

National Concrete Pavement Technology Center

Concrete Overlay Technology (Field Application Program)



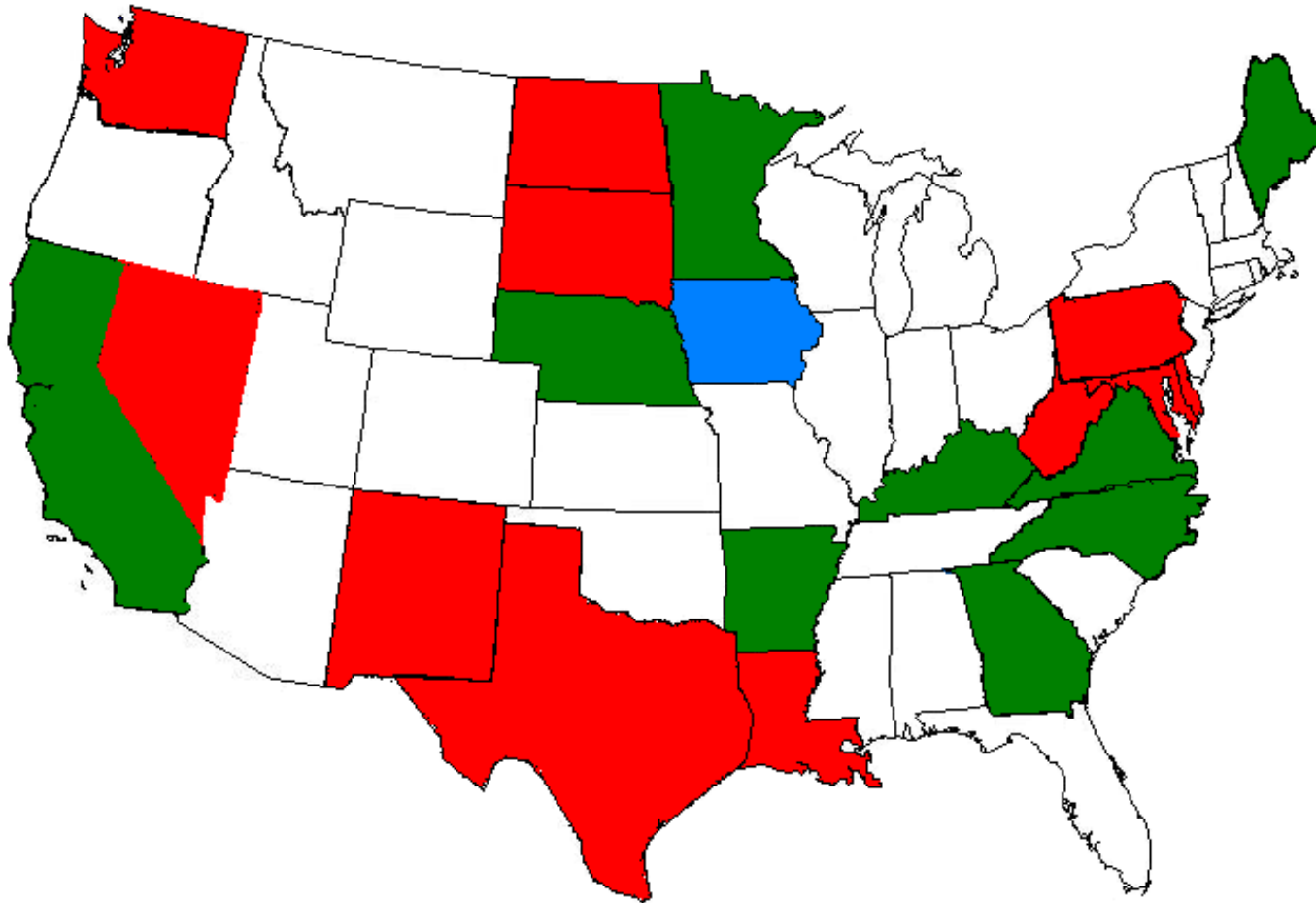
TTCC/NC2 Fall Meeting
St. Louis, MO
October 6-8, 2009

Concrete Overlay Field Application Program

The overall objective of the program is to increase the awareness, knowledge and strengthen confidence in concrete overlay applications among state DOTs, cities, counties, contractors, and engineering consultants



