NHI

NATIONAL HIGHWAY INSTITUTE

2006 NHI Training Catalog

Transportation Training Resources Catalog

U.S. Department of Transportation
Federal Highway Administration

OFFICE OF PROFESSIONAL AND CORPORATE DEVELOPMENT

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LETTER FROM THE DIRECTOR

Dear Customers and Colleagues:

On behalf of the Federal Highway Administration and our many transportation community partners, I am proud to present the 2006 NHI Course Catalog. We are pleased to provide more than 600 course sessions in the broad spectrum of transportation disciplines as our contribution to transportation workforce development.

In many ways, the transportation workforce is at a crossroads. A large number of "baby boomers" are reaching retirement age and will take with them years of experience and institutional knowledge that will be difficult to replace. At the same time, increasing customer expectations, greater complexities in program management, and continuing advancements in technology innovation are driving the need for new skills at all levels of the transportation workforce. The recently enacted SAFTEA-LU reauthorization legislation includes new requirements for transportation program management that must be addressed. In addition, SAFTEA-LU has provisions for transportation training and workforce development that will provide important, new opportunities for the transportation community to work together for enhanced workforce development. NHI expects to be a leader in these new initiatives. More information about the impacts of SAFETEA-LU is located in the general information section on page 176.

We will continue to work with our transportation partners to address changing skill needs, align workforce capabilities with organizational mission, and enhance our course development and delivery processes to ensure employee developmental needs are met quickly, efficiently, and effectively. As the need for safe and efficient transportation continues to grow, a skilled, technically competent workforce provides the greatest opportunity to close the gap between increasing demand and available resources.

In 2006, we look forward to providing our customers with high quality technical and program management courses that have become the staple of the National Highway Institute. We also look forward to continuing our efforts for improved course development and delivery in the constantly changing, challenging, and exciting transportation environment.

Sincerely,

Moges Ayele

Moges Ayele, Ph.D.
Director, National Highway Institute

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SCHEDULE

NHI course schedules are available on the NHI Web site at http://www.nhi.fhwa.dot.gov/.

REGISTRATION

Domestic Customers

Employees of the hosting government agency will need to contact the local coordinator for registration. All others, except FHWA employees, must also contact the local coordinator for availability and registration. Visa, MasterCard, Discover, and checks are acceptable forms of payment. To make additional payment arrangements, such as purchase orders, please contact the NHI Training Team at 703-235-0534.

FHWA Employees

As NHI training is provided to hosting agencies at a subsidized rate, space for up to three (3) participants is reserved for FHWA employees **until 3 weeks prior to the session start date.** NHI courses are considered internal training for FHWA and consequently there is no charge for FHWA employees. FHWA employees will need to use the following procedure to attend NHI courses:

a. Every FHWA organizational unit – including FHWA Resource Center Division offices – has a designated FHWA training coordinator. This is the FHWA employee's contact for attendance in an NHI course. The names of the coordinators can be accessed through the NHI Web site. FHWA employees must enroll in NHI course sessions using the FHWA learning management system (eLMS). Do NOT contact the State or private local coordinator directly.

b. If the FHWA spaces are not filled within three weeks of the session starting date, the hosting organization may fill these spaces with other participants.

International Customers

NHI will arrange the participation of international customers in training courses in the United States. In addition, NHI provides assistance to international organizations wishing to purchase standard NHI training courses on a variety of technical subjects. These courses can be tailored to the specific needs of the organization at an additional cost. For more information about training courses for international participants, please contact Roger Dean at (703) 235-0550 or by e-mail: roger.dean@fhwa.dot.gov.

FEES

Course fees are listed with the individual course description and include course materials for each participant.

CANCELLATION POLICY

Cancellation for an individual scheduled to attend a session is requested no later than seven days prior to the course start date to avoid incurring any fees. Please notify the point of contact at the host organization and copy nhitraining@fhwa.dot.gov.

Additional information about NHI cancellation policy can be found on page 7.

HOSTING A COURSE

REQUESTS/SCHEDULING

Any organization can host an NHI course. To host NHI courses, the On-Site Course Request, FHWA Form 1530, must be submitted through the NHI Web site or by fax. A copy of this form is also included in the back of this catalog and may be faxed to the NHI Training Team at (703) 235-0577. While preferred dates may be specified on the 1530 form, sessions are not officially confirmed until the hosting organization receives confirmation from NHI. After the On-Site Course Request is received, an instructor or a member of the NHI team will contact the local coordinator to discuss scheduling. After NHI confirms the session, the host will receive confirmation, the local FHWA Division office coordinator will be notified and the session will be listed on the NHI Web site. Course material will be shipped 3 weeks prior to the session start date.

To register for distance learning courses visit the NHI Web site at www.nhi.fhwa.dot.gov. On-line registration for distance learning courses requires MS Internet Explorer (IE) 5.0 or higher.

FEES

Course fees are listed with the individual course description and include course materials for each participant. A minimum number of 20 paid participants are required to hold a class. However, course fees and minimums may vary. Hosts are not charged for FHWA personnel attending NHI sessions at their locations. Hosts are not charged for any instructor expenses. NHI will continue to recover the full cost of delivery for international presentations. These will be handled on a case-by-case basis.

Checks, money orders, or other generally accepted forms of payment from individual course participants will be accepted as part of the NHI course fee, and must be made payable to the Federal Highway Administration. Such payments may be forwarded to NHI as soon as they are received with the amount of the invoice reduced accordingly; or they can be submitted as part of the total payment upon invoice to the hosting organization.

SURCHARGES

Course hosts may charge participants an additional fee to recover all or part of costs associated with hosting the course.

CANCELLATION POLICY

The host of an NHI course must contact the NHI Training Manager at (703) 235-0520 for approval to cancel a course for any reason. Cancellation is requested no later than 10 working days prior to the course start date to avoid incurring any fees. If the course materials have been sent, the host must return the materials to the FHWA Report Center. In the event of cancellation for any reason, it is the hosts' responsibility to contact all participants via e-mail and telephone. There must be validation that the registrants received cancellation notice. Notice to out-of-state participants is especially important to avoid charges for travel. If notification of cancellation occurs in less then 10 days prior to the start date of the course, travel costs for the participants may be the responsibility of the host.

AUDIENCE

When assessing internal training needs, we encourage hosts of NHI courses to survey the training needs of entities outside their own organization. In some cases, the combined needs may warrant hosting a course for which there otherwise would not be sufficient interest. By attending training together, all parties receive the same training, benefit from the breadth of experience added to classroom discussions, and increase their understanding of each other's perspectives by working together on class exercises.

CHECKLISTS

Everyone has attended training sessions where the instructor could not find the chalk or eraser; or the room was too hot or too cold; or there was not enough room for the number of participants scheduled for the course. To mitigate these, a training coordinator checklist and final arrangements checklist are provided as a suggested step-by-step process for those who are setting up the training site.

GENERAL INFORMATION

PAYMENT

Domestic Customers

NHI invoices the hosting organization upon completion of the course. Payment may be made to NHI by check, money order, or credit card. Checks and money orders must be made payable to the Federal Highway Administration. To make credit card payments, contact the NHI Training Team at nhitraining@fhwa.dot.gov or (703) 235-0534.

International Customers

NHI will fax an invoice to the individual or organization upon completion of the course. Cashier's checks, international money orders, and credit cards are accepted forms of payment. Special arrangements will have to be made for wire transfers, and customers must ensure that they pay all related bank fees. All cashier's checks and international money orders must be payable in U.S. dollars to the Federal Highway Administration.

Distance Learning Courses

NHI accepts checks, purchase orders, and credit cards as payment for distance learning courses in cases where a fee is charged. FHWA employees may take distance learning courses free of charge. Follow the on-line screen instructions when registering through the NHI Web site. For additional information, please contact the NHI Training Team at (703) 235-0534, (703) 235-0577 fax, or nhitraining@fhwa.dot.gov.

REFUNDS

A refund may be obtained for a distance-learning course within 72 hours after a user has paid for the class. Please submit an e-mail request for refund to the NHI Training Team. Your reimbursement will be processed as quickly as possible. Credit card reimbursements should appear within two billing cycles. A credit to attend another NHI course will be issued if payment was made by check.

CEUs AND PDHs

The course descriptions include Continuing Education Units (CEUs) that will be awarded to course participants who successfully complete NHI courses. According to the International Association for Continuing Education and Training (IACET): One Continuing Education Unit (CEU) is ten contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction.

The CEUs are based on a typical course presentation with 6 hours of actual instruction time (i.e., 0.6 CEUs) per day. Adjustments to the course length to match local work hours or to accommodate increased/decreased emphasis on certain topics or for travel on field trips may affect the actual number of CEUs awarded. CEUs will be awarded only to those participants who are present for the full course and successfully complete the end of course assessment. Some states and organizations use Professional Development Hours (PDHs) to track training. Each hour of instruction is worth one professional development hour.

For more information about how new SAFETEA-LU provisions benefit training see page 176.

TRAINING COORDINATOR CHECKLIST

1. Request for Training

Following the instructions on the form, send a completed On-Site Course Request form to NHI. Please furnish a copy to the local FHWA Division Office once NHI has approved the requested dates (Government hosts only).

2. Training Site

The following are some considerations when selecting a training site for the course:

- ☐ Select a room that will not be overcrowded, too hot or too cold, or subject to outside distractions. The instructor will provide you with any unique requirements for the training facilities
- ☐ Reserve a training room for the duration of the course
- ☐ Determine if books and equipment can be left in the room. Training courses requiring special equipment or computers may need after-hours security
- ☐ Visit the classroom to make certain it meets all of the instructor's requirements

☐ Other considerations for a training room:

- ☐ Heat or air conditioning - find out if the instructor can control these
- ☐ Adequate size and shape. No poles or obstructions
- ☐ Special arrangements for demonstrations, labs, and experiments
- ☐ Seating arrangements
- ☐ Away from kitchen, construction area, or other noise distractions
- ☐ Electrical outlets
- ☐ Adequate ventilation
- ☐ Lighting controls - many training courses use visual aids that require a projection screen. It is important to have a room where lighting can be controlled to prevent glare on the screen while not placing the room in total darkness

☐ Consider the following questions for using visual aids:

- ☐ Will shades completely darken all windows?
- ☐ Can the lights be selectively dimmed when showing slides or viewgraphs?
- ☐ Will overhead lights shine directly on the screen?
- ☐ Can a bulb be removed above the screen or will the blackboard be too dark?

