

**COURSE NUMBER**

FHWA-NHI-131023

COURSE TITLE**Highway Materials Engineering Academy**

NHI offers this annual academy as a series of six courses. Academy participation requires that potential participants complete an application and be approved for attendance. Please contact Michael.Rafalowski@fhwa.dot.gov for more information.

This course provides applied knowledge in highway engineering materials and quality control. Coverage includes:

1. Materials control and acceptance-quality assurance
2. Soil and foundations
3. Steels, welding, and coatings
4. Aggregates and unbound bases
5. Asphalt materials and paving mixtures
6. Portland cement concrete

OUTCOMES

Upon completion of the training, participants will be able to:

- Identify and describe the characteristics and engineering properties of the materials utilized in highways
- Identify and describe the selection and important design properties of highway materials
- Describe the important steps and considerations in the mix design procedures
- Demonstrate an understanding of materials quality assurance and be able to develop an effective materials acceptance plan
- Describe the field and laboratory testing procedures and the significance of test results, along with their relationship to laboratory designs
- Describe the issues and trends of importance to State DOT materials engineering personnel

TARGET AUDIENCE

State DOT engineers who require a basic knowledge of highway materials. The typical participant will have an undergraduate degree in engineering or equivalent engineering experience in the highway field. These individuals typically will be staff professionals who either have been assigned or have the potential to be assigned to responsible positions in the highway materials field, such as district or regional materials engineer, or an engineer in the materials central office operations.

A prospective participant must have a solid academic background in mathematics and science.

TRAINING LEVEL: Intermediate

FEE: Check the NHI Web site for current pricing

LENGTH: 30.0 DAYS (CEU: 16.0 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Michael Rafalowski • (202) 366-1571 • michael.rafalowski@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov





COURSE NUMBER

FHWA-NHI-131026

COURSE TITLE

Pavement Subsurface Drainage Design

Pavement Subsurface Drainage Design is a 2-day course aimed at teaching those involved in highway pavement design and construction how to design, build, and maintain subsurface drainage systems for new, existing, and reconstructed pavements. The information presented in this course about pavement subsurface drainage design is reinforced by hands-on training with the "Drainage Requirements in Pavements", Version 2.0 (DRIP2) Windows-based computer software. Workshop topics for this course cover an overview of pavement subsurface drainage, drainage considerations, drainage type selection, hydraulic design factors, permeable base systems, separator layers, longitudinal edgedrain design and construction, retrofit edgedrain design and construction, maintenance of subsurface drainage systems, and performance monitoring.



OUTCOMES

Upon completion of the training, participants will be able to:

- Design subsurface drainage systems for new and existing portland cement concrete (PCC) and asphalt concrete (AC) pavements
- Assist in developing plans, specifications, and estimates for subsurface drainage system projects
- Develop monitoring and maintenance programs for pavements with subsurface drainage systems

TARGET AUDIENCE

The course is directed toward Federal, State, and local highway engineers, designers, and personnel involved in hydraulic design, materials control, pavements design, research, construction, and maintenance of pavement subsurface drainage systems.

TRAINING LEVEL: Intermediate

FEE: Check the NHI Web site for current pricing

LENGTH: 2.0 DAYS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Angel Correa • (404) 562-3907 • angel.correa@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



Private sector transportation partners are encouraged to host NHI training. For instructions on how to host a course, please see page 8 or visit the NHI Web site for more information.



COURSE NUMBER

FHWA-NHI-131032

COURSE TITLE

TCCC Hot-Mix Asphalt Construction

Updated in 2002, this training resulted from a partnership between the American Association of State Highway and Transportation Officials (AASHTO), the Transportation Curriculum Council (TCCC), Federal Highway Administration (FHWA), and hot-mix asphalt (HMA) industry. It was developed through the cooperative efforts of the Joint AASHTO/FHWA/Industry Training Committee on Asphalt. It combines lectures and problem-solving workshop sessions to provide participants with a working knowledge of the hot-mix asphalt construction process and equipment. The course is designed to help participants understand the effect of construction actions on the final product. This program reviews the entire HMA construction process beginning with the delivery of the HMA to the job site, through lay down and compaction, and concluding with quality control/quality assurance (QC/QA) of the completed pavement. To emphasize recommended good practice in HMA construction, various exercises are used, including troubleshooting typical field problems. The course concludes with an examination which reviews the key elements of HMA construction.

Participants are required to bring a calculator.

OUTCOMES

Upon completion of the training, participants will be able to:

- Describe the purpose of project documents, pre-construction and pre-paving conferences, and cooperative communications on the job
- List the steps involved in preparing bases and existing pavements for overlays
- Select correct patching materials and placement techniques for pavement repair
- Define a proper HMA delivery process to the job site
- Explain the effect of the various components of a HMA paving machine on the finished mat
- Describe how to make a good longitudinal or transverse joint
- Identify QA techniques that apply to the HMA construction

TARGET AUDIENCE

This course is designed for an audience that contains 50 percent contractor supervisory personnel and 50 percent Federal, State, and local highway agency construction engineers and field inspectors involved in the planning, construction, and review of HMA placement projects. It is important that such a mix of participants is present.

TRAINING LEVEL: Intermediate

FEE: \$355 Per Person

LENGTH: 2.5 DAYS (CEU: 1.5 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Matthew Corrigan • (202) 366-1549 • matthew.corrigan@fhwa.dot.gov

Subject Matter Contact: Chris Newman • (202) 366-2023 • christopher.newman@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov

CHECK OUT THE FOLLOWING NHI TCCC TRAININGS

For more information about TCCC see the Real Solutions article on page XV.