Concrete Overlay Field Application States



- 5 States – 6” Bonded Overlays over HMA (6’x6’ joints)
- 3 States – 6” Unbonded Overlays over Concrete (6’x6’ joints)
- 1 State – 7” Bonded CRCP over Plain Jointed Concrete

Joined the Program

1. Delaware
2. Louisiana (Delayed)
3. Maryland (Delayed)
4. New Mexico
5. Nevada
6. North Dakota
7. Pennsylvania
8. South Dakota
9. Texas
10. Washington
11. West Virginia

Interested States

1. Arkansas
2. California
3. Georgia
4. Kentucky
5. Maine
6. Minnesota
7. Nebraska
8. North Carolina
9. Virginia

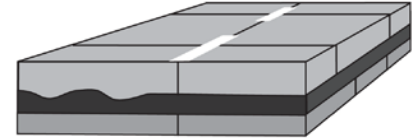
Iowa – 2009-2010
Field Application
Research Projects

Concrete Overlay Field Application Program – Phase I & II

- Phase I up to 6 states (2007/2009) & Phase II additional 12 states (2009/2011) will be guided through the concrete overlay:
 - selection
 - design
 - construction process.
- The participating states would belong to a consortium working together to:
 - Improve the project success
 - Minimize the risk of failure of concrete overlays.

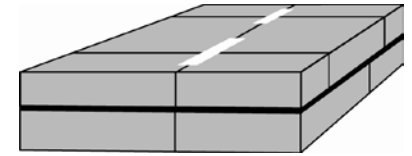


Expert Team



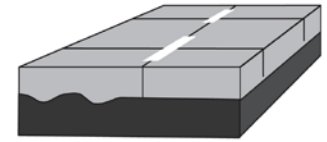
- Experts on concrete overlays will provide informational assistance to each participating state.
 - A team is assigned to a state to share their knowledge and experiences with:
 - Overlay Technology
 - Project Evaluation and Selection
 - Design Details
 - Construction Traffic Control Suggestions
 - Constructability Issues

Concrete Overlay Field Application Program



- Conduct initial field site review
- Walk through the evaluation process
- Walk through the design phase
- Attend pre-pour, pre-bid or pre-construction conference
- Attend during construction & may use mobile lab

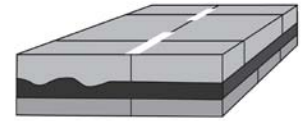
Project Reports



- For each state a project report will be developed that includes the mobile lab report
 - Site selection
 - Overlay type and design
 - Construction issues
 - Benefits and drawbacks
 - Recommendations
 - Lessons learned
- All State reports will be completed and also compiled into one report



Technical Working Group (TWG) Meetings



- Exchange of lessons learned between participating State DOT's
- Held first TWG conference call May 18, 2009 with nine states participating
 - Review uses & benefits
 - States share evaluation criteria and overlay selection process
 - States share their issues, solutions and lessons learned
 - Suggestions on update of Overlay Guide
 - Overall information sharing among states



Overlay Program Impacts

State	Route	Length	Overlay	Sq. Yds.
North Dakota	Hwy 11	8 miles	5" Bonded	77,500
New York Port Authority	JFK Airport		18" Unbonded	323,822
Minnesota	8 State Routes		Varies from 5" to 10"	1,305,000
Iowa	37 state & county projects	190.13 miles	Various	2,822,387
South Dakota	Vermillion Airport		7" Unbonded	34,000
South Dakota	SD 50	2.5 miles	7" Unbonded	40,000
Michigan	6 City Projects		4" Unbonded	205,000
Total				4,807,709



Plan for Deploying Concrete Overlay Technology

- | <u>Develop Technical Resources:</u> | <u>Lead Organization</u> |
|--|--------------------------|
| - Overlay Design Procedures | CP Tech Center |
| - National Data Base | ACPA |
| - Research on: | CP Tech Center |
| ▪ Paving control | |
| ▪ Traffic management | |
| ▪ Separation layer | |
| ▪ Opening strength | |
| - Technology Brief on “value” of concrete overlays | CP Tech Center |
| - Develop video of example projects | CP Tech Center |
| - Develop interviews video of State DOT who have completed overlays and will tell their story | CP Tech Center |
| - Develop Tech Brief of current overlay prices throughout country | CP Tech Center |



