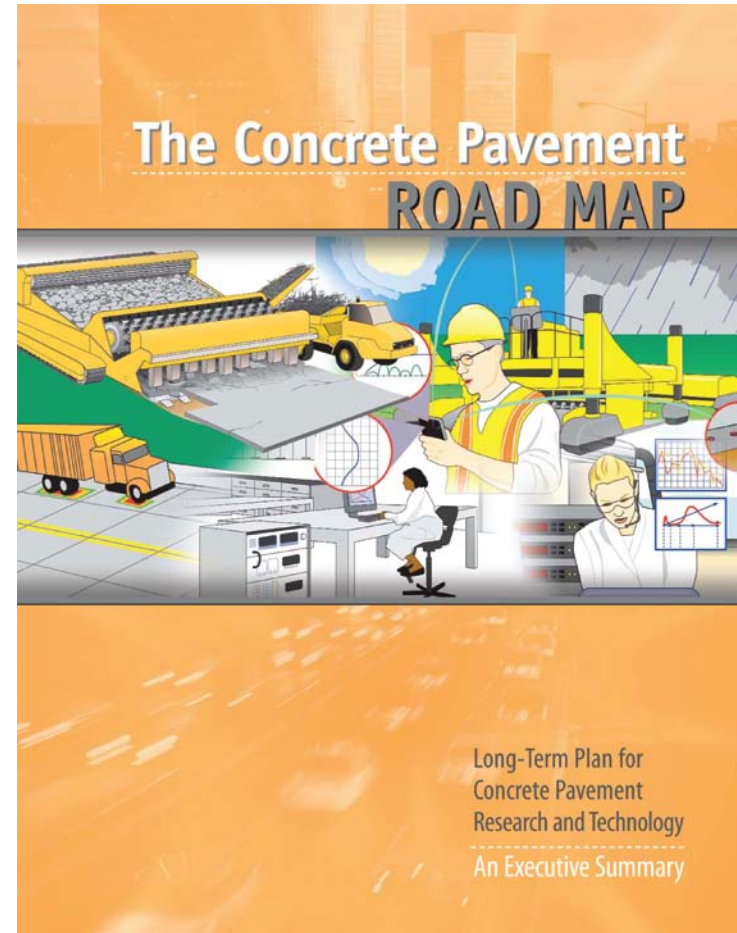
US Department of Transportation
Federal Highway Administration

Research, Development, and Technology
Turner-Fairbank Highway Research Center
6300 Georgetown Pike
McLean, VA 22101-2296



US Department of Transportation
Federal Highway Administration

Research, Development, and Technology
Turner-Fairbank Highway Research Center
6300 Georgetown Pike
McLean, VA 22101-2296



Long-Term Plan for
Concrete Pavement
Research and Technology
An Executive Summary



CP Road Map

Why are we here?

- What is the Road Map?
- Who are we?
- What is the current status?
- What is in it for you?
- How can you participate?





CP Road Map:

Comprehensive,
integrated, and fully
functional system

of concrete pavement
technologies that provides
innovative solutions for
customer-driven performance
requirements