Course Number	Title	Type	Page	Training Level
FHWA-NHI-131032	TCCC Hot-Mix Asphalt Construction	ILT	38	Intermediate
FHWA-NHI-131044	TCCC Hot-Mix Asphalt Production Facilities	ILT	40	Intermediate
FHWA-NHI-131045A	TCCC Hot-Mix Asphalt Materials, Characteristics, and Control	ILT	41	Intermediate
FHWA-NHI-131103A	TCCC Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments	ILT	48	Intermediate
FHWA-NHI-131103B	TCCC Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments	ILT	49	Intermediate
FHWA-NHI-131103C	TCCC Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments	ILT	50	Intermediate
FHWA-NHI-131104	TCCC Pavement Preservation: Integrating Pavement Preservation Practices and Pavement Management	ILT	51	Intermediate
FHWA-NHI-131107	TCCC Principles and Practices for Enhanced Maintenance Management Systems	ILT	54	Intermediate
FHWA-NHI-131110	TCCC Pavement Preservation Treatment Construction	WBT	57	Intermediate
FHWA-NHI-131114	TCCC Pavement Preservation: Optimal Timing of Pavement Preservation Treatments	WCT	59	Intermediate
FHWA=NHI-131115	TCCC Pavement Preservation: Preventive Maintenance Treatment, Timing, and Selection	ILT	60	Beginner
FHWA-NHI-131117	TCCC Basic Materials for Highway and Structure Construction and Maintenance	WBT	63	Beginner
FHWA-NHI-134001	TCCC Principles of Writing Highway Construction Specifications (2-Day)	ILT	105	Beginner
FHWA-NHI-134001A	TCCC Principles of Writing Highway Construction Specifications (3-Day)	ILT	106	Beginner
FHWA-NHI-134001B	TCCC Principles of Writing Highway Construction Specifications (4-Day)	ILT	107	Beginner
FHWA-NHI-134029	TCCC Bridge Maintenance Training	ILT	110	Intermediate
FHWA-NHI-134037A	TCCC Managing Highway Contract Claims: Analysis and Avoidance	ILT	111	Intermediate
FHWA-NHI-134042	TCCC Materials Control and Acceptance - Quality Assurance (4.5-Day)	ILT	113	Accomplished
FHWA-NHI-134042A	TCCC Materials Control and Acceptance - Quality Assurance (2-Day)	ILT	114	Accomplished
FHWA-NHI-134049	TCCC Use of Critical Path Method (CPM) for Estimating, Scheduling and Timely Completion	ILT	115	Beginner
FHWA-NHI-134055	TCCC Construction Inspection, Workmanship, and Quality	ILT	116	Intermediate
FHWA-NHI-134062	TCCC Bridge Evaluation for Rehabilitation Design Considerations (4.5-Day)	ILT	122	Intermediate
FHWA-NHI-134062A	TCCC Bridge Evaluation for Rehabilitation Design Considerations (5-Day)	ILT	123	Intermediate
FHWA-NHI-134069	TCCC Ethics Awareness for the Transportation Industry	WBT	129	Beginner
FHWA-NHI-134071	TCCC Basic Construction and Maintenance Documentation – Improving the Daily Diary	WBT	130	Beginner



COURSE NUMBER

FHWA-NHI-131044

COURSE TITLE

TCCC Hot-Mix Asphalt Production Facilities

This training course combines lectures and workshop sessions to provide participants with a working knowledge of hot-mix asphalt (HMA) production facilities. The training program is the result of a partnership between the American Association of State Highway and Transportation Officials (AASHTO), the Transportation Curriculum Coordination Council (TCCC), the Federal Highway Administration (FHWA), and the HMA Industry. This course covers the entire HMA production facilities process and addresses the following topics: types of plants, drying and heating systems, emission control systems, feeders and conveyor systems, storage systems, plant operation and maintenance, quality control, and quality assurance. It concludes with an examination that emphasizes the key elements of HMA production facilities.

Participants are required to bring a calculator.

OUTCOMES

Upon completion of the training, participants will be able to:

- Define the roles and responsibilities of each person at the HMA production facility
- Identify the different types of plants, the main components of each, and how these components interact
- Describe the materials control process and its effect on the quality of the final product
- Differentiate between acceptable and non-acceptable methods of plant operation and maintenance
- Explain the operation of the exhaust fan and emission control systems and discuss their importance
- Identify potential problems that may occur during production and develop specific solutions to those problems

TARGET AUDIENCE

This course is designed for project engineers, lead inspectors, plant supervisors, and all others involved with the HMA plant production. This course is designed for an audience that is a mix of contractor/producer personnel along with Federal, State, and local highway agency personnel.

TRAINING LEVEL: Intermediate

FEE: \$320 Per Person

LENGTH: 2.0 DAYS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Matthew Corrigan • (202) 366-1549 • matthew.corrigan@fhwa.dot.gov

Subject Matter Contact: Chris Newman • (202) 366-2023 • christopher.newman@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov

**COURSE NUMBER**

FHWA-NHI-131045

COURSE TITLE**TCCC Hot-Mix Asphalt Materials, Characteristics, and Control**

This training course is the result of a partnership between the American Association of State Highway and Transportation Officials (AASHTO), Federal Highway Association (FHWA), and hot-mix asphalt (HMA) industry. It was developed through the cooperative efforts of the Joint AASHTO/FHWA/Industry Committee on Asphalt. It combines lectures and problem-solving workshop sessions to provide participants with a working knowledge of hot-mix asphalt materials, their characteristics, and controls. The course focuses on two areas. The first provides technical information on the material properties of HMA, the processes used to measure these properties, and the effect that these properties have on the final, compacted pavement. The second involves achieving these properties in the field, with discussions on quality management and analyzing the impact of segregation and density on HMA pavement performance. The course concludes with an examination that reviews the key elements of HMA materials, characteristics, and control.

OUTCOMES

Upon completion of the training, participants will be able to:

- Identify the various and desirable properties of asphalt, aggregates, and mixtures
- Describe the proper procedures for handling, storing, sampling, and testing the materials
- Distinguish between desirable and undesirable results of tests used for controlling and analyzing the quality of HMA
- Select the processes and procedures that assure the quality of HMA pavements

TARGET AUDIENCE

Contractor personnel at both the production facility and on the pavement lay down site, owner/agency personnel involved with the inspection of HMA pavement construction, and others directly involved in the production and construction of hot-mix asphalt pavements. The course is designed for an audience that is a mix of contractor personnel and Federal, State, and local highway agency personnel.

TRAINING LEVEL: Intermediate

FEE: \$420 Per Person

LENGTH: 3.0 DAYS (CEU: 1.8 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Matthew Corrigan • (202) 366-1549 • matthew.corrigan@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



Interested in best practice tips for hosting an NHI session?

Download the most current Host/Local Coordinator checklist from the NHI Web site at www.nhi.fhwa.dot.gov



COURSE NUMBER

FHWA-NHI-131050

COURSE TITLE

Asphalt Pavement Recycling Technologies

This course is the result of a joint effort between the Federal Highway Administration (FHWA), the Asphalt Recycling and Reclamation Association (ARRA), and the National Center for Asphalt Technology (NCAT). The course provides in-depth technical knowledge of several recycling methods. It also offers training related to performance of recycled mixes, legislation/specification limits, selection of pavement for recycling and recycling strategies, economics of recycling, and structural design of recycled pavements. The ARRA publication "Basic Asphalt Recycling Manual" is used as a reference in this course.

OUTCOMES

Upon completion of the training, participants will be able to:

- Describe the various methods (hot and cold) of recycling pavements
- Determine when asphalt recycling is a viable pavement rehabilitation alternative
- Select the most appropriate asphalt recycling method or technique
- Identify materials and mix design for recycled pavements
- Specify equipment, construction methods, and QC/QA involved in recycling
- Demonstrate design methods for hot and cold recycled pavements

TARGET AUDIENCE

This course is intended for State and local highway officials, administrators, pavement design engineers and technicians, and construction engineers and inspectors involved in the recycling of asphalt pavements.