Plan for Deploying Concrete Overlay Technology

- Provide Technical Workshop: Lead Organization
 - Training through CPTP & CP Tech Center FHWA
- Introduce the Technology to States
Previously
 - Provide financial incentive (**consider changing to support travel**) FHWA
 - Missouri Open House on geotextiles FHWA/Mo.
 - Iowa Open House ICPA



Plan for Deploying Concrete Overlay Technology

- | <u>Proposed</u> | <u>Lead Organization</u> |
|---|--------------------------|
| • <u>Introduce the Technology to States</u> | |
| – Hold 2 national open houses | FHWA/CP Tech |
| – Pennsylvania interested in helping sponsor a concrete overlay open house next spring | CP Tech/FHWA |
| – Targeted visits with State management | FHWA/CP Tech |
| – Regional technology sharing with travel support | FHWA/CP Tech |



Partnering Training Programs National Concrete Pavement Technology Center

TTCC/NC2 Fall Meeting
St. Louis, MO
October 6-8, 2009



CP Tech Center Coordination on Training

- Working with NHI/ TC³ to help provide concrete Providing National Training on:
 - Concrete preservation, similar to the IMCP efforts
 - Concrete overlays and encouraging state demonstration projects
 - Surface Characteristics
 - pavement technology to their efforts
- Working with FHWA on a National Training Calendar
- Working with ACPA on the distribution of IMCP CDs



Transportation Curriculum Coordination Council (TC³)

- Supported by FHWA and State Pool Funds
- Works with National Highway Institute to Develop Training on Construction, Materials, Maintenance, Safety, and Employee Development
- Establish Free Training Programs for Specific Courses
- The Transportation Pool Fund Solicitation No. 1205





TCCC CONSTRUCTION OF PORTLAND CEMENT CONCRETE PAVEMENTS

Web-based Training

Improving and maintaining the quality of concrete is an important aspect of keeping pavements safe and long lasting. This training provides participants with an overview of the entire Portland cement concrete (PCC) paving and restoration process: setting forms, mixing, hauling, curing, and applicable repair techniques. This training is presented in several modules:

- Construction Quality
- PCC Production Overview
- Slipform Paving
- Fixed Form Paving
- Pavement Curing, Sawing, and Joint Sealing Operations
- Concrete Pavement Restoration

This self-paced, Web-based training is designed for participants to progress at their own pace. It focuses on the proper methods for construction of concrete paving and pavement restoration techniques with an emphasis on cause and effect.

OUTCOMES: Upon completion of the series, participants will be able to:

- Describe the differences between truck-mixed and ready-mixed concrete
- Identify factors in production and paving operations that contribute to achieving a smooth ride
- Describe the differences between slip-form and fixed-form paving
- Identify the factors that impact saw timing and crack control
- Recognize the importance and key factors in placing joint sealant materials
- Identify the components of concrete pavement restoration application and construction techniques
- Describe the purpose and appropriate use of full depth and partial depth repairs
- Identify critical factors for curing and sawing operations that affect pavement performance
- Describe the purpose of grinding and dowel bar retrofit
- Identify applicable repair techniques for concrete pavement restoration
- Describe purpose of slab stabilization and joint and crack resealing

TARGET AUDIENCE: This training is designed for contractors, technicians, and inspectors who are involved in daily pavement operations for the placement and restoration of PCC pavements. Participants should have some working knowledge of concrete pavement construction.

TRAINING LEVEL: Intermediate

LENGTH: 10 hours (varies based on training completed) **CEU:** 0 Units **FEE:** FREE

REGISTRATION: Register online at www.nhi.fhwa.dot.gov

NHI TRAINING TEAM: (703) 235-0534 • E-mail nhitraining@dot.gov

SUBJECT MATTER CONTACT: Chris Newman • (202) 366-2023 • E-mail christopher.newman@dot.gov

NHI TRAINING PROGRAM MANAGER: Martha Ross • (703) 235-0524 • E-mail marty.ross@dot.gov



COMING SOON!