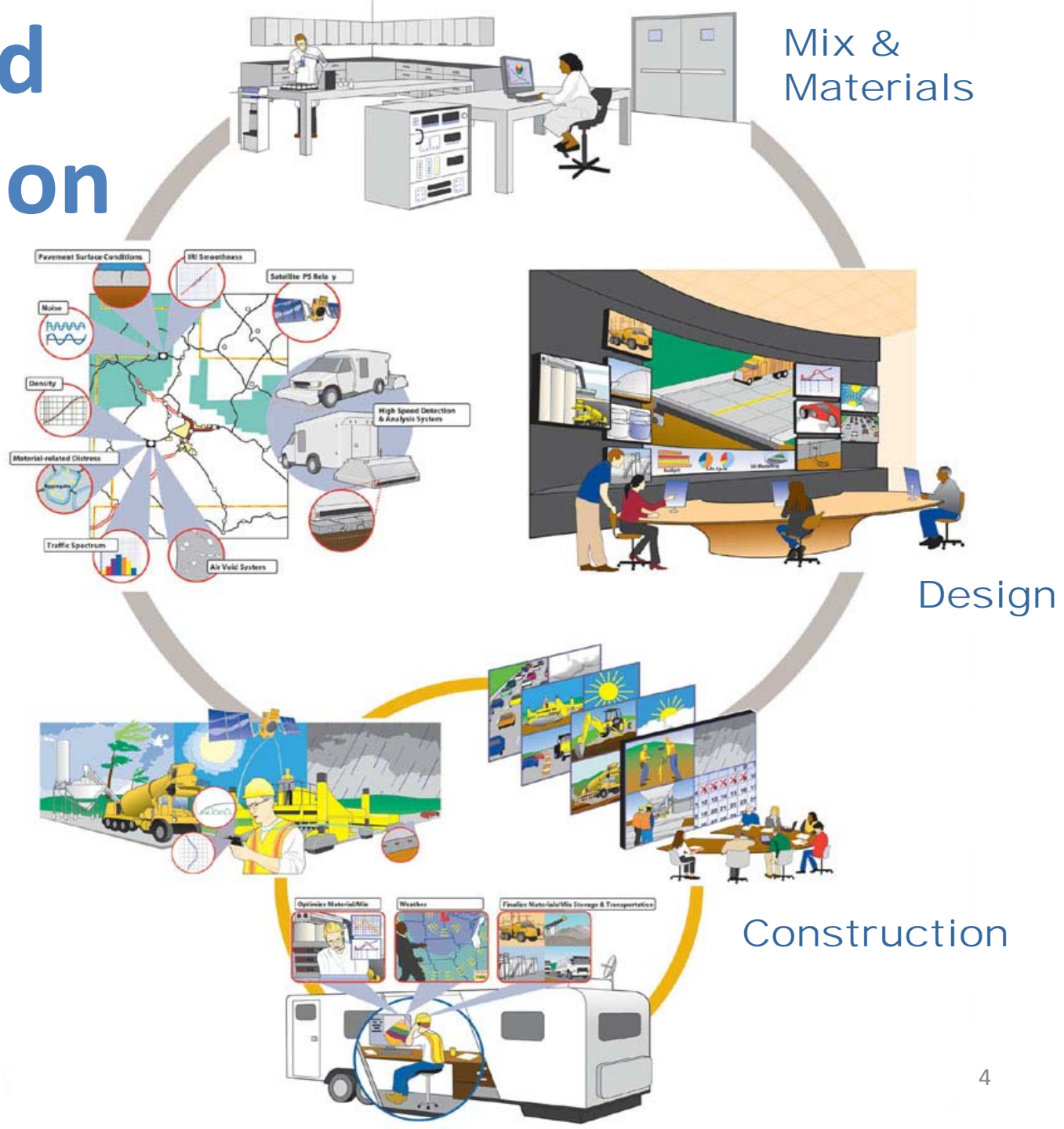
CP Road Map Vision

Feedback

Mix &
Materials

Design

Construction



Hallmarks of the Plan

- To be cooperatively conducted by researchers across the country
- Leverages ideas and funds
- Accelerates implementation through technology transfer
- To guide the investment of research dollars for the greatest efficiency
- To promote cooperation among fund managers and all stakeholders



Operations Support Group (OSG)