3. Accommodations

If needed, reserve a block of hotel/motel rooms for the course participants and instructors. Some hotels will provide a free meeting room if a minimum number of participants stay at the hotel. Participants and instructors will be:

- ☐ Informed of course starting and ending times
- ☐ Advised on hotel accommodations, room rates, and checkout times
- ☐ Furnished with maps
- ☐ Advised on parking arrangements

4. Equipment Needs

Nothing is more frustrating for the instructor and annoying to the participants than a computer that will not work or a VCR that will not play. The instructor will tell you what equipment is needed, in addition to normal items such as:

- ☐ Videotape player
- ☐ Blackboard with chalk and eraser or whiteboard with dry erase pens and eraser
- ☐ Easel with flip chart paper and various colored markers
- ☐ Lectern or instructor table
- ☐ Extension cords
- ☐ Masking tape

- ☐ Other course specific equipment may include:
  - ☐ Slide projector with spare bulb and remote control extension
  - ☐ Overhead projector with spare bulb
  - ☐ Marking pens in various colors
  - ☐ Computers
  - ☐ LCD projection equipment with cables
  - ☐ Screen – 6′ x 6′ or larger
- ☐ Check all equipment to ensure that it is working satisfactorily

To ensure that NHI and its traning partners provide excellent training and customer service, approval by the NHI Training Manager is required for course cancellations. Refer to page 7 for additional details.

FINAL ARRANGEMENTS CHECKLIST

1. Two Weeks Before The Course

- ☐ Make sure an approved copy of the On-Site Course Request has been received. If not, call the NHI Training Team at (703) 235-0534
- ☐ Verify that all training materials have arrived, such as:
  - ☐ Participant notebooks
  - ☐ Tent cards (large felt tip markers will be needed)
  - ☐ Evaluation forms
  - ☐ Class roster form
  - ☐ Certificates
- ☐ Reconfirm the training facilities
- ☐ Discuss the seating arrangements and who will set up the room
- ☐ Determine when the room is unlocked/locked
- ☐ Determine whether a technician is available to assist in setting up the room and to help if a technical problem arises during the course
- ☐ Send a confirmation e-mail to all that have registered for the session containing logistical and contact information

2. One Week Before The Course

- ☐ Prepare directional signs to classroom
- ☐ Post 'no smoking' signs in the classroom and find out where smoking areas are located
- ☐ Determine if snacks are available
- ☐ Identify where telephones are located to make outgoing calls and to receive incoming messages
- ☐ Pass out a list of eating places for lunch along with maps
- ☐ Decide who will welcome the participants and introduce the instructors
- ☐ Determine if special hotel check out arrangements are needed to coincide with the course completion time
- ☐ Determine who will prepare the certificates of training and who will pass them out
- ☐ Answer any e-mails from participants

3. One Day Before The Course

- ☐ Set up the classroom
- ☐ Organize the participant material
- ☐ Post directional signs
- ☐ Test all equipment

4. During The Course

- ☐ Let the instructor know whom to contact if he/she needs assistance
- ☐ Provide an accurate copy of the class participant roster to the instructor
- ☐ Prepare certificates of training (time needed to prepare them may be reduced and the appearance improved by using a computer with a graphics program and a laser printer)
- ☐ Check with the instructor at least once a day to resolve any problems

5. After The Course

- ☐ Make certain the instructor has the class roster, course evaluation forms, and application forms for CEUs. The instructor is responsible for sending these items to NHI

We hope these suggestions make the job of coordinating NHI courses easier and maximize training benefits.

COURSE NUMBER: FHWA-NHI-123002
COURSE TITLE: Scientific Approaches to Transportation Research

This course addresses professional and ethical practices for managing, conducting, and evaluating research programs and projects. Participants will learn about the critical elements in the research process, turning research objectives into research hypotheses, testing of the hypotheses, and evaluation of the results. The course will look at the scientific method as well as the management and handling of data as it applies to transportation research.

OUTCOMES:

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

- Recognize the differences between applied, basic, and development research
- List the tradeoffs between the risk (cost) and benefits of engaging in research
- Identify the steps in the research process and sequence of scientific inquiry
- Discuss issues with experiment design, e.g., types of research investigation and principles of data collection
- Discuss how and why probability distributions are used in statistics
- Discuss hypothesis testing and Statistical Inference and apply linear regression methods
- Discuss when and how to apply common nonparametric statistics

TARGET AUDIENCE:

Transportation engineers, research managers, and researchers who are involved in the design, development and implementation of transportation research. Participants should have, at a minimum, a limited exposure to basic statistics and research practices.

FEE: $460 Per Participant

LENGTH: 3.5 Days (CEU: 2.1 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Peter Kopac • (202) 493-3151 • peter.kopac@fhwa.dot.gov

If you're interested in this course, you may also want to take advantage of other NHI structures courses.

132012 Soil and Foundations Workshop – Geotechnical and Materials
132014 Drilled Shafts
132021 Driven Pile Foundations – Design and Construction
132040 Geotechnical Aspects of Pavements – Geotechnical and Materials
132042 Design of MSEW and RSS
132078 Micropile Design and Construction

COURSE NUMBER: FHWA-NHI-130053
COURSE TITLE: Bridge Inspection Refresher Training

UPDATED COURSE

The major goals of this course are to refresh the skills of practicing bridge inspectors in fundamental visual inspection techniques; review the background knowledge necessary to understand how bridges function; communicate issues of national significance relative to the nations' bridge infrastructures; re-establish proper rating practices; and review the professional obligations of bridge inspectors.

This course is based on the "Bridge Inspector's Reference Manual," 2002 with reference to the "AASHTO Manual for the Condition Evaluation of Bridges," 2000, with interims, the "FHWA Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," 1995, including 2003/2004 eratta sheet, and the "AASHTO Guide for CoRe (Commonly Recognized) Structural Elements," 1998, with interims.

Core course topics include tri-axial constraints, inspector qualifications and duties, record keeping and documentation, structure inventory and appraisal overview, national bridge inventory standard component ratings, element level ratings, safety, component case studies for decks, superstructures, substructures, and channels, and a virtual bridge inspection classroom exercise.

Optional topics include bridge mechanics, superstructure type identification, inspection techniques, fatigue and fracture in steel bridges, traffic safety features, bridge site signing, and culverts.

Host agencies desiring additional information on selection of optional topics and options for addressing NBI rating methods and element level data collection should contact Eric Mann of Michael Baker Corporation at (412) 269-7932.

OUTCOMES:

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

- Perform bridge safety inspection, component or element level condition ratings, functional appraisal, and data collection in a uniform manner consistent with NBIS and agency requirements
- Apply current inspection techniques
- Evaluate channel scour as applied to waterway ratings
- Collect field data with appropriate precision

TARGET AUDIENCE:

Federal, State, and local agencies and private-sector personnel employed in inspecting bridges or managing bridge inspection programs. Participants must have completed prior comprehensive bridge inspection training, or meet the criteria for a bridge inspector under the State's procedures or requirements.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Thomas Everett • (202) 366-4675 • thomas.everett@fhwa.dot.gov

Would you like more information about the Universities and Grants Programs? Go to page 178 in the catalog.

COURSE NUMBER: FHWA-NHI-130054
COURSE TITLE: Engineering Concepts for Bridge Inspectors

This course provides knowledge of the elementary concepts in bridge engineering that are needed by bridge inspectors. Materials, material properties, bridge components and details, loadings, stresses and strains, and deterioration of bridge materials and members are covered. The course concludes with an examination reviewing key elements of bridge engineering.

This course prepares technicians and other personnel who have a limited knowledge of bridge engineering for a more intensive course in bridge inspection, such as the 2-week course FHWA-NHI-130055 Safety Inspection of In-Service Bridges.

OUTCOMES:

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

- Identify common bridge types, recognize and name the typical major components and members of a highway bridge, and also the members and features unique to bridges such as trusses, arches, cable-stayed and suspension spans
- Name the common materials used in bridges and describe the basic properties, strengths, and weaknesses of each
- Discuss the basic concepts of elasticity of materials, response of materials and structural members to a variety of loadings, and the relationship between stresses and strains
- Describe the various types of deterioration of the common structural materials that result from weathering, loading, etc.
- Recognize the more common signs of material distress such as steel corrosion and cracking and concrete cracking, spalling and scaling
- Name the secondary elements and features of bridges such as joints, railings, scuppers, etc., and describe the proper role of each in the performance of a bridge
- Demonstrate knowledge of bridges, bridge components, material properties, and mechanics of materials to prepare to take a comprehensive course on bridge inspection

TARGET AUDIENCE:

Federal, State, and local technicians, inspectors, and engineers with basic experience relating to highway bridges. Individuals completing this course could serve on a bridge inspection team, but would require additional experience and training to qualify as team leaders.

FEE: $650 Per Participant

LENGTH: 5.0 Days (CEU: 3.0 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Thomas Everett • (202) 366-4675 • thomas.everett@fhwa.dot.gov

See page 6 in the front of the catalog for course registration information and page 9 for a coordination checklist.

COURSE NUMBER: FHWA-NHI-130055
COURSE TITLE: Safety Inspection of In-Service Bridges

This course is based on the "Bridge Inspector's Reference Manual" and provides training on the safety inspection of in-service highway bridges. Satisfactory completion of this course will fulfill the training requirements of the national Bridge Inspection Standards (NBIS) for a comprehensive training course.

Mid-term and final examinations based on course content will be administered to participants. The sponsoring agency/State may monitor the examinations and retain the scores to qualify or certify bridge inspectors. The sponsoring agency is responsible for grading the examinations. An answer key will be provided.

OUTCOMES:

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

- Evaluate a variety of bridges and determine the critical areas for inspection, including fatigue-prone details, and common points of deterioration and/or distress
- Review as-built plans and previous inspection reports and, based on this review, plan and conduct an effective safety inspection for common bridge types and bridge-length culverts
- Provide documentation of defects in various materials and of bridge configurations
- Recognize the need to inspect the underwater portions of bridge structures, describe the types of deficiencies to look for (e.g., scour), determine when an inspection is necessary, and identify the procedures and types of equipment available and the advantages and limitations of each
- Evaluate the severity of material deterioration and member distress and assign ratings according to coding guidance as developed by FHWA and/or the State highway agency.
- Determine when it is necessary to close the bridge (or recommend closure) because of imminent danger
- Discuss the equipment requirements for a complete inspection and demonstrate proficiency
- Recognize when further inspection, such as nondestructive testing (NDT), is required beyond the usual visual and hand tool inspection and decide what type of further inspection should be conducted

TARGET AUDIENCE:

Federal, State, and local highway agency employees involved in inspecting bridges or in charge of a bridge inspection unit. A background in bridge engineering or completion of NHI course FHWA-NHI-130054 Engineering Concepts for Bridge Inspectors is strongly recommended.

FEE: $1,400 Per Participant

LENGTH: 10.0 Days (CEU: 6.0 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Thomas Everett • (202) 366-4675 • thomas.everett@fhwa.dot.gov

If you're interested in this course, you may also want to take advantage of other NHI structures courses.