TRAINING LEVEL: Intermediate

FEE: \$320 Per Person

LENGTH: 2.0 DAYS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Jason Harrington • (202) 366-1576 • jason.harrington@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



COURSE NUMBER

FHWA-NHI-131060

COURSE TITLE

Concrete Pavement Design Details and Construction Practices

This course provides participants with current guidelines on design and construction details for concrete pavements. Topics include important concrete pavement design details, including subgrade preparation, base selection, drainage design, thickness design, joint design, and shoulder characterization. The course explains how to select the proper details to enhance structural performance. Emphasis is given to jointed plain concrete pavements (JPCP), although the course includes instruction on jointed reinforced concrete pavements (JRCP) and continuously reinforced concrete pavements (CRCP).

OUTCOMES

Upon completion of the training, participants will be able to:

- Recognize the effect of critical concrete pavement design details on overall concrete pavement performance
- Identify critical construction and maintenance practices that impact performance
- Select appropriate concrete pavement design details to enhance the performance of the pavement for a specific design condition

TARGET AUDIENCE

Highway engineers who are responsible for the design and construction of better-performing, longer-lasting concrete pavements.

TRAINING LEVEL: Intermediate

FEE: \$320 Per Person

LENGTH: 2.0 DAYS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Sam Tyson • (202) 366-1326 • sam.tyson@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



Need an LTAP/TTAP contact? See the LTAP/TTAP contact list located on page 267.



COURSE NUMBER

FHWA-NHI-131062

COURSE TITLE

Portland Cement Concrete Pavement Evaluation and Rehabilitation

This course will present state-of-the-practice and state-of-the-art techniques to identify the causes and patterns of different types of pavement distress, and techniques for rehabilitation selection, design, and construction that can be applied for those various types of distress.

OUTCOMES

Upon completion of the training, participants will be able to:

- Describe the typical behavior and performance of portland cement concrete (PCC) pavements
- Identify common PCC pavement distress types and be able to describe their mechanisms
- Describe key components of a thorough project-level evaluation
- Describe the variety of rehabilitation techniques available for PCC pavements
- Identify feasible rehabilitation techniques for existing PCC pavements
- Describe a process for selecting the preferred rehabilitation alternative for a given pavement

TARGET AUDIENCE

FHWA, State, and local highway engineers in design, construction, and maintenance who are involved in the application of pavement rehabilitation techniques.

TRAINING LEVEL: Intermediate

FEE: \$355 Per Person

LENGTH: 2.5 DAYS (CEU: 1.5 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Sam Tyson • (202) 366-1326 • sam.tyson@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



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COURSE NUMBER

FHWA-NHI-131063

COURSE TITLE

Hot-Mix Asphalt Pavement Evaluation and Rehabilitation

The course presents state-of-the-practice and state-of-the-art techniques to identify the causes and patterns of different types of pavement distress, and techniques for rehabilitation selection, design, and construction that can be applied to those various types of distress.

OUTCOMES

Upon completion of the training, participants will be able to:

- Describe typical behavior and performance of hot-mix asphalt (HMA) pavements
- Identify common types of HMA pavements distress and be able to describe their mechanisms
- Describe key components of a thorough project-level evaluation
- Describe the variety of rehabilitation techniques available and state their deficiencies
- Identify feasible rehabilitation techniques for HMA pavements exhibiting different distresses and conditions
- Develop the process for selecting the preferred rehabilitation alternative

TARGET AUDIENCE

FHWA, State, and local highway engineers in design, construction, and maintenance who are involved in the application of pavement rehabilitation techniques.

TRAINING LEVEL: Beginner

FEE: \$355 Per Person

LENGTH: 2.5 DAYS (CEU: 1.5 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Jason Harrington • (202) 366-1576 • jason.harrington@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



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COURSE NUMBER

FHWA-NHI-131064

COURSE TITLE

Introduction to Mechanistic Design for New and Rehabilitated Pavements

The sponsoring agency must provide 15 computers with the following minimum requirements: Intel Pentium Processor, 8 MB RAM, 50 MB hard disk space, CD-ROM drive, Windows 95/NT 4.0 (or later version), VGA graphics card, and Microsoft Excel 5.0 (or later version). Some of the requirements are flexible and are a function of the software typically used in the class. Additional details can be obtained from NHI.

This course presents the theory and application of the most comprehensive, up-to-date mechanistic design concepts. The general framework of the mechanistic-empirical design procedure and the individual components are discussed in detail. The course includes several hands-on exercises pertaining to materials characterization, structural response calculations, pavement performance prediction, and mechanistic-empirical pavement design. These exercises use real-world problems and exercises that enhance future application of this design methodology. Some of the exercises involve computations using public-domain pavement software and simple spreadsheet-based programs, and all are customized to each course based on project data provided by the host agency.

The course also discusses ongoing research and the effects that current research activities might have on the state of the practice. Throughout the class, particular emphasis is placed on the mechanistic-empirical design concepts used in the Mechanistic-Empirical Pavement Design Guide (NCHRP Project 1-37A) and those that form the foundation of the Superpave pavement performance prediction models. The course will include detailed discussions about the data needs (materials, traffic, environment, etc.) for local/regional calibration of the Mechanistic-Empirical Pavement Design Guide and what steps agencies should begin to take before the guide is adopted and used on a day-to-day basis for design.

OUTCOMES

Upon completion of the training, participants will be able to:

- List advantages of using M-E design
- Calculate structural responses for flexible, rigid, and overlaid pavements
- List major inputs to a mechanistic design procedure and how to obtain them
- Explain sensitivity of layer thickness, material properties, joint spacing, etc., to structural responses
- Back calculate layer moduli for flexible pavements
- Explain how layer thickness, material properties, joint spacing, etc., affect pavement distresses
- Construct a flowchart/outline for M-E design of flexible, rigid, and overlaid pavements

TARGET AUDIENCE

Pavement design engineers, materials engineers, and pavement management practitioners from government transportation agencies and the paving industry, and design consultants.

TRAINING LEVEL: Beginner

FEE: Check the NHI Web site for current pricing

LENGTH: 4.0 DAYS (CEU: 2.4 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Gary Crawford • (202) 366-1286 • gary.crawford@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



COURSE NUMBER

FHWA-NHI-131100

COURSE TITLE

Pavement Smoothness: Use of Inertial Profiler Measurements for Construction Quality Control

This course presents a comprehensive overview of pavement smoothness and is designed for those directly involved in the use of inertial profilers and the application of the data obtained from inertial profilers. Participants will gain an understanding and knowledge of the different types of measurement techniques and indices used for reporting smoothness from profilers. The course is divided into units that introduce participants to the various components of roadway profiling, the operational requirements of most inertial profiling devices, and the analysis of data from most types of inertial profilers.