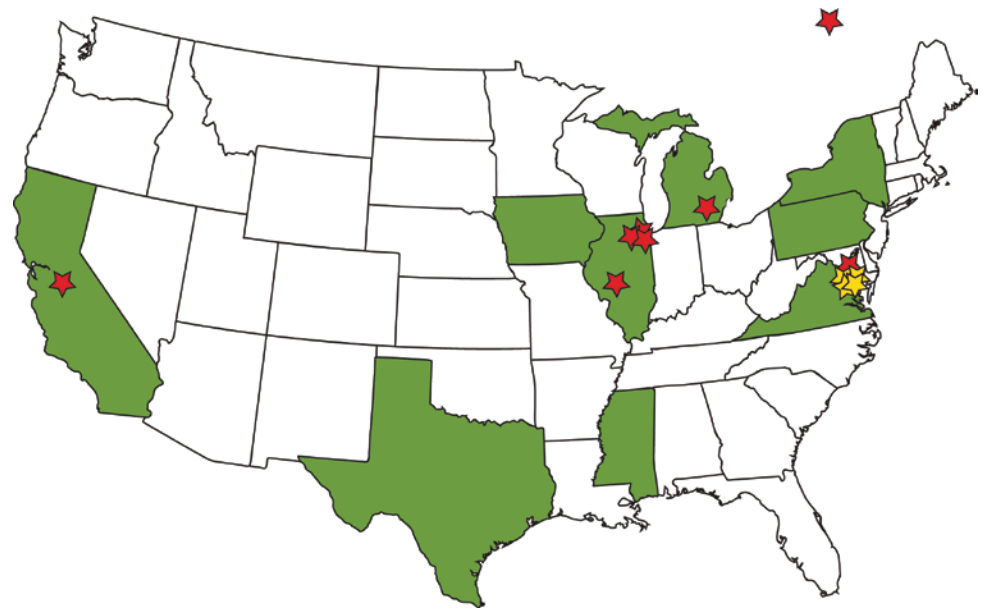
- FHWA competitive process
 - CP Tech Center selected as the Task Order contractor
- Need/value of a support group
 - Prevent it from being another plan on the shelf
 - Provide implementation information on completed research
 - Communications on current activities
 - Collaboration among agencies



Executive Committee

22 Members from

- DOT (9)
- Industry (9)
- FHWA (3)
- TRB (1)



Pooled Fund

- Pooled Fund # TPF-5(185) with FHWA, Iowa, Michigan, New York, Mississippi, Pennsylvania, and Virginia.
- Provides OSG support/direction
- Peter Kopac at Peter.Kopac@fhwa.dot.gov



What is OSG?

- Coordinate with Executive Committee for direction
- Set up Priority Track Leadership Teams
- Work with Funders to get priority projects into their processes
- Communications
 - Website
 - E-News (quarterly)



What OSG is Not

- It is not the Research Czar!
- It does not control research funding
- It does not provide research funding
- It does not write research proposals or establish funding priorities



Road Blocks

- Difficult to get DOTs and research matched between states or regions
- Difficult to get information on what research funders are looking to pursue
- Some DOTs work exclusively with in-state Universities
- Industry funding has decreased with the downturn in the economy



Progress to Date

- Executive Committee set Priority Tracks and added #13-Sustainability
 - Track 1: Mix Design
 - Track 2: Performance-Based Design
 - Track 3: Non-Destructive Testing/Intelligent Construction
 - Track 4: Surface Characteristics
 - Track 7: Overlays (Sub track)
 - Track 11: Business Systems
 - Track 13: Sustainability



Progress to Date (cont.)

- Track Leadership Teams formed for each Priority Track

e.g. Surface Characteristics Leadership Team

Tom Cackler, CP Tech Center *George Chang, Transtec*

Ted Ferragut, TDC Partners *John Ferris, Virginia Tech*

Gary Fick, Trinity *Jeff Seiders, TX DOT*

Bernard Izevbekhai, MN DOT *Steven Karamihas, U Michigan*

Kevin McGhee, VA DOT *Bob Orthmeyer, FHWA*

Linda Pierce, WA DOT *Robert Otto Rasmussen, Transtec*

John Roberts, ACPA-IGGA *Brian Schleppi, OH DOT*

Larry Scofield, ACPA *Mark Swanlund, FHWA*

Paul Wiegand, CP Tech Center

Larry Wisner, FHWA *Ron Guntert, G & Z*



Progress to Date (cont.)

Framing documents created by the Leadership Team for each priority track, e.g.: Non-Destructive Testing

- Complete and detailed study of sensor technologies
- Detailed study of types and protocols for wireless network tools
- Outreach and implementation programs.
- Further study of stringless paving operations
- Further study of Smart-Cure curing system
- Study ways to finance the development and evaluation of new systems

See www.cproadmap.org for other priority project listings



Progress To Date (Cont.)