132012 Soil and Foundations Workshop – Geotechnical and Materials
132014 Drilled Shafts
132021 Driven Pile Foundations – Design and Construction
132040 Geotechnical Aspects of Pavements – Geotechnical and Materials
132042 Design of MSEW and RSS
132078 Micropile Design and Construction

COURSE NUMBER: FHWA-NHI-130060
COURSE TITLE: Vessel Collision Design of Highway Bridges

The AASHTO "Guide Specification and Commentary for Vessel Collision Design of Highway Bridges" was developed to enable bridge engineers to assess the risk of vessel collision with a bridge, calculate the costs of probable collisions with the bridge, develop plans to minimize the risk of collision, and develop designs to protect the bridge and its motorists in the event of a collision.

This 2-day training course provides bridge engineers with the background and overall approach of the design specification. Bridge engineers will be trained on the detailed application of those specifications through the use of a typical design situation. The course covers the following subjects:

1. Background and historical collisions
2. General provisions, including applicability of the specification, data collection, bridge importance classification, vessel types and characteristics, design vessel, design impact speed/vessel collision energy, collision force on piers and superstructures, ship and barge bow damage, depth and impact load combination and location of forces
3. Design vessel selection, including waterway/bridge/vessel characteristics, impact distribution, design loads, selection methods (semi-deterministic, risk analysis, and cost-effectiveness)
4. Substructure provisions
5. Concrete and steel design
6. Bridge protection design provisions and planning guidelines, including physical protection (fixed and moveable bridges) and motorist warning systems/aids-to-navigation

OUTCOMES:

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

- Apply the AASHTO vessel collision specification to design bridge structures
- Determine ship and barge characteristics for vessels transiting a waterway
- Compute vessel impact forces and collision energies
- Determine the location of impact forces on bridge members
- Determine design impact loads using Method I (semi-deterministic) criteria, Method II (risk analysis) criteria and Method III (benefit/cost) criteria
- Describe alternative pier protection systems for bridge structures
- Apply vessel collision planning guidelines for the development of new bridges

TARGET AUDIENCE:

Federal, State, and local highway bridge design engineers and bridge managers who are responsible for the construction of bridges over marine or inland waterways navigable by large commercial vessels. It will also be of interest to other parties who are responsible for the management of inland waterway, port, and navigation facilities or for the operation of merchant vessels.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Benjamin Tang • (202) 366-4592 • benjamin.tang@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-130069
COURSE TITLE: Hazardous Bridge Coatings: Design and Management of Maintenance and Removal Operations

The focus of this training course is on the maintenance or removal of bridge paint systems that contain lead or other potentially toxic materials. In compliance with applicable regulations, the course offers a step-by-step method for the design, specification, and management of bridge painting projects.

The classroom presentation includes a combination of lectures and discussions, demonstrations of key methods and procedures, and workshops. In addition, each participant receives a field guide containing a detailed project design checklist, a model/template specification, a suggested contractor pre-qualification package, and a pre-bid meeting agenda, a submittal review checklist, as well as an environmental, health, and safety checklist.

OUTCOMES:

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

- Recognize the health hazards and legal risks associated with paint containing lead and the impacts on bridge painting programs
- Use coating assessment surveys to maximize the service life of individual coating systems and improve the cost-effectiveness of an overall bridge painting program
- Select appropriate combinations of removal methods and containment systems based upon the chosen painting strategy and the relative risks of the paint disturbance operation to workers, the public, and the environment
- Implement a monitoring program that adequately demonstrates that associated risks have been controlled
- Establish performance standards to protect workers, reduce long-term liabilities associated with hazardous wastes, and document successful clearance of project sites
- Prepare clear, well-organized, performance-based, project-specific specifications that establish objective goals for all areas of contract performance but leave the means and methods of construction to the contractor
- Use available tools to help pre-qualify contractors, conduct effective pre-bid meetings, review contractor submittals, and enforce project specifications

TARGET AUDIENCE:

Highway and transportation agency employees and private industry personnel who are responsible for development of contract specifications and procurement requirements for the removal and/or maintenance of bridge paint systems. Training is also applicable to managers who are responsible for procurement approval and for other personnel involved in such operations.

FEE: $530 Per Participant

LENGTH: 4.0 Days (CEU: 2.4 Units)

CLASS SIZE: Minimum: 20; Maximum: 28

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Robert Kogler • (202) 493-3080 • bob.kogler@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-130078
COURSE TITLE: Fracture Critical Inspection Techniques for Steel Bridges

The course curriculum reflects current practices and addresses new and emerging technologies available to bridge inspectors. In addition, the course includes exemplary training and hands-on workshops for popular types of nondestructive testing (NDT) equipment and a case study for the preparation of an inspection plan for a fracture critical bridge.

The first day of the course focuses on the concept of fracture critical members (FCMs), FCM identification, failure mechanics, and fatigue in metal. These fundamentals are followed by an overview of NDT methods. Day two provides demonstration sessions and hands-on applications of NDT techniques for dye penetrant, magnetic particle testing, Eddy current, and ultrasonic testing. Days three and four emphasize inspection procedures and reporting for common FCMs, including problematic details, I-girders, floor beams, trusses, box girders, pin and hanger assemblies, arch ties, eyebars, and cross girders/pier caps. A case study of the preparation of an inspection plan of a fracture critical bridge closes out the presentation. The course includes daily participant assignments. The schedule can be tailored to specific agency requirements.

OUTCOMES:

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

- Identify fracture critical bridges, fracture critical bridge members, and fatigue prone details
- Categorize contributing factors in the initiation and propagation of fatigue cracks
- Perform an intensive, indepth, and thorough fracture critical member inspection
- Identify various crack types and access their impact on the performance of the member
- Evaluate, select, and facilitate the use of available NDT methods
- Recommend a necessary course of action based on inspection findings

TARGET AUDIENCE:

Those benefiting most from this training will be public and private-sector bridge inspectors, supervisors, project engineers, maintenance engineers, shop inspectors, shop foreman, and others responsible for shop fabrication and field inspection of fracture critical steel bridge members. Participants should have completed NHI course FHWA-NHI-130054 Engineering Concepts for Bridge Inspectors and/or FHWA-NHI-130055 Safety Inspection of In-Service Bridges, or possess equivalent field experience relative to bridges to fully understand bridge mechanics and bridge safety inspection procedures as required by the National Bridge Inspection Standards.

FEE: $460 Per Participant

LENGTH: 3.5 Days (CEU: 2.1 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Thomas Everett • (202) 366-4675 • thomas.everett@fhwa.dot.gov

Look on the inside back cover for information about NHI's accreditation with the International Association for Continuing Education and Training (IACET).

COURSE NUMBER: FHWA-NHI-130079
COURSE TITLE: Bridge Coatings Inspection

This training course focuses on inspection of surface preparation and application of protective coating systems for bridge and highway structures, including navigation through the State's painting specification. The course provides a basic overview of the theory of corrosion and its control, the characteristics of various bridge coating types, as well as surface preparation and coating application techniques and equipment. Sessions on understanding coating specifications and diagnosing premature coating failures are also included.

The classroom presentation includes a combination of lectures and discussions, demonstrations of surface preparation, coating application and inspection equipment, and hands-on workshops.

OUTCOMES:

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

- Define the components of a corrosion cell and the methods in which protective coatings inhibit the corrosion process
- Describe the components of an industrial coating, the four basic curing mechanisms, and the advantages and limitations of protective coatings systems for bridge and highway structures
- Identify methods for surface preparation and describe the advantages and limitations of each
- Interpret SSPC and NACE surface preparation specifications
- Use coating manufacturers' product data sheets to ensure proper coating mixing, thinning, and application
- Identify methods of coating application and describe the advantages and limitations of each
- Describe the importance of quality assurance inspection of surface preparation and coating application operations on bridge structures
- Calibrate and use coatings inspection gauges and industry standards
- Describe the content of a pre-job conference
- Describe the basic format and content of a painting specification and identify the key items in the State's painting specification and/or special provisions
- Describe quality assurance documentation procedures
- Identify coating maintenance options and determine the overcoatability of an existing coating system
- Identify the causes of premature coating failures, methods of prevention, and resolution
- Recognize basic safety hazards associated with inspection of protective coatings
- Describe the basic controls used to help prevent environmental contamination during surface preparation and coating application operations

TARGET AUDIENCE:

Highway and transportation agency employees and private industry personnel who are responsible for the onsite inspection of protective coating systems during their installation by outside painting contractors or by State personnel. Training is also applicable to management and bridge inspection supervisory personnel.

FEE: $530 Per Participant

LENGTH: 4.0 Days (CEU: 2.4 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Bob Kogler • (202) 493-3080 • bob.kogler@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-130081-Concrete (2-Day) **NEW COURSE**
FHWA-NHI-130081A-Steel (2-Day)
FHWA-NHI-130081B-Concrete (2.5-Day)
FHWA-NHI-130081C-Steel (2.5-Day)
FHWA-NHI-130081D (4.5-Day)

COURSE TITLE: LRFD for Highway Bridge Superstructures

This new course expands the suite of FHWA services to assist State and local governments in a successful implementation of load and resistance factor design (LRFD). The course promotes the philosophy of the LRFD design platform and establishes the motivation for LRFD as the reassurance that safe design practice is being applied where it is needed. For structural applications, the curriculum follows the AASHTO "LRFD Bridge Design Specifications," 3rd Edition, 2004 (AASHTO LRFD), including the approved 2005 and 2006 Interims.

This course is a combination of instructor-led discussions and workshop exercises. It includes LRFD theory applied to design examples and illustrates step-by-step LRFD design procedures. The training includes the extensive use of student exercises and example problems to demonstrate overall design, detailing, and construction principles addressed in the reference materials, and afford hands-on experience in the AASHTO LRFD design and detailing of steel and concrete superstructures. Exercise and example problems are based on components of overall comprehensive bridge design examples using AASHTO LRFD and provide comparisons between ASD, LFD, and LRFD design methods where meaningful.

The curriculum materials are comprised of a comprehensive design manual, FHWA Publication No. 06-001 FHWA NHI XX-XXX, lecture and workshop exercises intended to promote or enhance a working knowledge of the AASHTO LRFD specification, and a participant workbook for lecture notes and exercises

The curriculum material contains the following major topics:

1. General superstructure design considerations
2. Preliminary design concepts for steel superstructures
3. Steel I-girder design (including miscellaneous steel detail design)
4. Preliminary design concepts for prestressed concrete superstructures
5. Pretensioned concrete I-girder design
6. Continuous pretensioned concrete I-girder design
7. Staged construction of prestressed concrete girder bridges
8. Bearing design

OUTCOMES:

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

- Describe the bridge superstructure design and construction process in accordance with the current AASHTO LRFD specifications
- Identify the application of appropriate current AASHTO LRFD specification articles dealing with:
  - Selection of Bridge Type, Size, and Location
  - Bridge Economics
  - Evolution of Bridge Design Codes
  - Bridge Loads and Load Combinations
  - Structural Analysis
  - Deck Design
  - Concrete Bridge Superstructure Design
  - Steel Bridge Superstructure Design
  - Bearings Selection and Design
- Demonstrate the use of the current AASHTO LRFD specification requirements for superstructure design through the completion of step-by-step procedures, student exercises and design examples
- Successfully complete applicable Learning Outcome Assessments with a combined score of 70% or higher

TARGET AUDIENCE:
This course has been developed for the needs of practicing public and private sector structural engineers with 1-10 years of experience. The primary audience is Agency and consultant structural designers.