OUTCOMES

Upon completion of the training, participants will be able to:

- Describe the data collection process and operation of the inertial profilers as pavement profile measurement devices
- Identify the basic elements of the inertial profiler, which include the profiler's components, how the equipment works, the raw data is being collected, outputs from the data collection process, and the filtering of the raw data itself
- Explain how the inertial profiler output is used to establish various smoothness indices, including data processing techniques and computational procedures of different smoothness, or ride quality indices, identification of outliers, and factors that have an effect on the variability of the measurements
- Explain the relationships between profiler results and the equipment used, the measurement surface conditions, the measurement environment, the profiler operation, and the profiler operators themselves
- Explain how data acquisition and computational methods can affect computed indices, including the filtering process, sample intervals, record intervals, variability in collecting the data, and factors that have an effect on that variability

TARGET AUDIENCE

This course is intended for an audience involved in the use of inertial profilers and in the application of the data obtained from inertial profilers. This primarily includes road profiler operators and individuals responsible for the data interpretation. Information may also be of interest to users of profiler output, engineers, and administrators.

TRAINING LEVEL: Intermediate

FEE: \$255 Per Person

LENGTH: 1.5 DAYS (CEU: 0.9 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Mark Swanlund • (202) 366-1323 • mark.swanlund@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov

**COURSE NUMBER**

FHWA-NHI-131103A

COURSE TITLE**TCCC Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments**

In preventive maintenance, the types of treatments and the timing of their applications provide highway agencies with a very broad range of life-extending treatment techniques and enable agencies to achieve their goals of enhancing pavement performance in a cost-effective and efficient manner while meeting their customers' need for an improved level of service.

This course targets those field personnel involved in constructing preventive maintenance treatments, including both buying agency's inspectors and the contractors' foremen and field crews. It contains modules on all of the categories of preventive maintenance treatments in widespread use today, focusing on the best practices for designing and constructing those treatments. It also addresses troubleshooting construction practices, so that participants can clearly identify the results of poor construction practices. This course is the second in a series of three courses on the general subject of pavement preservation.

The 2-day version consists of Modules 1 and 4, with limited content selected by the hosting organization from topics in Modules 2 and 3. The course instructor will assist the host in selecting the most appropriate topics for the target audience.

Module 1: Introduction to Preventive Maintenance.

Module 2: Crack Filling and Sealing; Fog Seals, Sand Seals, Scrub Seals, and Rejuvenators; Slurry Seals and Microsurfacing; Chip Seals; In-Place Recycling; Thin and Ultra-Thin HMA Overlays.

Module 3: Joint Resealing and Crack Sealing; Diamond Grinding and Grooving; Full-Depth Repairs; Partial-Depth Repairs; Load Transfer Restoration; Thin PCC Overlays; Undersealing.

Module 4: Course Summary.

Developed in partnership with the Transportation Curriculum Coordination Council (TCCC).

OUTCOMES

Upon completion of the training, participants will be able to:

- Describe the benefits provided by preventive maintenance treatments
- Describe critical design factors for preventive maintenance techniques
- Describe the recommended procedures for the construction of the preventive maintenance techniques
- Identify critical post-construction/pre-opening inspection objectives

TARGET AUDIENCE

Construction foremen and agency construction inspectors, up to and including middle managers. While it is aimed at those who have some familiarity with the equipment and materials used to construct effective preventive maintenance treatments, it should also be of value to those just starting out in the maintenance field. This course is also recommended for asset management team members.

TRAINING LEVEL: Intermediate

FEE: \$320 Per Person

LENGTH: 2.0 DAYS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Joseph Gregory • (202) 366-1557 • joseph.gregory@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



COURSE NUMBER

FHWA-NHI-131103B

COURSE TITLE

TCCC Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments

In preventive maintenance, the types of treatments and the timing of their applications provide highway agencies with a very broad range of life-extending treatment techniques and enable agencies to achieve their goals of enhancing pavement performance in a cost-effective and efficient manner while meeting their customers' need for an improved level of service.

This course targets those field personnel involved in constructing preventive maintenance treatments, including both buying agency's inspectors and the contractors' foremen and field crews. It contains modules on all of the categories of preventive maintenance treatments in widespread use today, focusing on the best practices for designing and constructing those treatments. It also addresses troubleshooting construction practices, so that participants can clearly identify the results of poor construction practices. This course is the second in a series of three courses on the general subject of pavement preservation.

The 3-day version consists of Modules 1 and 4, with additional content selected by the hosting organization from topics in Modules 2 and 3. The course instructor will assist the host in selecting the most appropriate topic for the target audience. The length of the course will be determined by the number of topics being discussed. The course modules are:

Module 1: Introduction to Preventive Maintenance.

Module 2: Crack Filling and Sealing; Fog Seals, Sand Seals, Scrub Seals, and Rejuvenators; Slurry Seals and Microsurfacing; Chip Seals; In-Place Recycling; Thin and Ultra-Thin HMA Overlays.

Module 3: Joint Resealing and Crack Sealing; Diamond Grinding and Grooving; Full-Depth Repairs; Partial-Depth Repairs; Load Transfer Restoration; Thin PCC Overlays; Undersealing.

Module 4: Course Summary.

Developed in partnership with the Transportation Curriculum Coordination Council (TCCC).

OUTCOMES

Upon completion of the training, participants will be able to:

- Describe the benefits provided by preventive maintenance treatments
- Describe critical design factors for preventive maintenance techniques
- Describe the recommended procedures for the construction of the preventive maintenance techniques
- Identify critical post-construction/pre-opening inspection objectives

TARGET AUDIENCE

Construction foremen and agency construction inspectors, up to and including middle managers. While it is aimed at those who have some familiarity with the equipment and materials used to construct effective preventive maintenance treatments, it should also be of value to those just starting out in the maintenance field. This course is also recommended for asset management team members.

TRAINING LEVEL: Intermediate

FEE: Check the NHI Web site for current pricing

LENGTH: 3.0 DAYS (CEU: 1.8 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Joseph Gregory • (202) 366-1557 • joseph.gregory@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov

**COURSE NUMBER**

FHWA-NHI-131103C

COURSE TITLE**TCCC Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments**

In preventive maintenance, the types of treatments and the timing of their applications provide highway agencies with a very broad range of life-extending treatment techniques and enable agencies to achieve their goals of enhancing pavement performance in a cost-effective and efficient manner while meeting their customers' need for an improved level of service.