- OSG Track Coordinators
 - Track 1: Mix Design - Peter Taylor.
 - Track 2: Performance-Based Design - Dale Harrington, Rob Rasmussen, Dan Dawood, and Jerod Gross.
 - Track 3: Non-destructive Testing/Intelligent Construction Systems - Paul Wiegand, Rob Rasmussen
 - Track 4: Surface Characteristics - Paul Wiegand, Rob Rasmussen
 - Track 7: Overlays - Dale Harrington, Paul Wiegand and Jerod Gross
 - Track 11: Business and Economics - Tom Cackler, Dale Harrington and Jerod Gross.
 - Track 13: Sustainability - Peter Taylor, Tom Van Dam



Progress to Date (cont.)

- Collaboration
 - Workshops at TRB
 - AFH 50 - Construction
 - AFN30 - Durability
 - AASHTO
 - Subcommittee on Materials
 - Two NCHRP project proposals in 2009
 - FHWA
 - Members on all Priority Track Leadership Teams



Next Steps

- Task Order #3 approved for activities through July, 2010
- Main Work Activities
 - Review research project priorities with Leadership Track Teams
 - Schedule meetings with DOTs, Industry and Academia
 - Communications and Outreach



DOT Input

DOT discusses:

- Recent research successes
- Current research program
- Research prioritization process
- Collaborative activities
- Research needs
- Technology Transfer needs



Researcher Input

University researchers discuss

- Current concrete pavement research
- Upcoming research projects
- Collaboration activities
- Areas of expertise
- Laboratory facilities



Industry Input

Industry representatives discuss

- Research needs
- Priorities
- Potential collaboration



Follow Up

- Information shared at each meeting will be posted on the CP Road Map website
- Project booklet highlighting the DOT's concrete pavement related research will be developed
- Local research activities and results will be highlighted in an electronic newsletter (published quarterly) as appropriate
- Contact list for each agency developed



The Future

- Through interaction, priority research projects and capabilities are identified
- Research collaboration can be established
- Relationships among all three groups are initiated
- Networking to discuss research activities is initiated




The Future (cont.)

- Publications


- MAP (Moving Advancements into Practice) Briefs

- MAP Briefs describe promising technologies that can be used now

- MAP Brief (7-1) describes the potential use of geotextile materials as interlayers in concrete pavement systems



shaping the future of concrete pavement



www.cproadmap.org

MAY 2009

ROAD MAP TRACK 7
High-Speed Concrete Pavement Rehabilitation and Construction

PRIMARY SOURCE
Nonwoven Geotextile Interlayers for Separating Cementitious Pavement Layers: German Practice and U.S. Field Trials, May 2009
Robert Otto Rosenowen and Sabrina I. Garber
The Transtec Group, Inc.
robert@transtecgroup.com
912-451-6233
<http://international.flwa.dot.gov/pubs/geotextile/index.cfm>

SPONSOR
Federal Highway Administration

MORE INFORMATION
Paul Wiseman
CP Roadmap Research Engineer
515-294-7882
pwiseman@ustatstate.edu

Moving Advancements into Practice (MAP) Briefs describe promising technologies that can be used now to enhance concrete paving practices. MAP Brief 7-1 provides information relevant to Task 7 of the CP Road Map, High-Speed Concrete Pavement Rehabilitation and Construction.

The Long-Term Plan for Concrete Pavement Research and Technology (CP Road Map) is a national research plan developed and jointly implemented by the concrete pavement stakeholder community. Publications and other support services are provided by the Operations Support Group and funded by TPFS (05).