Pre-training Competencies
Individuals attending this course should have a minimum BSCE degree and completed the Web Based Training LRFD Primer, or a working knowledge of the current AASHTO LRFD or the AASHTO Standard Specifications for Highway Bridges; and relevant design experience using either of these specifications on at least one bridge superstructure.

FEE: $300 Per Participant (FHWA-NHI-130081)
LENGTH: 2.0 Days (CEU: 1.2 Units)

FEE: $300 Per Participant (FHWA-NHI-130081A)
LENGTH: 2.0 Days (CEU: 1.2 Units)

FEE: $375 Per Participant (FHWA-NHI-130081B)
LENGTH: 2.5 Days (CEU: 1.5 Units)

FEE: $375 Per Participant (FHWA-NHI-130081C)
LENGTH: 2.5 Days (CEU: 1.5 Units)

FEE: $675 Per Participant (FHWA-NHI-130081D)
LENGTH: 4.5 Days (CEU: 2.7 Units)
CLASS SIZE: Minimum: 20; Maximum: 40

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Firas Ibrahim • (202) 366-4598 • firas.ibrahim@fhwa.dot.gov

We want to hear from you about the NHI catalog. Please complete the catalog survey card in the back of the catalog.

COURSE NUMBER: FHWA-NHI-130082 (1-Day)
FHWA-NHI-130082A (3-Day)
FHWA-NHI-130082B (4-Day)
FHWA-NHI-130082C (5-Day)

NEW COURSE

COURSE TITLE: LRFD for Highway Bridge Substructures and Earth Retaining Structures

This new course expands the suite of FHWA services to assist State and local governments in a successful implementation of load and resistance factor design (LRFD). The course promotes the philosophy of the LRFD design platform and establishes the motivation for LRFD as the reassurance that safe design practice is being applied where it is needed. For structural applications, the curriculum follows the AASHTO "LRFD Bridge Design Specifications," 3rd Edition, 2004 (AASHTO LRFD). However for geotechnical applications, the curriculum follows recent development work on AASHTO LRFD Section 10, Foundations, including the approved 2006 interim specifications.

This course is a combination of instructor-led discussions and workshop exercises. It includes LRFD theory applied to design examples and illustrates step-by-step LRFD design procedures through a series of detailed process flowcharts. The training includes the extensive use of student exercises and example problems to demonstrate overall design, detailing, and construction principles addressed in the reference materials, and afford hands-on experience in the AASHTO LRFD design and detailing of bridge abutment and pier elements, deep and shallow foundation design, and earth retaining structures. Exercise and example problems are based on components of overall comprehensive bridge design examples using AASHTO LRFD and provide comparisons between ASD, LFD, and LRFD design methods where meaningful.

The curriculum materials are comprised of a comprehensive reference manual, FHWA Publication No. FHWA NHI 05-094, lecture and workshop exercises intended to promote or enhance a working knowledge of the AASHTO LRFD specification, and a participant workbook for lecture notes and exercises.

The curriculum material contains the following major topics:

1. Loads, load distribution, and load combinations
2. Principles of limit state designs
3. Geotechnical spread footing design (soil and rock)
4. Driven pile and drilled shaft design (soil and rock)
5. Substructure design and detailing for a cantilever abutment and hammerhead pier
6. Mechanically stabilized earth walls
7. Precast modular walls
8. Ground anchor wall design

The following course delivery options are available in order to suit the varying levels of participant experience within a given agency.

OUTCOMES:

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

- Define AASHTO LRFD limit states and compute structural and geotechnical design loads
- Apply AASHTO LRFD criteria for design
- Integrate the AASHTO LRFD specification provisions into the host agency's current practice
- Integrate the geotechnical aspects of LRFD foundation design into LRFD structural design
- Complete a comprehensive final exam and score at least 70 percent

This course can be taught in different course length formats. See our Web site to determine which course length best suits your training needs.

TARGET AUDIENCE:
The primary target audience for the seminar is mid-level bridge and geotechnical journeymen or mid-level design engineers with one to five years of experience responsible for the structural and/or geotechnical design of bridge substructures and earth retaining structures. The course can accommodate a blend of entry-level designers with college LRFD experience and experienced designers with load factor design (LFD) experience but minimal or no LRFD experience.

FEE: $250 Per Participant (FHWA-NHI-130082)
LENGTH: 1.0 Days (CEU: 0.6 Units)

FEE: $450 Per Participant (FHWA-NHI-130082A)
LENGTH: 3.0 Days (CEU: 1.8 Units)

FEE: $600 Per Participant (FHWA-NHI-130082B)
LENGTH: 4.0 Days (CEU: 2.4 Units)

FEE: $750 Per Participant (FHWA-NHI-130082C)
LENGTH: 5.0 Days (CEU: 3.0 Units)
CLASS SIZE: Minimum: 20; Maximum: 40

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Firas Ibrahim • (202) 366-4598 • firas.ibrahim@fhwa.dot.gov
Technical Information: Jerry DiMaggio • (202) 366-1569 • jerry.dimaggio@fhwa.dot.gov

If you're interested in this course, you may also want to take advantage of other NHI structures courses.

132012 Soil and Foundations Workshop – Geotechnical and Materials
132014 Drilled Shafts
132021 Driven Pile Foundations – Design and Construction
132040 Geotechnical Aspects of Pavements – Geotechnical and Materials
132042 Design of MSEW and RSS
132078 Micropile Design and Construction

COURSE NUMBER: FHWA-NHI-130087
COURSE TITLE: Inspection and Maintenance of Ancillary Highway Structures

This course provides training in the inspection and maintenance of ancillary structures, such as structural supports for highway signs, luminaries, and traffic signals. Its goal is to provide agencies with information to aid in establishing and conducting an inspection program in accordance with the FHWA "Guidelines for the Installation, Inspection, Maintenance, and Repair of Structural Supports for Highway Signs, Luminaries, and Traffic Signals."

OUTCOMES:

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

- List and identify common visible weld defects
- Identify appropriate nondestructive testing techniques
- Identify factors that lead to corrosion and explain mitigation methods used in ancillary structures
- Define the severity of observed defects in accordance with the FHWA guidelines
- Identify defects in base/anchor rod installations
- List key issues in construction inspection of ancillary structures
- Identify repair techniques and discuss their use

TARGET AUDIENCE:

Structural engineers, material engineers, traffic engineers, field inspectors, construction supervisors, maintenance personnel, and other technical personnel involved in the installation, inspection, maintenance, and repair of ancillary highway structures. This course is not a design course; however, the information should be helpful to those working in design and specification of ancillary structures.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Tom Everett • (202) 366-4675 • thomas.everett@fhwa.dot.gov

If you're interested in this course, you may also want to take advantage of other NHI structures courses.

132012 Soil and Foundations Workshop – Geotechnical and Materials
132014 Drilled Shafts
132021 Driven Pile Foundations – Design and Construction
132040 Geotechnical Aspects of Pavements – Geotechnical and Materials
132042 Design of MSEW and RSS
132078 Micropile Design and Construction

COURSE NUMBER: FHWA-NHI-130088
COURSE TITLE: Bridge Construction Inspection

NEW COURSE

The Bridge Construction Inspection Course (BCIC) is one of the core curriculum initiatives cited by AASHTO, FHWA, and the five regional organizations. These core curriculum initiatives are being pursued in order to maximize regional, public, and industry resources in the development of core training and qualification-based certification programs, improve the quality of bridge construction, and promote uniformity in training content and qualification requirements.

Overall, the BCIC improves quality, ensures uniformity, and establishes minimum competencies for bridge construction inspection. The underlying themes of the course can be broken down into key segments. The BCIC will provide the construction inspector with:

1. The requisite knowledge of construction that will make him/her an effective inspector
2. An overall awareness of the problems and consequences that can arise during construction and how these factors will impact the safety and service life of the structure
3. A knowledge of the inspections that should be performed to confirm conformance to the contract documents, or document contract nonconformance

OUTCOMES:

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

- Explain the role of the construction inspector as part of the overall project team
- Interpret drawings and specifications
- Anticipate possible construction and materials problems
- Maintain bridge controls for location and elevation
- Describe construction sequence for various bridge systems (e.g. foundations, substructures, superstructures, and miscellaneous systems), bridge types and materials
- Conduct regular systematic inspections of materials and standards of construction, through the use of job aids, such as checklists
- Explain and perform basic inspection and testing of materials
- Perform accurate surveys and checking of dimensions
- Make and maintain sufficient records

TARGET AUDIENCE:

Construction supervisors, transportation department field inspectors, field engineers, resident engineers, structural engineers, materials engineers, and other technical personnel involved in the construction inspection of bridges. The course is developed for participants without an indepth engineering background. However, more knowledgeable persons can attend and will add to the overall effectiveness of the training through their active participation.

FEE: $600 Per Participant

LENGTH: 4.5 Days (CEU: 2.7 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Benjamin Tang • (202) 366-4592 • benjamin.tang@fhwa.dot.gov

Do you have a suggestion for a new training course? Please complete the new training course request card in the back of the catalog.

COURSE NUMBER: FHWA-NHI-131023
COURSE TITLE: Highway Materials Engineering

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 course, participants will be able to:

- Identify and describe the characteristics and engineering properties of the materials utilized in highways
- Identify and describe the selection criteria 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:

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

FEE: $5,100 Per Participant

LENGTH: 30.0 Days (CEU: 18.0 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Michael Rafalowski • (202) 366-1571 • michael.rafalowski@fhwa.dot.gov

Registering for this course requires submitting an application. For information on application requirements, please contact Michael Rafalowski at (202) 366-1571 or michael.rafalowski@fhwa.dot.gov.

COURSE NUMBER: FHWA-NHI-131026
COURSE TITLE: Pavement Subsurface Drainage Design

The course provides detailed information concerning pavement subsurface drainage design for new or reconstructed portland cement concrete (PCC) or asphalt concrete (AC) pavements and retrofit edge drains. This course teaches cost-effective design methods, including permeable bases and edge drains where appropriate to prevent or minimize moisture-related distress to pavements.

OUTCOMES:

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

- Evaluate the need for subsurface drainage systems for existing pavements or new pavement designs
- Design subsurface drainage systems for portland cement concrete and hot-mix asphalt pavements
- Explain the guidelines for developing plans and specifications for subsurface drainage systems
- 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.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Angel Correa • (404) 562-3907 • angel.correa@fhwa.dot.gov

Courses can be hosted by any transportation organization. Instructions for hosting a course can be found on page 7.