This course targets those field personnel involved in constructing preventive maintenance treatments, including both buying agency's inspectors and the contractors' foremen and field crews. It contains modules on all of the categories of preventive maintenance treatments in widespread use today, focusing on the best practices for designing and constructing those treatments. It also addresses troubleshooting construction practices, so that participants can clearly identify the results of poor construction practices. This course is the second in a series of three courses on the general subject of pavement preservation.

The 4-day version contains all modules including:

Module 1: Introduction to Preventive Maintenance.

Module 2: Crack Filling and Sealing; Fog Seals, Sand Seals, Scrub Seals, and Rejuvenators; Slurry Seals and Microsurfacing; Chip Seals; In-Place Recycling; Thin and Ultra-Thin HMA Overlays.

Module 3: Joint Resealing and Crack Sealing; Diamond Grinding and Grooving; Full-Depth Repairs; Partial-Depth Repairs; Load Transfer Restoration; Thin PCC Overlays; Undersealing.

Module 4: Course Summary.

Developed in partnership with the Transportation Curriculum Coordination Council (TCCC).

OUTCOMES

Upon completion of the training, participants will be able to:

- Describe the benefits provided by preventive maintenance treatments
- Describe critical design factors for preventive maintenance techniques
- Describe the recommended procedures for the construction of the preventive maintenance techniques
- Identify critical post-construction/pre-opening inspection objectives

TARGET AUDIENCE

Construction foremen and agency construction inspectors, up to and including middle managers. While it is aimed at those who have some familiarity with the equipment and materials used to construct effective preventive maintenance treatments, it should also be of value to those just starting out in the maintenance field. This course is also recommended for asset management team members.

TRAINING LEVEL: Intermediate

FEE: Check the NHI Web site for current pricing

LENGTH: 4.0 DAYS (CEU: 2.4 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Joseph Gregory • (202) 366-1557 • joseph.gregory@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



COURSE NUMBER

FHWA-NHI-131104

COURSE TITLE

TCCC Pavement Preservation: Integrating Pavement Preservation Practices and Pavement Management

Obtaining optimum value from preventive maintenance treatments is only possible when preventive maintenance activities are fully linked to a pavement management system. There are many opportunities for such integration, from identifying and tracking the benefits of different treatments and timings to developing models that incorporate the effects of preventive maintenance. By using pavement management data for network-level analysis, an effective pavement strategy that utilizes reconstruction, rehabilitation, and preventive maintenance actions can be developed. When used at the project level, pavement management can assist the decisionmaker in selecting the best pavement preservation option to be designed and applied.

This course is intended to communicate to agencies the importance of integrating pavement preservation activities into pavement management. Presently many pavement management systems identify the "worst" case pavements. These pavements typically have conditions ratings far below those intended to be addressed by pavement preservation activities. This course identifies the process in which:

1. Management tools are adjusted to support a pavement preservation program
2. Pavement preservation activities are integrated into "enhanced" pavement management models
3. The use of these "enhanced" pavement management models to support decisions at the project, network, and systems levels

This course addresses integrating pavement preservation with pavement management in a logical sequence beginning with project-level performance issues and ending with the use of network-level information in making strategic system-level decisions. The course materials identify steps that agencies must take in order to develop an action plan to improve their integration efforts.

Developed in partnership with the Transportation Curriculum Council (TCCC).

OUTCOMES

Upon completion of the training, participants will be able to:

- Name several ways pavement management tools can support a pavement preservation program at the project, network, and strategic analysis levels
- List the reasons it is important for an agency to integrate pavement preservation into its pavement management activities
- Name the ways that pavement preservation techniques can be integrated into pavement management models
- Name some of the common obstacles to the successful integration of pavement preservation and pavement management programs and strategies for overcoming these obstacles

TARGET AUDIENCE

This course is primarily intended for pavement management engineers, district (or regional) maintenance engineers, local agency engineers, maintenance management engineers, and planning and programming personnel. This course is also recommended for asset management team members.

TRAINING LEVEL: Intermediate

FEE: \$320 Per Person

LENGTH: 2.0 DAYS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Joseph Gregory • (202) 366-1557 • joseph.gregory@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov

**COURSE NUMBER**

FHWA-NHI-131105

COURSE TITLE**Analysis of PMS Data for Engineering Applications**

This course is a compilation of case studies from States that are using the years of condition data stored in their pavement management systems (PMS) to track the real-life performance of pavements, evaluate and analyze pavement overlay design, track performance of materials and construction, incorporate preventive maintenance actions, and evaluate maintenance or pavement performance.

OUTCOMES

Upon completion of the training, participants will be able to:

- Analyze their agency's need to either add additional data to their PMS or electronically link databases so that engineering analysis can be done
- Describe the range of applications and the processes needed to do engineering analysis

TARGET AUDIENCE

Design engineers, materials engineers, maintenance engineers, QA/QC staff, and pavement management staff. This course is also recommended for asset management team members.

TRAINING LEVEL: Intermediate

FEE: \$320 Per Person

LENGTH: 2.0 DAYS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Nastaran Saadatmand • (202) 366-1337 • nastaran.saadatmand@dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



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COURSE NUMBER

FHWA-NHI-131106

COURSE TITLE

Transportation Asset Management

Transportation asset management is a strategic approach to managing physical transportation infrastructure. This introductory course covers the principles, concepts, components, techniques, and benefits of asset management. The materials are based on the AASHTO's "Transportation Asset Management Guide" that was produced under the National Cooperative Highway Research Program (NCHRP) Project 20-24(11).

This course supports, complements, and builds familiarity with using the guide and illustrates asset management "best practices" in key functions of a transportation agency's resource allocation and utilization: policy development, planning and programming, program delivery, operations, and use of information and analytic tools.

A self-assessment process is provided for transportation agencies to benchmark current asset management practices and identify potential areas for further enhancement and implementation.

OUTCOMES

Upon completion of the training, participants will be able to:

- Identify the fundamentals of transportation asset management
- Recognize how the framework and principles of transportation asset management relate and fit into their agencies' business process
- Begin to visualize how the framework and principles of transportation asset management relate and fit into their agencies' business processes
- Use the self-assessment guide to assess and benchmark their agencies' transportation-asset-management program
- Begin to develop transportation-asset-management goals and objectives for their agencies

TARGET AUDIENCE

Senior-level and mid-level managers from State departments of transportation and other transportation agencies, who typically have the responsibility for decision-making in one or more areas addressed by transportation asset management. A 35-minute module at the beginning of the course provides a succinct overview of asset management that is suitable for executives. Participants should represent a number of organizational units, including (but not limited to) planning, engineering (e.g., facility management, design, construction), capital programming, maintenance and operations, financial management, traffic and safety engineering, system operation and management, and information technology. The course is also intended for individuals who manage or provide critical information to senior managers, or who have direct responsibility for meeting specific transportation system performance or program delivery targets.