FHWA-NHI-134074 TCCC Bolted Connections

Listing of Courses Available

- Basic Materials for Highway and Structure Construction and Maintenance
- **Portland Cement Concrete Paving Inspection**
- Ethics Awareness for the Transportation Industry
- Basic Construction and Maintenance Documentation - Improving the Daily Diary
- Math Module
- **Hardened Concrete Properties - Durability**
- GPS Technology
- **Construction of Portland Cement Concrete Pavements**
- **Portland Cement Concrete Paving Inspection**
- **Concrete Series**
- Plan Reading



Listing of Courses Available, Cont.

- **Fundamentals of Materials Used for Concrete Pavements**
- **Incompatibility in Concrete Pavement Systems**
- **Mix Design Principles**
- **Early Age Cracking**
- **Basics of Cement Hydration**
- **Fresh Properties**
- **Construction of Concrete Pavements**
- **QCQA for Concrete Pavements**
- **Design of Pavement**
- **Troubleshooting for Concrete Pavements**
- **Bolted Connections**



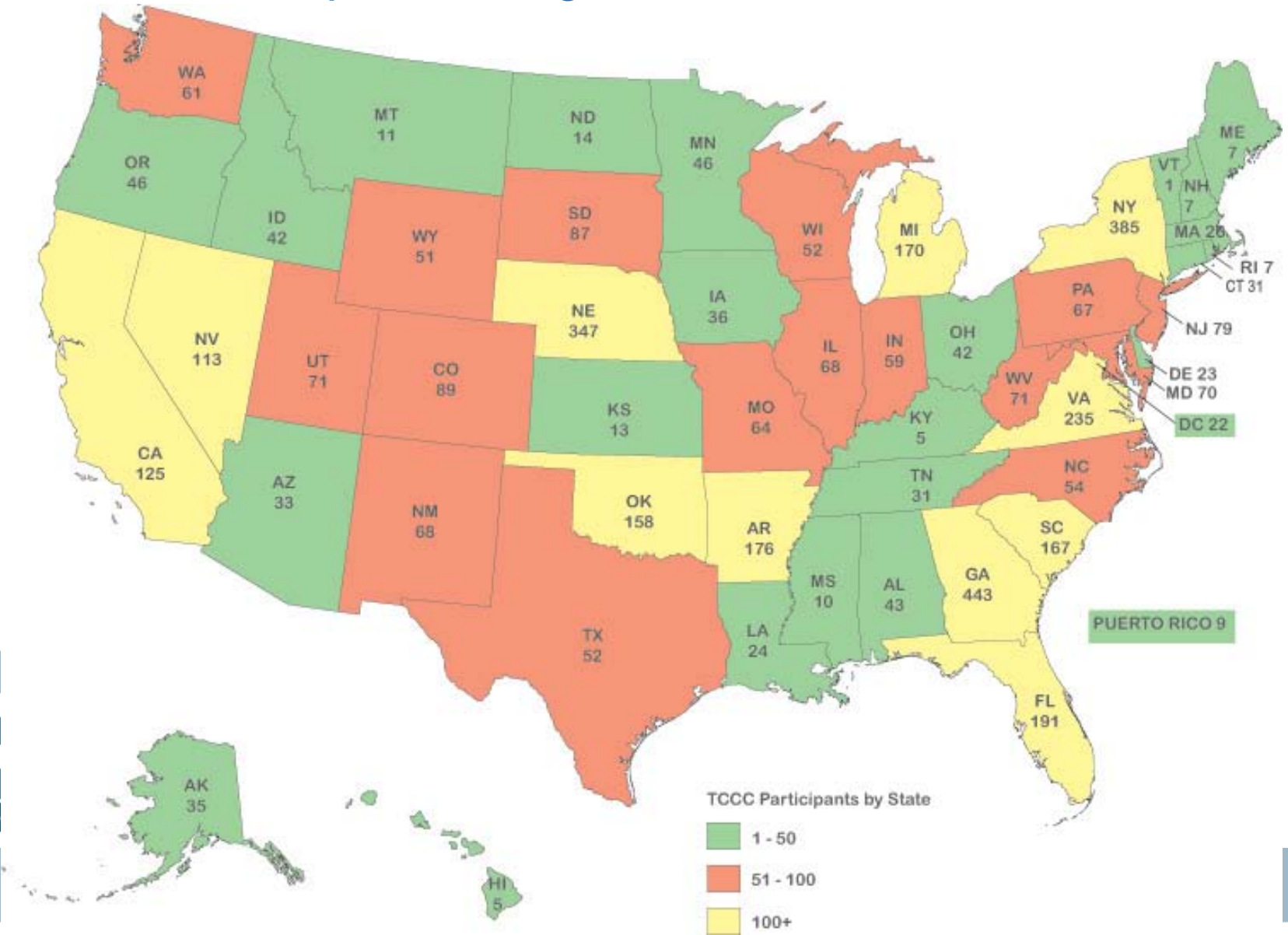
Listing of Courses Available, Cont.