COURSE NUMBER: FHWA-NHI-131032
COURSE TITLE: Hot-Mix Asphalt Construction

This training course is the result of a partnership between the American Association of State Highway and Transportation Officials (AASHTO), 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 course, 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.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Chris Newman • (202) 366-2023 • christopher.newman@fhwa.dot.gov
Technical Information: Michael Rafalowski • (202) 366-1571 • michael.rafalowski@fhwa.dot.gov

Earn Continuing Education Units (CEUs) with NHI courses.

COURSE NUMBER: FHWA-NHI-131044
COURSE TITLE: 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 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 course, 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.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Chris Newman • (202) 366-2023 • christopher.newman@fhwa.dot.gov
Technical Information: Matthew Corrigan • (202) 366-1549 • matthew.corrigan@fhwa.dot.gov

How can we help? We want to assist you with your training needs. Please complete the 'How Can We Help' survey card in the back of the catalog.

COURSE NUMBER: FHWA-NHI-131045
COURSE TITLE: 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 course, 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.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Matthew Corrigan • (202) 366-1549 • matthew.corrigan@fhwa.dot.gov

An FHWA Divisions and State Highway Agencies contact list is located on page 183.

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 indepth 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 course, 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.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Jason Harrington • (202) 366-1576 • jason.harrington@fhwa.dot.gov

Video conferencing technology can make instructor-led courses accessible to remote participants without changing the delivery format. Contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov for more information.

COURSE NUMBER: FHWA-NHI-131054
COURSE TITLE: Pavement Preservation: The Preventive Maintenance Concept

This training course provides an introduction to the concept of pavement preventive maintenance, including a description of currently available tools and technology that make the implementation of a pavement preventive maintenance program feasible. Targeting an audience of upper management and policy makers in highway agencies, the course focuses on the information needed to develop or improve a preventive maintenance program and illustrates the steps that five states have taken in the development of their own preventive maintenance programs. Considerably less emphasis is given to actual pavement preventive maintenance techniques themselves, although an extensive listing of pertinent references is provided for each technique. This is the first in a series of four courses on the general subject of pavement preservation. The second course is FHWA-NHI-131058 Pavement Preservation: Selecting Pavements for Preventive Maintenance. The third and fourth courses are FHWA-NHI-131103 Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments and FHWA-NHI-131104 Pavement Preservation: Integrating Pavement Preservation Practices and Pavement Management.

OUTCOMES:

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

- Identify the components of a pavement preventive maintenance (PPM) program
- Identify various pavement preservation techniques and materials and discuss the need for performance evaluation and pavement condition analysis
- Discuss the effects of various treatments on pavement performance and pavement condition indices
- Describe the importance of integrating pavement preservation into pavement management systems
- Explain cost/benefit concepts

TARGET AUDIENCE:

Upper- and mid-level highway agency professionals who are responsible for pavement preservation and management.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Tom Deddens • (202) 266-1557 • tom.deddens@fhwa.dot.gov

Need an LTAP/TTAP contact? See the LTAP/TTAP contact list located on page 192.

COURSE NUMBER: FHWA-NHI-131058
COURSE TITLE: Pavement Preservation: Selecting Pavements for Preventive Maintenance

This short course focuses on selecting the right pavement for various preservation treatments by evaluating the merits of each treatment under various field conditions. This course will illustrate in detail the pavement evaluation, project selection, and material considerations for the various preventive maintenance applications. This is the second in a series of four courses on the general subject of pavement preservation. The first course is FHWA-NHI-131054 Pavement Preservation: The Preventive Maintenance Concept. The third and fourth courses will be FHWA-NHI-131103 Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments and FHWA-NHI-131104 Pavement Preservation: Integrating Pavement Preservation Practices and Pavement Management.

OUTCOMES:

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

- Identify pavement conditions and other attributes that suggest whether preventive maintenance is appropriate
- Identify feasible treatments for the selected pavement
- Select the appropriate technique(s) and the appropriate timing for pavement preservation actions to extend the service life and retard the development of pavement distress
- Select a treatment based on consideration of life-cycle cost, improved performance, anticipated benefits, and other factors

TARGET AUDIENCE:

Field managers and practitioners for both the owner of the facilities and industry.

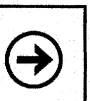
FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Tom Deddens • (202) 366-1557 • tom.deddens@fhwa.dot.gov

You don't need to be a government agency to host a course. For instructions on how to host a course, please see page 7.



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 course, 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.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Mark Swanlund • (202) 366-1323 • mark.swanlund@fhwa.dot.gov

The On-Site Course Request Form (FWHA Form 1530) is located in the back of the catalog. Please make copies of the form for future use. You can also submit an electronic copy via the NHI Web site.

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 course, 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.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Mark Swanlund • (202) 366-1323 • mark.swanlund@fhwa.dot.gov

Video conferencing technology can make instructor-led courses accessible to remote participants without changing the delivery format. Instruction is delivered to a video camera and broadcast to video conferencing sites in areas close to participants, eliminating or greatly reducing the need for travel. Contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov for more information.

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 course, 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.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Jason Harrington • (202) 366-1576 • jason.harrington@fhwa.dot.gov

Online courses consist of interactive instructional material in Web-based format that can be accessed from any computer with an Internet connection. For more information about online courses contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov.

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 workshops pertaining to materials characterization, structural response calculations, pavement performance prediction, and mechanistic-empirical pavement design. These workshops use real-world problems and exercises that enhance future application of this design methodology. Some of the workshops 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 2002 "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 2002 "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 course, 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.

FEE: $530 Per Participant

LENGTH: 4.0 Days (CEU: 2.4 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Sam Tyson • (202) 366-1326 • sam.tyson@fhwa.dot.gov
Technical Information: Leslie Myers • (202) 366-1198 • leslie.myers@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 course, 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.

FEE: $235 Per Participant

LENGTH: 1.5 Days (CEU: 0.9 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Mark Swanlund • (202) 366-1323 • mark.swanlund@fhwa.dot.gov

Want to read more about the International Association for Continuing Education and Training (IACET)? Go to the inside back cover.

COURSE NUMBER: FHWA-NHI-131103
COURSE TITLE: Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments

NEW COURSE

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. 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 decision-maker in selecting the best pavement preservation option to be designed and applied.

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 third in a series of four courses on the general subject of pavement preservation.

OUTCOMES:

Upon completion of the course, 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.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Tom Deddens • (202) 366-1557 • tom.deddens@fhwa.dot.gov

With NHI courses, learn new skills that can be quickly applied to your job.

COURSE NUMBER: FHWA-NHI-131104
COURSE TITLE: Pavement Preservation: Integrating Pavement Preservation Practices and Pavement Management

This course is intended to communicate to agencies the importance of integrating preventive maintenance 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 preventative maintenance 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 preventive maintenance 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.

OUTCOMES:

Upon completion of the course, 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.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Tom Deddens • (202) 366-1557 • tom.deddens@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 course, 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.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Sonya Hill • (202) 366-1337 • sonya.hill@fhwa.dot.gov

Web conferencing allows individuals to conduct live interactive presentations, demonstrations, meetings, classes, or training sessions via the Internet while simultaneously communicating through an audio conference bridge. Contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov for program assistance.

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 course, participants will be able to:

- Understand the fundamentals of transportation asset management
- Appreciate why using transportation asset management is important to their agencies
- 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 conscise 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.

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 40

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Stephen Gaj • (202) 366-1336 • stephen.gaj@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-131107
COURSE TITLE: Principles and Practices for Enhanced Maintenance Management Systems

This course is an introduction to the methods and practices used in enhanced maintenance management systems (MMS) to effectively maintain and operate a highway network. It provides participants with the principles and practices of using MMS and illustrates effective maintenance and operation of a highway network. 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 as much as possible to illustrate the use of the principles in transportation agencies.

OUTCOMES:

Upon completion of the course, 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.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

CLASS SIZE: Minimum: 20; Maximum: 40

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Celso Gatchalian • (202) 366-1342 • celso.gatchalian@fhwa.dot.gov

We want to hear from you about the NHI catalog. Please complete the catalog survey card in the back of the catalog.

COURSE NUMBER: FHWA-NHI-132012
COURSE TITLE: Soils and Foundations Workshop

The sponsoring organization is responsible for providing access to a materials laboratory for demonstration purposes. Course runs from 1:00 PM on Monday through noon on Friday.
This course is geared toward the practicing design and construction engineers in the foundation field, routinely dealing with soil and foundation problems, and who have little theoretical background in soil mechanics or foundation engineering. The course takes a project-oriented approach whereby the soils input to a fictitious bridge project is followed from conception to completion. A visit to a laboratory is used to illustrate basic soil concepts in typical major project phases. In each phase of the fictitious project, the soil concepts will be developed into specific foundation designs and recommendations. Classroom presentation includes a variety of exercises to verify achievement of learning objectives. Each participant will take away a notebook containing a complete foundation design, completed exercises, and enough reference data to independently complete other related activities.

OUTCOMES:

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

- Develop a visual description of soils native to the host state
- List the basic soil test procedures and application of soil test results to highway projects
- Demonstrate basic procedures used for both settlement and stability analysis, and identify design solutions to stability and settlement problems
- Demonstrate procedures used for determining bearing capacity and settlement of spread footing foundations
- Demonstrate basic skill in the design and construction management of driven pile foundations
- Identify driven pile foundation construction equipment and procedures for construction inspection
- Identify format and provide minimum content for an adequate foundation report

TARGET AUDIENCE:

Geotechnical specialists, bridge designers, highway designers, construction engineers, maintenance engineers and drillers, and especially the first-line supervisors involved in the design of highway structures and earthworks. The greatest impact will be achieved by convincing structural, design, and construction engineers to use procedures from this course as a guide for routine geotechnical work. One of the major benefits is to give engineers an appreciation of activities outside their specialties that influence, or are influenced by, the work of the geotechnical specialist. All attendees should be encouraged to attend the entire course. The one exception is for drillers who could be invited to attend only the first phase of the course (Monday PM and Tuesday AM).

FEE: $530 Per Participant

LENGTH: 4.0 Days (CEU: 2.4 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Ben Rivers • (404) 562-3926 • benjamin.rivers@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-132013 (1-Day)
FHWA-NHI-132013A (3-Day)

COURSE TITLE: Geosynthetics Engineering Workshop

Two courses are available. These courses provide training on the correct, cost-effective utilization of geosynthetics in transportation applications. The use of geotextiles, geogrids, pavement edge drains, drainage composites, erosion control materials, sediment control materials, and geomembranes are examined. Applications of filtration, drainage, temporary and permanent erosion control, sediment control, roadway separation, roadway reinforcement, roadway subgrade improvement, pavement overlays, embankments over soft foundations, mechanically stabilized earth walls, mechanically stabilized earth slopes, geomembrane containment ponds, and geomembrane pavement encapsulation are covered.

The 1-day summary course provides an introduction to geosynthetics, focusing on identifying, specifying, testing, installing, and inspecting geosynthetic installations.