TRAINING LEVEL: Intermediate

FEE: \$220 Per Person

LENGTH: 1.0 DAY (CEU: 0.6 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 40

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Stephen Gaj • (202) 366-1336 • stephen.gaj@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov

**COURSE NUMBER**

FHWA-NHI-131107

COURSE TITLE**TCCC Principles and Practices for Enhanced Maintenance Management Systems**

This course is an introduction to the methods and practices used in an enhanced maintenance management system (MMS) to effectively maintain and operate a highway network. It provides participants with the principles and practices of using MMS effectively and illustrates efficient maintenance and operation of a highway network. Throughout the course, participants are provided with activities and assignments specific to using MMS.

The course materials rely heavily on the recently developed AASHTO "Guidelines for Maintenance Management Systems, the Transportation Asset Management Guide," along with several other recent publications on this topic. The course materials will be supplemented with examples from State and local highway agencies to illustrate the application of the principles in transportation agencies.

Developed in partnership with the Transportation Curriculum Coordination Council.

OUTCOMES

Upon completion of the training, participants will be able to:

- Compare and contrast a first generation MMS with an enhanced MMS of the 21st century
- Describe the terms "outcome-based" and "performance-based" and how they pertain to an enhanced MMS
- Describe the use of service levels to support the programming and budgeting activities incorporated into a MMS
- Identify the types of systems that should be integrated with a MMS and provide several examples of the types of data that should interface between each system
- List the potential benefits to be realized by fully integrating an enhanced MMS
- Identify several steps that will advance the agency's current maintenance management practices now and in the future

TARGET AUDIENCE

The target audience for this course includes State and local maintenance engineers, maintenance supervisors, asset managers, and their industry counterparts. This course is specifically for individuals who are responsible for directing and managing maintenance operations and budgets, maintenance project and treatment selection, and/or the monitoring of system conditions.

TRAINING LEVEL: Intermediate

FEE: \$355 Per Person

LENGTH: 2.5 DAYS (CEU: 1.5 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Celso Gatchalian • (202) 366-1342 • celso.gatchalian@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



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COURSE NUMBER

FHWA-NHI-131109

COURSE TITLE

Analysis of New and Rehabilitated Pavement with M-E Design Guide Software



This course will provide an opportunity for State Highway Agencies to become familiar with the MEPDG documentation, the models and the methodology used in the software program. Modules on software inputs for materials (unbound, asphalt and concrete), as well as climatic and traffic inputs help participants understand how they are used in the design analysis. Other modules will require participants to use the software to complete exercises designed to demonstrate the iterative design process for new rigid pavements, new flexible pavements, and rehabilitated pavements. The last day of the course will focus on implementation and innovative features of the MEPDG as well as an end of course assessment to reinforce the course material.

The course will include detailed discussions about the data needs (materials, traffic, environment, etc.) for local/regional calibration of the Mechanistic-Empirical Pavement Design Guide and what steps agencies should begin to take before the guide is adopted and used on a day-to-day basis for design. The sponsoring agency must provide 20 computers with the following minimum requirements:

Pentium III or higher PC running at least 800 MHz or higher is recommended; at least 128 MB of Random Access Memory (256MB or more is recommended); 800 MB of free hard drive space; CD-ROM drive; Microsoft Windows 98, Windows ME, Windows 2000, Windows NT 4.0, or Windows XP.

The sponsoring agency must provide 20 computers with the following minimum requirements:

- Pentium III or higher PC running at least 800 MHz or higher is recommended
- At least 128 MB of Random Access Memory (256MB or more is recommended)
- 800 MB of free hard drive space
- CD-ROM drive
- Microsoft Windows 98, Windows ME, Windows 2000, Windows NT 4.0, or Windows XP

OUTCOMES

Upon completion of the training, participants will be able to:

- Apply a flexible (new and rehabilitated) pavement analysis using Design Guide software
- Apply a rigid (new and rehabilitated) pavement analysis using Design Guide software
- Evaluate the predicted performance of a design
- Describe the relationship between the Design Guide inputs and predicted pavement performance
- Estimate the performance of a flexible pavement structure, new or rehabilitated
- Estimate the performance of a rigid pavement structure, new or rehabilitated
- Compare the predicted performance with the target performance criteria and determine if the design is acceptable or if additional software runs are necessary
- Describe the relationship between the Design Guide inputs and predicted pavement performance in general and for the specific analysis case in question

TARGET AUDIENCE

The target audience for this course is State DOT and local highway agency pavement design engineers. Additional participants may include: design consultants, university researchers, agency materials, pavement management, and traffic engineers. In addition, State Agency stakeholders may attend the implementation module (Module 6) to better understand the benefits of using the Guide and their role in the implementation process.

Assumed Pre-Training Competencies, participants should be familiar with:

- Personal computer operations and MS Windows environment
- Principles of structural pavement design

TRAINING LEVEL: Intermediate

FEE: Check the NHI Web site for current pricing

LENGTH: 3.5 DAYS (CEU: 2.1 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Gary Crawford • (202) 366-1286 • gary.crawford@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



*The participant workbook is available for download at the NHI Store.
Visit the NHI Web site at www.nhi.fhwa.dot.gov.*



COURSE NUMBER

FHWA-NHI-131110

COURSE TITLE

TCCC Pavement Preservation Treatment Construction

FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TCCC) created the Pavement Preservation Treatment Construction Guide (PPTCG) as a resource for agency and industry pavement preservation practitioners. The guide covers basic pavement preservation concepts, as well as information on specific treatments to extend the life of asphalt pavements.

This course is designed to provide participants with an introduction to the PPTCG, so that they can better use it to familiarize themselves with general information on pavement preservation concepts and techniques. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.



OUTCOMES

Upon completion of the training, participants will be able to:

- Identify the components and value of a Pavement Preventive Maintenance (PPM) program
- Identify pavement conditions and other attributes that suggest whether preventive maintenance is appropriate
- Identify various pavement preservation strategies, techniques and materials
- State the performance characteristics of various pavement preservation strategies, techniques and materials
- Select the appropriate strategy(ies), technique(s) and material to extend the service life and retard the development of pavement distress

TARGET AUDIENCE

The primary audience for the Pavement Preservation Treatment Construction WBT course is Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Although not in the primary audience, design engineers will also benefit from the online guide and the associated training.

TRAINING LEVEL: Intermediate

FEE: FREE

LENGTH: 6.5 HOURS (CEU: 0.6 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Chris Newman • (202) 366-2023 • christopher.newman@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



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**COURSE NUMBER**

FHWA-NHI-131112

COURSE TITLE

Principles and Practices for Enhanced Maintenance Management Systems



The course consists of three live Web sessions with several self-study modules. NHI developed this course to save participants time and money on travel. It covers the same content as the Instructor-led training FHWA-NHI-131107 but because of the online delivery method, it is substantially less expensive.