Concrete Pavement Preservation

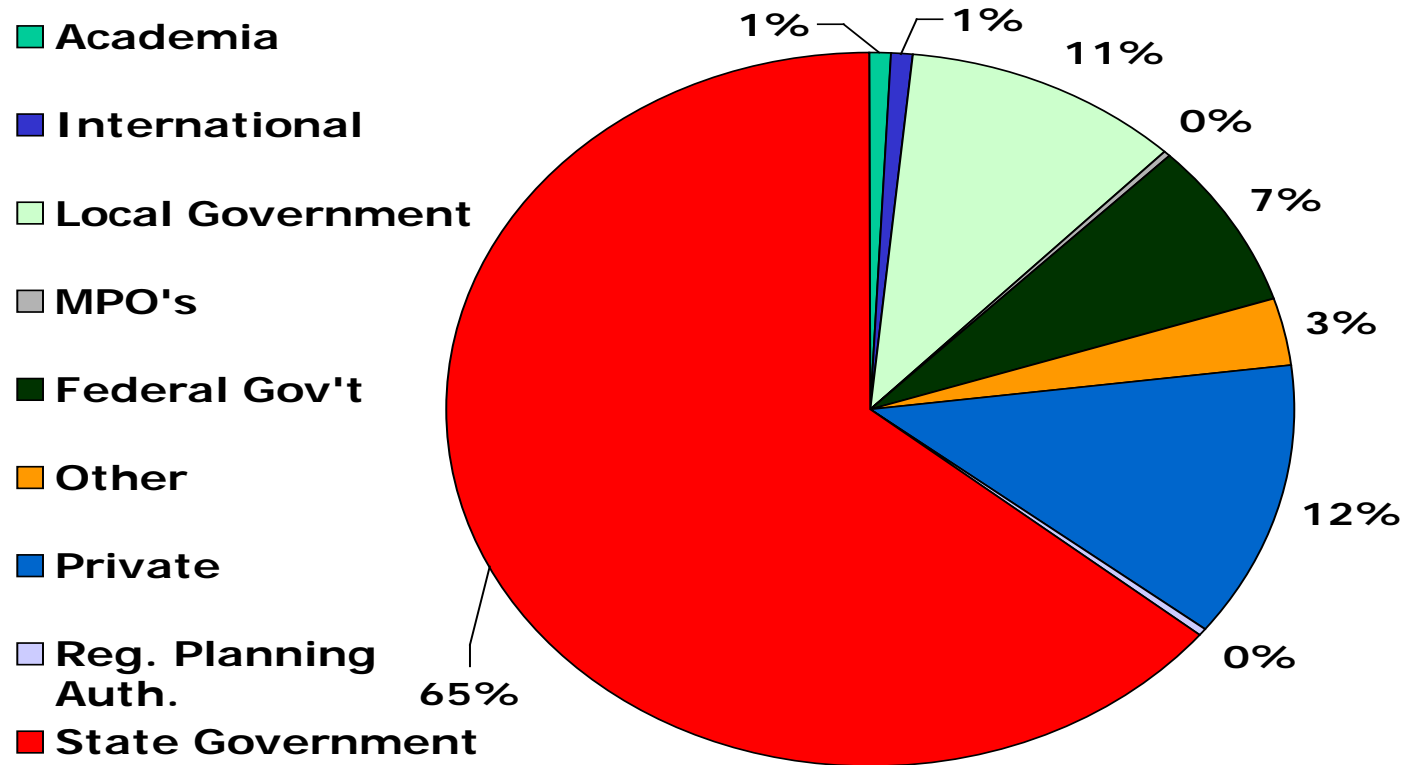
- **Preventive Maintenance and Pavement Preservation Concepts**
- **Concrete Pavement Evaluation**
- **Slab Stabilization and Slab Jacking**
- **Partial-Depth Repairs**
- **Full-Depth Repairs**
- **Retrofitted Edge Drains**
- **Load Transfer Restoration**
- **Diamond Grinding and Grooving**
- **Joint Resealing and Crack Sealing**
- **Strategy Selection**