The 3-day design and construction course provides a review of design procedures, expands on the material of the one-day summary course and includes workshop problems and student exercises.

OUTCOMES:

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

- Determine if geosynthetics are a feasible, cost-effective option for construction or maintenance of transportation earthworks
- Specify procedures for and oversee geosynthetic installations
- Locate references on geosynthetic materials and geosynthetic applications
- Prepare conceptual and basic designs for filtration, drainage, temporary and permanent erosion control, sediment control, roadways, pavement overlays, embankments over soft foundations, mechanically stabilized earth walls and earth slopes, and geomembrane transportation applications [3-day only]
- Select appropriate material property and design parameter test methods for specific geosynthetic projects, and differentiate between index and performance tests/properties [3-day only]
- Develop appropriate materials and construction specifications for geosynthetic projects [3-day only]
- Determine the need for site specific monitoring or special inspection schemes to ensure compliance with design [3-day only]

TARGET AUDIENCE:

Public agency personnel and consultants (bridge, hydraulic, pavement, geotechnical, construction and maintenance engineers, and construction inspectors and technicians). The 1-day course is for those involved with construction and maintenance of transportation facilities that include earthwork construction, while the 3-day course is for those involved with design and/or construction of transportation facilities that incorporate earthwork. There are no prerequisites, although prior attendance in FHWA-NHI-132012 Soils and Foundations Workshop is recommended.

FEE: $200 Per Participant (FHWA-NHI-132013)

LENGTH: 1.0 Days (CEU: 0.6 Units)

FEE: $400 Per Participant (FHWA-NHI-132013A)

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Jerry DiMaggio • (202) 366-1569 • jerry.dimaggio@fhwa.dot.gov
Technical Information: Rich Barrows • (360) 619-7704 • rich.barrows@fhwa.dot.gov

This course has different course length options. Visit the NHI Web site for information on each course length.

COURSE NUMBER: FHWA-NHI-132014
COURSE TITLE: Drilled Shafts

Drilled shafts are an alternate type of deep foundation that may be more cost-effective than, and have improved performance compared to, other types of deep foundations in bridge piers at river crossings, retrofit operations, high-mast lighting, earth retaining structures, single-column piers, and similar applications. This course provides participants with specific technical guidance on all aspects of designing, installing, and monitoring of drilled shafts. The lessons address the following topics: applications, advantages, and disadvantages of drilled shafts for transportation structure foundations; general requirements for subsurface investigations; construction methods; construction case histories; construction specifications; principles of design of drilled shafts for axial and lateral loading; expansive soils, downdrag, and similar effects; load testing; inspection; integrity testing; repair and retrofit of defective shafts; and cost estimation. The participants will receive a comprehensive reference manual on drilled shaft construction and design used by engineers who perform detailed designs of drilled shafts, write construction specifications, and evaluate the performance of the contractor through a comprehensive inspection program.

OUTCOMES:

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

- Describe the various drilling rigs and tools that are available to construct drilled shafts under varied subsurface soil and rock conditions
- Recognize the basic features of drilling aids, such as casings and drilling slurries, and the reasons for certain fundamental requirements for these aids
- Design drilled shafts for axial loading in simple soil and rock profiles
- Demonstrate a general understanding of the elements of designing drilled shafts for lateral loads
- Demonstrate an understanding of the need for load tests and available methods for performing them
- Formulate the basic elements of construction specifications for drilled shafts
- Estimate costs for drilled shafts

TARGET AUDIENCE:

Geotechnical engineers, bridge designers, and resident engineers. The course embraces both construction and design, and it is important that all participants attend all lessons, not just those in the immediate area of interest. A key issue is how the details of construction affect the way in which a drilled shaft should be designed and how the intent of the design affects inspection. Participants in the course are expected to have a degree in engineering for which they have passed an undergraduate course in soil mechanics and/or have successfully completed NHI course FHWA-NHI-132012 Soils and Foundations Workshop. This course is intended for field or laboratory personnel with a background in engineering.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Barry Siel • (720) 963-3208 • barry.siel@fhwa.dot.gov
Technical Information: Curtis Monk • (515) 233-7320 • curtis.monk@fhwa.dot.gov

Need to find a FHWA Division or State Highway Agency contact? See the contact list on page 183.

COURSE NUMBER: FHWA-NHI-132021
COURSE TITLE: Driven Pile Foundations - Design and Construction

UPDATED COURSE

This course covers the practical application of driven pile technology, with an emphasis on data interpretation and decision-making issues common to real- life construction projects. The course addresses subsurface investigation, pile selection, economic analysis, static design analysis (single pile and pile group behavior under compression, tension and lateral loading, pile settlement, negative skin friction) specifications and contracting documents, construction monitoring (pile inspection, dynamic driving formulas, wave equation analysis, dynamic testing), static methods of pile load testing, driven pile installation equipment, and accessories. This course also covers definition and design procedures of aggressive subsurface conditions; the driven computer program for calculation of static pile capacity; design procedures for downdrag, scour, squeeze, and heave; plugging of open pile sections; group design for lateral and uplift loads; and economics of pile selection. Instructional methods include workshops, student exercises, and sample problems to transfer the necessary knowledge and skills to plan and design driven pile foundation projects, and to implement QA/QC procedures during construction.

OUTCOMES:

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

- Implement a systematic plan for the design and construction of driven pile foundations
- Choose the appropriate pile type in a given soil profile based on the advantages and disadvantages of common driven pile types
- Calculate single and group capacities of driven piles to resist compression, tension, and lateral loads
- Use time-dependent soil strength changes in pile foundation design and construction control
- Identify the project influence and significance of pile driveability, pile refusal, and minimum and estimated pile toe elevations
- Calculate allowable design and allowable driving stresses for common pile types
- Identify pile hammer types, their operational characteristics, and key pile hammer and pile hammer accessory inspection issues

TARGET AUDIENCE:

Geotechnical specialists, bridge engineers, construction engineers, and consultant review specialists. This course is suitable for attendance by entry-level and experienced engineers and advanced-level technicians. Attendees should have a basic knowledge of subsurface investigation methods and the general aspects of foundation design and construction.

FEE: $530 Per Participant

LENGTH: 4.0 Days (CEU: 2.4 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Jerry DiMaggio • (202) 366-1569 • jerry.dimaggio@fhwa.dot.gov

Any transportation organization can host a course.
For hosting instructions, see page 7.

COURSE NUMBER: FHWA-NHI-132022
COURSE TITLE: Driven Pile Foundations - Construction Monitoring

UPDATED COURSE

This course provides information on current methods of driven pile technology with emphasis on data interpretation and decision-making issues common to driven pile installation and monitoring. The course covers the following areas: specifications, contracting issues, pile installation, monitoring, and inspection. Application and interpretation of the wave equation, and dynamic and static pile-load-testing methods are highlighted with an emphasis on the practical issues related to pile monitoring and acceptance on typical construction projects. Construction material includes pile capacity verification by formula, wave equation, dynamic test or static test; performance and interpretation of compression, tension, and lateral load test; new load testing devices, the Osterberg Cell and Statnamic; operation and inspection of pile hammers, including new hydraulic hammers; and troubleshooting of pile hammer operation and pile installation problems. (Refer to course FHWA-NHI-132021 Driven Pile Foundations - Design and Construction for additional background information.) The goal of this course is to transfer the necessary knowledge and skills to plan driven pile foundation projects and to implement QA/QC procedures during construction.

OUTCOMES:

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

- Implement a systematic plan for the construction of driven pile foundations
- Discuss the appropriate pile type in a given soil profile based on the advantages and disadvantages of common driven pile types
- Identify pile refusal, and minimum and estimated pile toe elevations
- Define key components of driven pile specifications
- Use dynamic pile testing and static load testing correctly and effectively
- Identify pile hammer types, their operational characteristics, and key pile hammer and pile hammer accessory inspection issues
- Identify pile toe accessories, pile splicing methods, and pile installation aids applicable to the pile type and subsurface conditions
- Explain appropriate methods of pile installation inspection

TARGET AUDIENCE:

Geotechnical specialists, bridge engineers, construction engineers, consultant review specialists, and advanced-level technicians involved in and responsible for the specification and construction monitoring of driven pile foundations. Basic knowledge of subsurface investigation methods is desirable.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Jerry DiMaggio • (202) 366-1569 • jerry.dimaggio@fhwa.dot.gov

Are you hosting a course? See page 9 for a course coordination checklist.

COURSE NUMBER: FHWA-NHI-132031
COURSE TITLE: Subsurface Investigations

This course is designed to have students recognize the essential importance of a properly planned, reviewed, and executed subsurface investigation program to the design and construction of transportation facilities and to provide them with the skills to do this work. This course presents the latest methods and procedures in the planning, execution, and interpretation of the various subsurface investigation methods and the development of appropriate soil and rock design and construction parameters for engineering applications. Topics include the geotechnical specialist's role in subsurface investigations; exploration methodologies; exploratory equipment types and their suitability for various subsurface conditions; the use of in-situ testing and geophysical surveys for subsurface characterization; the handling, transportation, and storage of soil and rock samples; and laboratory testing techniques and interpretation of data. Contracting for soil and rock investigations, correlation of soil and rock properties, and preparation of clear and concise geotechnical reports are also covered. Classroom instruction includes student exercises and example problems to reinforce course OUTCOMES:.

OUTCOMES:

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

- Recognize the importance of performing an adequate subsurface investigation
- Plan and execute a subsurface exploration program for a typical surface transportation project
- Use existing information in the planning of the investigation program
- Apply appropriate in-situ testing procedures based upon the expected subsurface conditions and obtain high-quality soil and rock samples for laboratory testing
- Assign appropriate laboratory testing procedures for determining soil and rock design parameters
- Interpret the results of laboratory tests and determine soil and rock parameters to be used in design
- Summarize results of subsurface investigation in a concise geotechnical investigation report

TARGET AUDIENCE:

FHWA, State, and local transportation agency employees, college and university faculty, and consultant engineers who are or will be involved in the planning, execution, review, and interpretation of subsurface investigations. An undergraduate degree in geology, engineering geology, civil engineering, or equivalent engineering experience in the highway/transportation field is desirable.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Ben Rivers • (404) 562-3926 • benjamin.rivers@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-132033
COURSE TITLE: Soil Slope and Embankment Design and Construction

UPDATED COURSE

Participants will receive a comprehensive reference manual on investigation, design, construction, and mitigation of soil slopes and embankments used by practicing highway/geotechnical engineers. The participant workbook contains copies of visual aids and student exercises that closely follow the PowerPoint slide presentations. The student exercises promote interaction in the classroom and illustrate the basic principles and analyses.

This course covers important aspects associated with the design and construction of soil slopes and embankments. It is intended to provide transportation earthwork professionals with knowledge to recognize potential soil slope/embankment stability and deformation problems in transportation projects, to develop necessary skills to design and evaluate soil slopes and embankments, and to consider the construction and inspection implications. The course embraces both design and construction. It is important for all participants to attend all lessons, not just those in their immediate areas of interest.