MAP Brief 7-1 is available at: <http://www.cproadmap.org/publications/MAPBrief7-1.pdf>

“Moving Advancements into Practice”

MAP Brief 7-1:
Describing promising technologies that can be used now to enhance concrete paving practices

Use of Nonwoven Geotextiles as Interlayers in Concrete Pavement Systems

A Potential Solution
As part of a May 2006 scanning tour of long-life concrete pavements in Europe¹, participants examined German pavement systems. For 25 years, German engineers have been using nonwoven geotextile materials as interlayer material between new cement-treated bases and jointed concrete surface layers (figure 1). These pavement systems are of excellent quality and have long lives, despite carrying significant traffic loads.

German engineers also use nonwoven geotextiles as interlayer material on occasion when they construct unbonded concrete overlays. Before they place the geotextile interlayer, however, the existing pavement is either siltblasted or cracked-and-sealed, which is not common U.S. practice.

German engineers have steadily improved the following characteristics and functions of nonwoven geotextiles for use as interlayer materials:

The Need
In the United States, hot-mix asphalt (HMA) is the material traditionally used to separate cementitious pavement layers. In the case of unbonded concrete overlays on existing concrete pavements, a 1-in. thick HMA interlayer is typically required.

Although HMA interlayers provide adequate cushioning and layer separation, HMA can have some drawbacks.

For example, using HMA as an interlayer requires setting up two separate paving operations, one for concrete and one for asphalt, which can be expensive and time consuming.

Some HMA mixes do not provide adequate drainage and can be subject to stripping under heavy truck traffic.

The 1-in. typical HMA interlayer depth for unbonded overlays on concrete pavements can be problematic in tight vertical clearance situations, particularly in urban areas.

Because of these shortcomings of HMA interlayers, contractors and roadway agencies could benefit from an alternative to HMA.




Figure 1. Core from Germany showing nonwoven geotextile interlayer between surface concrete (left) and cement-treated base (right)

¹ In 2006, U.S. public and private sector representatives participated in a European scanning tour on long-life concrete pavements sponsored by the Federal Highway Administration, the American Association of State Highway Transportation Officials, and the National Cooperative Highway Research Program. The final report of the scanning tour can be found at <http://international.flwa.dot.gov/pubs/p07027/>

The Future (cont.)

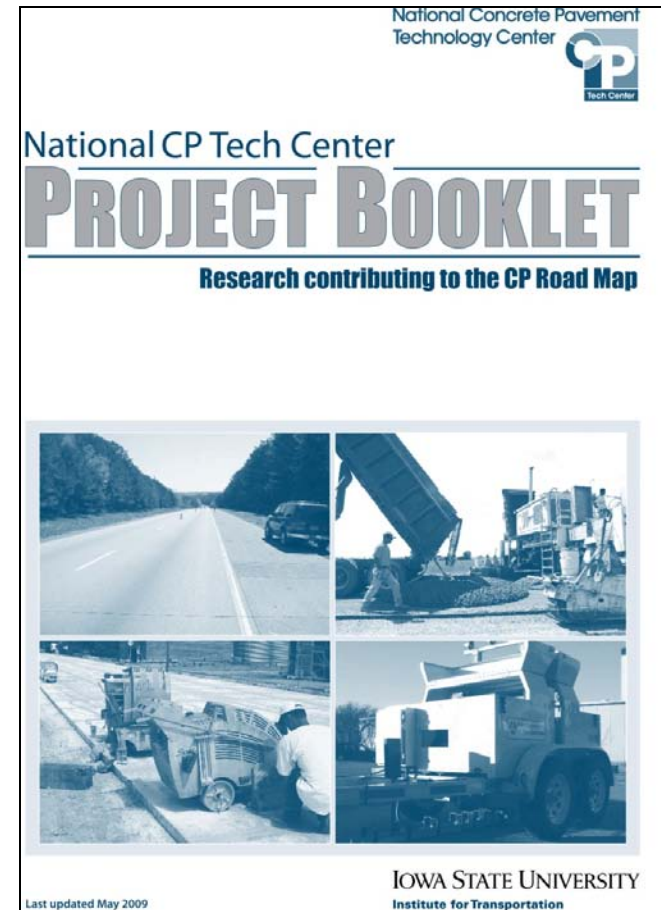
Map Briefs - Potential topics

- COMPASS
- Laying a Concrete Foundation
- Enhancing the Durability of Concrete Pavements Subjected to Liquid Chemical Deicers
- Enhancing Concrete Pavement Sustainability through Two-Lift Construction
- Sustainable Concrete Pavements
- Diamond Grinding



The Future (cont.)