This course is an introduction to the methods and practices used in an enhanced maintenance management system (MMS) to effectively maintain and operate a highway network. It provides participants with the principles and practices of using MMS effectively and illustrates efficient maintenance and operation of a highway network. Throughout the course, participants are provided with activities and assignments specific to using MMS.

The course materials rely heavily on the recently developed AASHTO Guidelines for Maintenance Management Systems, the Transportation Asset Management Guide, along with several other recent publications on the topic. The materials will be supplemented with examples from State and local highway agencies to illustrate the application of the principles in transportation agencies. This course has the same content and outcomes as FHWA-NHI-131107, Principles and Practices for Enhanced Maintenance Management Systems.

OUTCOMES

Upon completion of the training, participants will be able to:

- Compare and contrast a first generation MMS with an enhanced MMS of the 21st century
- Describe the terms "outcome-based" and "performance-based" and how they pertain to an enhanced MMS
- Describe the use of service levels to support the programming and budgeting activities incorporated into an MMS
- Identify the types of systems that should be integrated with an MMS and provide several examples of the types of data that should interface between each system
- List the potential benefits to be realized by fully integrating an enhanced MMS
- Identify several steps that will advance an agency's current maintenance management practices now and in the future

TARGET AUDIENCE

The target audience for this course includes State and local maintenance engineers, maintenance supervisors, asset managers, and their industry counterparts. The course is specifically for individuals who are responsible for directing and managing maintenance operations and budgets, maintenance project and treatment selection, and/or the monitoring of system conditions.

TRAINING LEVEL: Beginner

FEE: \$275 Per Person

LENGTH: 15.0 HOURS (CEU: 1.5 UNITS)

CLASS SIZE: MINIMUM: 15; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Celso Gatchalian • (202) 366-1342 • celso.gatchalian@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



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COURSE NUMBER

FHWA-NHI-131114

COURSE TITLE

TCCC Pavement Preservation: Optimal Timing of Pavement Preservation Treatments



Many agencies perform pavement preservation or preventive maintenance. An important issue facing such programs is identifying the best time to apply a preventive maintenance (PM) treatment. Applying PM treatments too soon or too late is just not effective from either a cost, performance, or managerial view. This four-hour seminar explores some of the work performed under NCHRP Project 14-14 and the OPTime tool that was developed as part of that project to help agencies determine the optimal time to apply a treatment. Topics range from defining goals, characteristics of good pavement preservation programs, collecting treatment performance relationship data, and key cost and benefit considerations. Taught online in a virtual classroom, the course is taught by a lead author of the report and includes access to the NCHRP 523 report and a download of the OPTime timing software add-on.

Developed in partnership with the Transportation Curriculum Coordination Council (TCCC).

OUTCOMES

Upon completion of the training, participants will be able to:

- Describe the methodology for determining the optimal timing of preventive maintenance treatments
- List the factors governing optimal timing of treatments
- Apply the methodology to their agency's pavement preservation program.
- Describe the effect of timing on pavement preservation treatment performance and program effect.

TARGET AUDIENCE

The target audience includes upper- and mid-level highway agency professionals who are responsible for pavement preservation and management. Pertaining to job tasks, participants may be responsible for choosing rehabilitation, reconstruction, preservation treatments for highways, surveying roads and determining which projects to schedule, program planning and charged with deciding which projects fall under a particular program, allotment of funds, and scheduling. Finally, possible attendees include those who may currently be using preservation methods, but may not be using the entire "toolbox" of preservation techniques.

In terms of education levels, those attending this course should, at a minimum, have completed high school and read at least at a 12th grade level. Their experience should include knowledge of the basics of pavement maintenance, pavement preservation, and how they differ.

TRAINING LEVEL: Intermediate

FEE: \$100 Per Person

LENGTH: 4.0 HOURS (CEU: 0.0 UNITS)

CLASS SIZE: MINIMUM: 15; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Chris Newman • (202) 366-2023 • christopher.newman@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



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COURSE NUMBER

FHWA-NHI-131115

COURSE TITLE

TCCC Pavement Preservation: Preventive Maintenance Treatment, Timing, and Selection

The purpose of this course is to improve the skills of those involved in implementing pavement preservation programs. This includes improving the selection of pavement preventive maintenance projects and the selection of preventive maintenance treatments.

Developed in partnership with the Transportation Curriculum Coordination Council (TCCC).



OUTCOMES

Upon completion of the training, participants will be able to:

- Describe the different types of pavements and how they perform in response to traffic and environmental loading
- Identify concepts of a preventive maintenance program and the role of such a program in pavement management
- Identify pavement conditions and other attributes that indicate whether preventive maintenance is appropriate for a given pavement
- Describe preventive maintenance treatments and materials
- Determine when is the most appropriate time during the life of a pavement to apply a preventive maintenance treatment
- Select the most appropriate (or "best") preventive maintenance treatment for a given pavement based on a combination of timing, anticipated benefits, economic considerations, and other key factors

TARGET AUDIENCE

The target audience for this course is mid- or upper-level highway agency professionals responsible for pavement preservation/maintenance and management. For example, this might include the following job titles within a State highway agency: pavement engineer, project manager/maintenance engineer, region director, materials lab personnel, planning/programming staff, pavement management engineer/manager, road superintendent.

For local agencies, this group might include public works directors or chief engineers/ engineers of cities, towns, counties, and metropolitan planning organizations (MPOs).

Current performance and responsibilities of the target audience could include the following: evaluating pavements, selecting pavements and treatments for preservation projects, making budget determinations for pavement preservation projects (preservation vs. reconstruction), and/or appropriating background information or prior knowledge which would be useful for the course participants includes the following:

1. Basic understanding of the information imported in a pavement condition report.
2. Ability to interpret the results of a pavement condition report.
3. Identify deterioration/distress using visual information and determine the causes of that deterioration/distress.

TRAINING LEVEL: Beginner

FEE: \$320 Per Person

LENGTH: 2.0 DAYS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Chris Newman • (202) 366-2023 • christopher.newman@fhwa.dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



The participant workbook is available for download at the NHI Store.