OUTCOMES:

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

- Recognize potential failure modes or deformation types for soil slopes and embankments
- Identify the potential failure modes for soil slopes and the type of analysis required to evaluate stability of the slope
- Determine the stability of a slope using slope stability charts
- Recognize the major design consideration for embankments constructed using earth fill, rock fill, and lightweight fill
- List the design steps necessary for the design of an embankment over compressible foundation soil
- List the common causes/triggering mechanisms for landslides/slope instabilities
- List appropriate stabilization methods

TARGET AUDIENCE:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers/geologists who are involved in the analysis, design, construction, maintenance, and remediation of soil slopes and embankments on surface transportation facilities. An undergraduate degree in civil engineering or equivalent engineering experience in the highway/transportation field is desirable.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Peter Osborn • (410) 962-0702 • peter.osborn@fhwa.dot.gov
Technical Information: Jerry DiMaggio • (202) 366-1569 • jerry.dimaggio@fhwa.dot.gov

Learn online with NHI Internet-based courses.

COURSE NUMBER: FHWA-NHI-132034
COURSE TITLE: Ground Improvement Techniques

This course covers important design and construction aspects associated with ground improvement techniques. Topics on ground improvement techniques include grouting, vertical drains, stone columns, lightweight fills, vibro compaction, dynamic compaction, deep soil mixing, column supported embankments, soil nailing, MSE walls, and reinforced soil slopes.

The goal of this course is to have each participant recognize the applicability of, and develop preliminary cost analysis for, specific ground improvement method(s) that could be employed to sufficiently improve the ground to permit construction of earthwork, bridge and earth retaining structure transportation features.

Participants completing this course will develop an appreciation for the necessary subsurface exploration and laboratory characterization necessary of subsurface soil and rock as well as the requisite design parameters necessary to develop a preliminary design and cost estimate. Limitations of each method are discussed and summarized. The course is designed so that maximum input will be elicited from the students, particularly regarding an understanding of application criteria, the impact of geotechnical features on the long-term performance, and contracting methods.

OUTCOMES:

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

- Locate criteria to determine the applicability of each ground improvement method for a specific project under consideration
- Describe advantages, disadvantages, and limitations for each ground improvement method discussed
- Locate and identify required soil and rock properties necessary to perform preliminary design
- Prepare conceptual and basic designs, and be able to check contractor-submitted designs
- Discuss appropriate QA/QC methods for each type of ground improvement method
- Summarize key elements of a preferred contracting method for each technique
- Develop a preliminary cost estimate based on a preliminary design

TARGET AUDIENCE:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers who are or will be involved in planning, designing, and/or constructing ground improvement systems for earthwork, bridge, and earth retaining structure transportation features. An undergraduate degree in geology, engineering geology, civil engineering, or equivalent engineering experience in the highway/transportation field is desirable.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Silas Nichols • (410) 962-1246 • silas.nichols@fhwa.dot.gov

See page 180 to learn about distance learning.

COURSE NUMBER: FHWA-NHI-132035
COURSE TITLE: Rock Slopes

UPDATED COURSE

The participants will receive a comprehensive reference manual (FHWA-HI-99-007) and the accompanying student exercises (FHWA-HI-99-036). The reference manual is a comprehensive reference on investigation, design, and construction of rock slopes for highway/geotechnical engineers. It is geared to the practicing engineer who is involved with rock slope design and stabilization, but may not have the complete theoretical background. The student exercises (FHWA HI-99-036) are designed to promote interaction in the classroom and to illustrate the basic principles and analyses. Solutions to the exercises are included with each exercise.

The course presents appropriate geological investigation techniques, shear strength theories and determination of rock strength, and various design methods for rock slopes with different failure mechanisms. Other topics include rock blasting, rock slope stabilization methods, and contracting issues. Classroom instructions include the discussion of sample problems and case histories involving rock slope analyses and design.

OUTCOMES:

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

- Describe the basic principles of rock slope design
- Plan and execute a geological investigation, including geologic mapping
- Perform appropriate in-situ and laboratory strength tests
- Determine rational design rock strength parameters by proper evaluation of in-situ and laboratory test data along with appropriate rock strength correlations
- Identify the failure mechanisms associated with rock slopes and apply appropriate design methodologies
- Design effective rock-fall protection and slope stabilization measures
- Design a monitoring program for cut slopes

TARGET AUDIENCE:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers/ geologists who are or will be involved in the design, excavation, and stabilization of rock slopes. An undergraduate degree in geology, engineering geology, civil engineering, or equivalent engineering experience in the highway/ transportation field is desirable.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Barry Siel • (720) 963-3208 • barry.siel@fhwa.dot.gov

FHWA Mission – Enhancing mobility through innovation, leadership, and public service.

COURSE NUMBER: FHWA-NHI-132036
COURSE TITLE: Earth Retaining Structures

UPDATED COURSE

The goal of this course is to provide agencies with state-of-the-practice design tools and construction techniques to expand implementation of safe and cost-effective earth retention technologies. This course addresses the selection, design, construction, and performance of earth retaining structures used for support of fills and excavations or cut slopes. Factors that affect wall selection are discussed, including contracting approaches with an emphasis on required bidding documents for each approach. Class discussions will include design procedures and case histories, demonstrating the selection, design, and performance of various earth retaining structures.

OUTCOMES:

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

- Recognize potential applications for retention structures used in transportation facilities
- Select the most technically appropriate and cost-effective type of retaining wall for the application from a thorough knowledge of available systems
- Examine and select appropriate material properties, soil design parameters, and earth pressure diagrams
- Prepare conceptual and basic (i.e., for simple geometry) designs using appropriate design methods, factors of safety, earth pressure diagrams and field verification methods; and be able to appraise contractor-submitted designs
- Select appropriate specification/contracting method(s) and prepare contract documents
- Demonstrate a clear understanding of retaining wall construction and maintenance

TARGET AUDIENCE:

Primary audience is agency and consultant bridge/structures, geotechnical, and roadway design engineers; engineering geologists; and consultant review specialists. Additionally, management, specification and contracting specialists, and construction engineers involved in design and contracting aspects of retaining structures are encouraged to attend. Attendees should have a basic knowledge of soil mechanics and structural engineering.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Barry Siel • (720) 963-3208 • barry.siel@fhwa.dot.gov

If you're interested in this course, you may also want to take advantage of another NHI geotechnical course.

130082 LRFD for Highway Bridge Substructures and Earth Retaining Structures

COURSE NUMBER: FHWA-NHI-132037
COURSE TITLE: Shallow Foundations

The participants will receive a comprehensive reference manual on investigation, design, and construction of shallow foundations used by highway/geotechnical engineers that will be referred to during the course, so the participants will become familiar with its contents. The student exercises book is an interactive teaching tool for the course.

This course provides transportation earthwork professionals with the necessary skills to design shallow foundations for transportation applications and to consider the construction and inspection implications on the design.

Presentation of the course is in an interactive format so that the participants are actively involved in the learning experience.

OUTCOMES:

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

- Recognize potential failure modes or deformation types for soil slopes and embankments
- Develop the ability to judge when shallow foundations should be considered
- List the failure modes of shallow foundations
- Determine the bearing capacity of shallow foundations on soils and rocks
- Calculate vertical stress distribution below a shallow foundation
- Determine the primary consolidation settlement of shallow foundations on cohesive soils
- Determine the settlement of shallow foundations on cohesionless soils
- Identify problematic soils that may be encountered
- List the soil improvement techniques that may be used to improve the performance of shallow foundations
- List ground improvement techniques that may be used to improve the performance of shallow foundations
- Describe procedures for construction inspection and performance monitoring of shallow foundations

TARGET AUDIENCE:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers/geologists who are involved in the analysis, design, construction, maintenance, and remediation of soil slopes and embankments on surface transportation facilities. An undergraduate degree in civil engineering or equivalent engineering experience in the highway/transportation field is desirable.

The course will be of most benefit to geotechnical engineers, engineering geologists, foundation designers, project engineers, and highway/bridge engineers who are involved in design and construction of foundations for surface transportation projects.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Jerry DiMaggio • (202) 366-1569 • jerry.dimaggio@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-132040
COURSE TITLE: Geotechnical Aspects of Pavements

This course covers the latest methods and procedures to address the geotechnical issues in pavement design, construction and performance for new construction, reconstruction, and rehabilitation (e.g., road widening) pavement projects. The course content includes geotechnical exploration and characterization of in-place and constructed subgrades; designing and constructing pavement subgrades and unbounded materials for paved and unpaved roads with emphasis on the current AASHTO 1993 design guidelines and on the mechanistic-empirical design approach, including the three levels of design inputs; the overall geotechnical and drainage aspects of bases, subbases and subgrades (for a safe, cost-effective, and durable pavement); and construction and inspection of pavement projects.

The goal of this course is to have each participant recognize the essential importance of the geotechnical aspects relevant to the design, construction, and performance of a pavement system. Participants completing this course will develop an appreciation for adequate subsurface exploration and laboratory characterization of subgrade soils as well as the requisite design parameters for unbound base layers and drainage features in relation to pavement design. The course is designed so that maximum input will be elicited from the students, particularly regarding an understanding of the impact of geotechnical features on the long-term performance of pavement systems.

OUTCOMES:

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

- Explain the geotechnical parameters of interest in pavement design and their effect on the performance of different types of pavements
- Explain the influence of climate, moisture, and drainage on pavement performance
- Identify and explain the impact of unsuitable subgrades on pavement performance
- Determine the geotechnical inputs needed for design of pavements
- Evaluate and select appropriate remediation measures for pavement subgrades
- Explain the geotechnical aspects of construction specifications and inspection requirements
- Identify subgrade problems during construction and develop recommended solutions

TARGET AUDIENCE:

Many groups within an agency are involved with different aspects of definition, design use, and construction verification of pavement geomaterials. These groups include pavement design engineers, geotechnical engineers, specification writers, and construction engineers who are (or will be) involved in the design, evaluation, and construction (or reconstruction or rehabilitation) of pavements. This course was developed as a format for these various personnel to meet, and together develop a better understanding of the geotechnical aspects of pavements. The overall goal is for this group of personnel to work together to enhance current procedures to build and maintain more cost-efficient pavement structures.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Jerry DiMaggio • (202) 366-1569 • jerry.dimaggio@fhwa.dot.gov

Ready to request a course? Please complete the On-Site Course Request Form (FWHA Form 1530) located in the back of the catalog or submit an electronic copy via the NHI Web site.