NHI Website Training Numbers – Participants by State (over 8300)

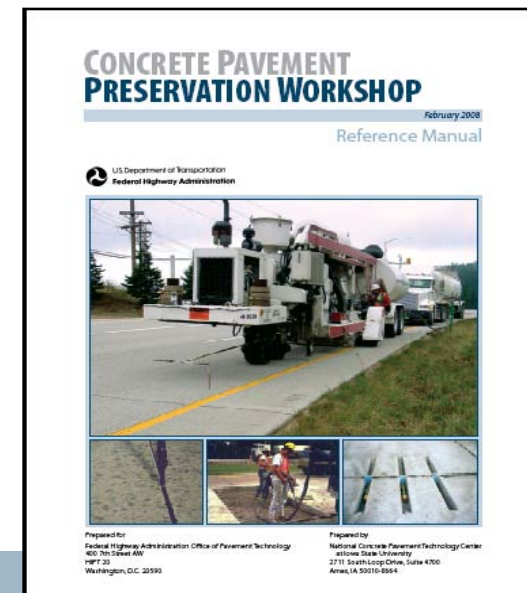
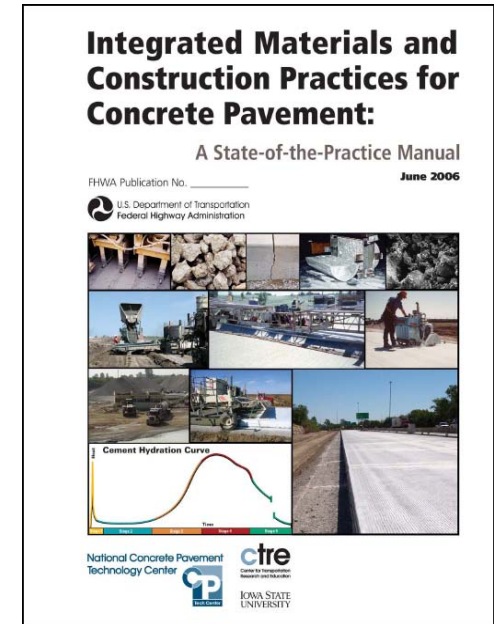


NHI Website Training Numbers - Participants by Industry Type



Establish an Interactive, Online, Training on Demand Program

- Training on Demand modules have been developed and made available on NHI and soon will be available on the CP Tech Center websites
- Users participate in online training at their convenience using Computer Based Interactive Training (CBIT)
- Users can access any one of the training modules, listen to audio and visual presentations & answer questions at the end of the modules



Training on Demand Module

Early Age Cracking Module

<E:\FHWA-NHI-134095 Early Age Cracking\index.htm>



Ways to Access the TCCC Web-Based Training

- Through the NHI Website
 - Register online www.nhi.fhwa.dot.gov
 - Complete the profile to create NHI user ID and password
 - Log in to the NHI Website to add a course to your shopping cart
 - Proceed to Checkout
 - You will receive an e-mail with detailed instructions for accessing the web-based training



Ways to Access the TCCC Web-Based Training

- Become a Partner State
 - Contact TCCC Project Manager (Chris Anderson - Christie.Anderson@dot.iowa.gov)
 - Complete a short questionnaire about your LMS, Intranet needs and contact information
 - TCCC will conduct a pilot project with you to verify compatibility
 - Select from over 30 existing TCCC courses
 - Courses also available on CD
 - You will be sent all materials for your LMS
 - Send TCCC quarterly participation numbers



Transportation Curriculum Coordination Council (TC³)

- Supported by FHWA and State Pool Funds
- Works with National Highway Institute to Develop Training on Construction, Materials, Maintenance, Safety, and Employee Development
- Establish Free Training Programs for Specific Courses
- The Transportation Pool Fund Solicitation No. 1205



THANK YOU!

Dale S. Harrington
Representing the National Concrete
Pavement Technology Center
dharrington@snyder-associates.com
515-964-2020