COURSE NUMBER

FHWA-NHI-131116

COURSE TITLE

Pavement Management Systems: Characteristics of an Effective Program



Transportation agencies have made large investments in their pavement infrastructure, which makes effective pavement management an important component of an agency's transportation asset management program. However, pavement management concepts are not always taught in the traditional civil engineering curriculum and there is little training available on this important concept. In fact, in a 2006 survey of the Federal Highway Administration (FHWA) division offices, most offices indicated a need for training in this area. The need was further emphasized by participants at the 2007 National Pavement Management Conference. This 1-day course was designed to help improve the effectiveness of an existing pavement management program. In addition to introducing the basic components of an effective pavement management program, the course materials illustrate the effective use of pavement management information and provide opportunities for participants to identify strategies that will help enhance their existing capabilities. The focus of the class is broad enough to include data collection activities, condition assessment, program development, investment analysis, and other uses of pavement management information to support an agency's decision processes to improve pavement performance. The role of pavement management in supporting an agency's transportation asset management program at the strategic, network, and project levels is also introduced.

Only one of the three lessons, Lesson 4-1, will be covered during this 1-day version of the course, which introduces strategies to improve the effectiveness of the agency's pavement management program. Since the training is offered at no charge, availability of instructors may be limited.

OUTCOMES

Upon completion of the training, participants will be able to:

- Identify the components of an effective Pavement Management Program and describe the contribution of each to the Program's success
- Explain the role of pavement management in supporting an agency's Transportation Asset Management (TAM) Program
- Describe effective uses of pavement management information

TARGET AUDIENCE

The target audience for this course includes transportation professionals from State and local agencies responsible for managing and maintaining pavements and/or prioritizing pavement projects for programming purposes. Course participants should be directly involved with providing data to support pavement management activities, selecting pavement projects, developing candidate project recommendations, or determining funding allocations for pavement-related activities. The primary audience will be practitioners from State highway agencies, but the course is also appropriate for individuals from local agencies.

TRAINING LEVEL: Beginner

FEE: \$FREE

LENGTH: 1.0 DAY (CEU: 0.0 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Nastaran Saadatmand • (202) 366-1337 • nastaran.saadatmand@dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov

**COURSE NUMBER**

FHWA-NHI-131116A

COURSE TITLE

Pavement Management Systems: Characteristics of an Effective Program



Transportation agencies have made large investments in their pavement infrastructure, which makes effective pavement management an important component of an agency's transportation asset management program. However, pavement management concepts are not always taught in the traditional civil engineering curriculum and there is little training available on this important concept. In fact, in a 2006 survey of the Federal Highway Administration (FHWA) division offices, most offices indicated a need for training in this area. The need was further emphasized by participants at the 2007 National Pavement Management Conference. This one and a half day course was designed to help improve the effectiveness of an existing pavement management program. In addition to introducing the basic components of an effective pavement management program, the course materials illustrate the effective use of pavement management information and provide opportunities for participants to identify strategies that will help enhance their existing capabilities. The focus of the class is broad enough to include data collection activities, condition assessment, program development, investment analysis, and other uses of pavement management information to support an agency's decision processes to improve pavement performance. The role of pavement management in supporting an agency's transportation asset management program at the strategic, network, and project levels is also introduced.

This course includes five modules. Module 4 has been divided into three lessons. This one-and-a-half day version of the course allows for a State to receive Lesson 4-1 (strategies to improve the effectiveness of the agency's pavement management program), as well as Lesson 4-2 (pavement condition assessment and performance modeling) and Lesson 4-3 (using pavement management to support a pavement preservation program). Since it is offered at no charge, availability of instructors may be limited.

OUTCOMES

Upon completion of the training, participants will be able to:

- Identify the components of an effective Pavement Management Program and describe the contribution of each to the Program's success.
- Explain the role of pavement management in supporting an agency's Transportation Asset Management (TAM) Program.
- Describe effective uses of pavement management information.
- Describe several strategies for improving the effectiveness of a Pavement Management Program.

TARGET AUDIENCE

The target audience for this course includes transportation professionals from State and local agencies responsible for managing and maintaining pavements and/or prioritizing pavement projects for programming purposes. Course participants should be directly involved with providing data to support pavement management activities, selecting pavement projects, developing candidate project recommendations, or determining funding allocations for pavement-related activities. The primary audience will be practitioners from State highway agencies, but the course is also appropriate for individuals from local agencies.

TRAINING LEVEL: Beginner

FEE: FREE

LENGTH: 1.5 DAYS (CEU: 0.0 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Training Information: (703) 235-0534 • nhitraining@dot.gov

Subject Matter Contact: Nastaran Saadatmand • (202) 366-1337 • nastaran.saadatmand@dot.gov

NHI Training Program Manager: Ann Gretter • (703) 235-1260 • ann.gretter@fhwa.dot.gov



COURSE NUMBER

FHWA-NHI-131117

COURSE TITLE

TCCC Basic Materials for Highway and Structure Construction and Maintenance



This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review basic materials for highway and structure construction and maintenance. The training was prepared by State DOT personnel for State DOT personnel. It is the first training of its kind offered by NHI, and we would like to give special recognition to the TCCC for their efforts. It contains good practices from various agencies. Each State agency/company has their own specifications, which the viewer needs to review and follow.

Although there are a number of materials used in the construction and maintenance process for both highways and structures, this course is focused on the three basic materials. They are Aggregate, Portland Cement Concrete (referred to as PCC), and Hot Mix Asphalt (referred to as HMA).

This training is directed toward the entry level technician, to give them a general view of the basic materials used in construction and maintenance. The course modules will address the procedures used in the production and sampling of aggregates.

Module 1 is called Basic Aggregates and includes quarry inspection, sand operation, stockpiling, and sampling. Module 2 covers Portland cement, including the production of Portland Cement, the hydration process, as well as other cementing materials used in concrete such as water, admixtures, and aggregates. Module 3 reviews Hot Mix Asphalt, including the asphalt binder and aggregates used in the production.

NHI is hosting this and other TCCC Web-based developments to serve a critical need for training. We need your feedback to determine whether we should continue posting other Web-based trainings like this one. Please take the time to complete the evaluation form provided at the end of the training, or e-mail nhimarketing@dot.gov.

OUTCOMES

Upon completion of the training, participants will be able to:

- Identify aggregate production and sampling procedures
- Recognize the ingredients of PCC and the part each plays in concrete production
- Recognize the ingredients of HMA and the part each plays in hot mix asphalt production

TARGET AUDIENCE

This training is designed for Level I and Level II State/local public agency personnel and their industry counterparts involved in the construction, maintenance and testing process for highways and structures. Level I or Entry refers to employees/trainees with little to no experience in the subject area and perform his/her activities under direct supervision. Level II or Intermediate refers to employees that understand and demonstrate skills in one or more areas of the entry level and perform specific tasks under general supervision.

TRAINING LEVEL: Beginner

FEE: FREE

LENGTH: 4.0 HOURS (CEU: 0.0 UNITS)

CLASS SIZE: MINIMUM: 1; MAXIMUM: 1

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*Need help with the NHI Web site or enrolling in a Web-based training?
Call (703) 235-0556 or e-mail nhiwebmaster@dot.gov.*