- Publications
 - Project Booklet
 - Collect and publish information about States' recent and current research
 - To be distributed among all stakeholders
 - Booklets can call attention to opportunities for organizations to team up



The Future (cont.)

- Publications
 - Field Applications
 - Innovations developed by field staff or equipment manufacturers.



We Need your Help!

- Meeting Assistance
 - Contact you for names of who to involve in the meeting for the best representation
 - Provide “heads up” to those people
 - Encourage participation
 - Assist in preparing answers to your research input information
 - Assist in providing completed research information for project booklet



CONCRETE PAVEMENT ROAD MAP

THANK
YOU

Long-Term Plan for Concrete Pavement
Research and Technology—The Concrete
Pavement Road Map:
Volume I, Background and Summary

FHWA PUBLICATION NUMBER FHWA-HRT-05-052

SEPTEMBER 2005



Long-Term Plan for Concrete Pavement
Research and Technology—The Concrete
Pavement Road Map: Volume II, Tracks

FHWA PUBLICATION NUMBER HRT-05-053

SEPTEMBER 2005



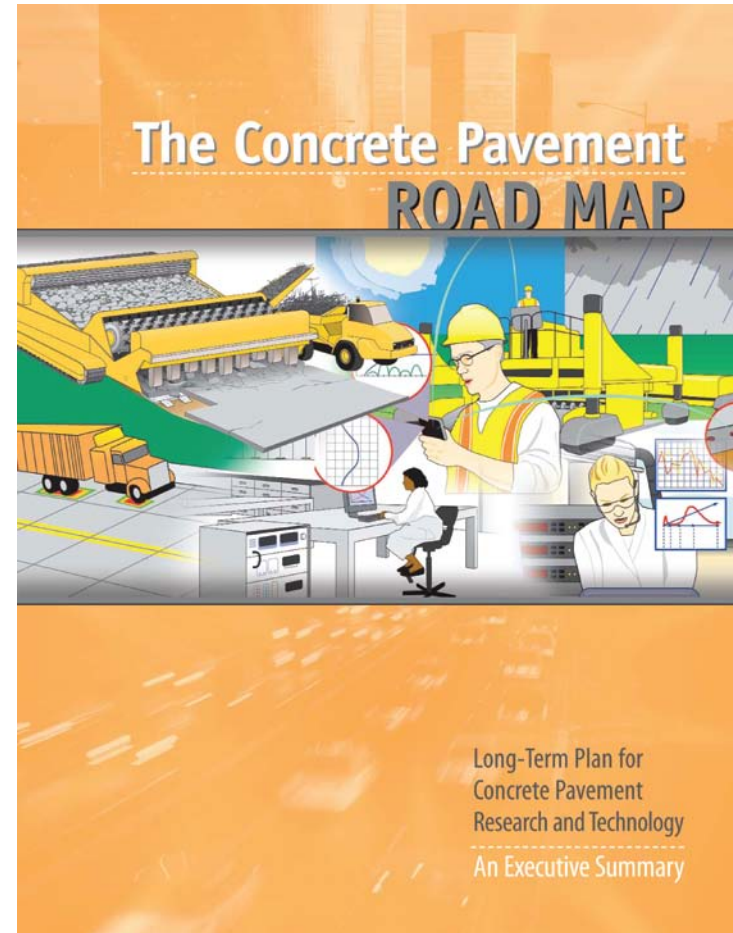
US Department of Transportation
Federal Highway Administration

Research, Development, and Technology
Turner-Fairbank Highway Research Center
6300 Georgetown Pike
McLean, VA 22101-2296



US Department of Transportation
Federal Highway Administration

Research, Development, and Technology
Turner-Fairbank Highway Research Center
6300 Georgetown Pike
McLean, VA 22101-2296



www.cproadmap.org