COURSE NUMBER: FHWA-NHI-132041
COURSE TITLE: Geotechnical Instrumentation

The course is designed to provide students with the necessary knowledge and skills to plan, select, and implement instrumentation programs in geotechnical features for construction monitoring and performance verification. The course will discuss measurement tools, including recommendations for a systematic and complete approach to planning monitoring programs. Recommendations for the selection of proper instrumentation for various types of construction are presented. Field tasks covered include calibration, maintenance and installation of instrumentation, collection of instrumentation data, processing and presentation of collected data, interpretation of processed data, and reporting of results.

OUTCOMES:

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

- Recognize effective uses of geotechnical instrumentation in transportation projects
- Identify benefits of instrumentation to help participants promote instrumentation programs to their teams (ultimate benefit - save money)
- Recognize the need to follow a systematic approach when planning, selecting, and executing an instrumentation program and identify the components of a systematic approach
- Identify available instrumentation and how it is used for answering key geotechnical questions
- Identify where to find additional information and assistance
- Perform an evaluation of the need for and potential benefits of geotechnical instrumentation on a project

TARGET AUDIENCE:

FHWA, State, and local highway agency employees, college and university faculty, and consultant engineers/ geologists who are or will be involved in the design, evaluation, and construction of pavements. An undergraduate degree in civil engineering, geology or equivalent engineering experience in the highway/transportation field is desirable.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Silas Nichols • (410) 962-2460 • silas.nichols@fhwa.dot.gov

Look on the inside back cover for information about NHI's accreditation with the International Association for Continuing Education and Training (IACET).

COURSE NUMBER: FHWA-NHI-132042
COURSE TITLE: Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes

Mechanically stabilized earth walls (MSEW) and reinforced soil slopes (RSS) are two modern methods of earth-fill construction which are extremely cost-effective and aesthetically pleasing. The basic concept behind these related methods is to combine soil, reinforcing materials made of steel or polymers, and appropriate facing to produce a composite material with improved engineering properties. Both MSEW and RSS provide substantial construction time and cost savings when compared with other conventional types of earth-retaining systems.

The goal of this course is to provide agencies with state-of-the-practice design tools and construction practices to initiate or continue implementation of mechanically stabilized earth technology for routine use of cost-effective earth retention structures. This course would be of most benefit to persons who are involved in design and construction of earth retention structures for surface transportation projects.

OUTCOMES:

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

- Recognize potential applications for MSEWs and RSS structures for use in transportation facilities
- Prepare conceptual and basic (i.e., for simple geometry) designs, and be able to check contractor-submitted designs for walls and slopes
- Examine and select appropriate material properties and parameters used in design
- Calculate cost of conceptual MSEWs and RSS structures, and determine if construction is a cost-effective option
- Select appropriate specification/contracting method(s). Prepare detailed materials and methods of construction specifications
- Define and communicate major components of construction inspection of MSEWs and RSS structures to confirm compliance with design

TARGET AUDIENCE:

Primary audience is agency and consultant bridge/structures, geotechnical, and roadway design engineers; engineering geologists; and consultant review specialists. Additionally, management, specification and contracting specialists, and construction engineers interested in design and contracting aspects of MSEW and RSS structures are encouraged to attend. Attendees should have a basic knowledge of soil mechanics and structural engineering. (Note that NHI offers a 1-day course, FHWA-NHI-132043 Construction of MSEW and RSS. The target audience for that course is construction engineers, inspectors, and technicians.)

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Rich Barrows • (360) 619-7704 • rich.barrows@fhwa.dot.gov

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COURSE NUMBER: FHWA-NHI-132043
COURSE TITLE: Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes

Mechanically stabilized earth walls (MSEW) and reinforced soil slopes (RSS) are two modern methods of earth-fill construction which are extremely cost-effective and aesthetically pleasing. The basic concept behind these related methods is to combine soil, reinforcing materials made of steel or polymers, and appropriate facing to produce a composite material with improved engineering properties. Both MSEW and RSS provide substantial construction time and cost savings when compared with other conventional types of earth-retaining systems.

The goal of this course is to provide agencies with current construction practices for continued, or to initiate, implementation of mechanically stabilized earth technology for routine use of cost-effective earth retention structures. This course is most beneficial to persons who are involved in the construction of earth retention structures for surface transportation projects.

OUTCOMES:

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

- Recognize potential applications for MSEWs and RSS structures for use in transportation facilities
- Recognize differences between available systems and their components
- Understand the intent of specification/contracting method(s)
- Define and communicate major components of construction inspection of MSEW and RSS structures to confirm compliance with design

TARGET AUDIENCE:

Primary audience is agency and consultant construction engineers, inspectors, and technicians. Additionally, management; specification and contracting specialists; bridge/structures, geotechnical, and roadway design engineers; and engineering geologists interested in construction aspects of MSEW and RSS structures are encouraged to attend. Attendees should have a basic knowledge of soil mechanics and structural engineering. (Note that NHI offers a 3-day course, FHWA-NHI-132042 Design of MSEW and RSS Structures, and the target audience of that course is bridge/structures, geotechnical, and roadway design engineers; and engineering geologists.)

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Rich Barrows • (360) 619-7704 • rich.barrows@fhwa.dot.gov

If you're interested in this course, you may also want to take advantage of another NHI geotechnical course.

130082 LRFD for Highway Bridge Substructures and Earth Retaining Structures

COURSE NUMBER: FHWA-NHI-132069
COURSE TITLE: Driven Pile Foundation Inspection

This course was developed to provide a basis for local, regional, or national qualification for pile driving inspectors of all States. Its goal is to provide inspectors with the practical knowledge and accepted standard industry practices for the inspection of pile-driving construction operations.

To establish a national standard for transportation personnel, this course was developed based upon the existing Florida DOT's Pile Driving Inspector's Qualification course materials, the 2000 AASHTO "Bridge Construction Specifications," and FHWA NHI courses FHWA-NHI-132021 Driven Pile Foundations - Design and Construction and FHWA-NHI-132022 Driven Pile Foundations - Construction Monitoring. However, the local specifications, inspection reports, and plan sheets available from the hosting agency also will be discussed. The course includes a three-hour qualification examination.

OUTCOMES:

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

- Explain the inspector's role, duties, and responsibilities
- Describe the pile driving system components
- Recognize key inspection elements of the contract documents
- Identify proper communication and coordination with the engineer and contractor
- Identify the key elements of a pile installation plan
- Recognize and identify pile driving system components and tools
- Verify tip elevations, cutoff elevations, pile penetration, and length driven for vertical and battered piles
- Perform inspection of pile driving operations and verify compliance to construction tolerances
- Recognize "when to stop driving" based upon provided driving criteria, minimum tip or penetration and refusal guidelines.
- Verify pile condition, labeling, and marking for compliance
- Recognize and explain the difference between test piles and production piles and the various types of pile testing
- Identify "driving" irregularities
- Identify and document pay quantities
- Interpret and apply applicable AASHTO specifications relating to foundation acceptance
- List potential problems and safety issues

TARGET AUDIENCE:

Foundation or major structures inspectors involved in inspection of pile driving operations during construction. Additionally, project management and construction engineers in charge of pile driving construction inspection are encouraged to attend. Attendees should have completed courses in basic construction plan reading, basic construction math, and high school algebra.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Peter Osborn • (410) 528-4550 • peter.osborn@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-132070
COURSE TITLE: Drilled Shaft Foundation Inspection

The Drilled Shaft Foundation Inspection course is a stand-alone training course developed to provide a basis for local, regional, or national qualification of drilled shaft foundation inspectors. The goal of this course is to provide drilled shaft foundation inspectors with practical knowledge and standard industry practices for the inspection of drilled shaft foundation construction.

Presentation of the course is in an interactive format, so that the participants are actively involved in the learning experience. A two-hour qualification exam is administered on the third day of the course.

The course follows recommended FHWA specifications and practices for drilled shaft construction. This course may be modified to follow local agency specifications and practices, which may deviate from recommended FHWA specifications and practices.

OUTCOMES:

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

- Identify and understand the role and duties of the inspector
- Recognize key inspection elements of the contract documents
- Identify proper communication and coordination with the engineer and contractor
- Interpret and verify contractor compliance with drilled shaft installation plan items
- Recognize and identify drilled shaft construction equipment and tools
- Perform visual field verification of soil/rock material for comparison to supplied soil boring data/logs
- Calculate percent recovery and rock quality designation (RQD)
- Recognize and identify the various types of drilled shaft construction
- Perform inspection of drilled shaft excavations for compliance to plans, construction tolerances and cleanliness
- Verify reinforcing cage construction compliance including side spacers and SCL requirements
- Determine theoretical shaft concrete volumes and develop concrete curves
- Identify shaft "concreting" irregularities
- Perform calculations for volume, area, circumference, and elevation
- Locate, explain, and apply applicable FHWA guide specifications/AASHTO/State DOT specifications relating to compliance

TARGET AUDIENCE:

The primary audience is agency and consultant foundation or major structures inspectors. Additionally, project management and construction engineers in charge of drilled shaft construction inspection are encouraged to attend.

This course is designed to be of most benefit to foundation inspectors who are responsible for or involved in providing inspection of drilled shafts during construction.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Peter Osborn • (410) 528-4550 • peter.osborn@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-132078
COURSE TITLE: Micropile Design and Construction

NEW COURSE

The primary goal of this course is to provide the target audience with guidance on when and where it is appropriate to use micropiles, and with the state-of-the-practice in the design and construction of micropiles. Stepwise procedures for the design of micropiles for structural support and for slope stability applications are presented. Construction, inspection and integrity testing aspects and issues are discussed. Classroom presentations include exercises that will lead participants through the technical and cost feasibility evaluation aspects for structural support and slope stability design with micropiles. Each participant will receive a participant workbook and micropile reference manual containing detailed micropile design examples for various applications.

FHWA-NHI-132012 Soils and Foundations Workshop is a recommended prerequisite.

OUTCOMES:

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

- Briefly describe the history and current status of the micropile industry
- Identify potential micropile applications
- Explain construction constraints, techniques, and performance
- Assess feasibility of micropiles for a given application
- Prepare conceptual and basic designs, and evaluate contractor-submitted designs
- Select appropriate specification/contracting method(s) and prepare contract documents
- Describe construction monitoring and inspection requirements

TARGET AUDIENCE:

This course is directed toward practicing geotechnical, foundation, construction and bridge/structural engineers who have knowledge and experience in the design and construction of driven piles and drilled shaft foundations. Engineers involved with the design and construction of structure foundations will all benefit from this training that builds upon the basic concepts presented in FHWA-NHI-132012, 132014, and 132021.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Barry Siel • (720) 963-3208 • barry.siel@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-132079
COURSE TITLE: Subsurface Investigation Qualification

NEW COURSE

This course is part of a series to develop a training and qualification/certification program for geotechnical field inspectors. The course follows FHWA specifications and practices for subsurface investigations. A partial list of topics addressed in the course are exploration equipment and methods; safety; borehole sealing; drilling and sampling requirements and criteria; proper soil and rock visual classification and descriptions; common drilling errors; and dealing with difficult subsurface site conditions. A two-hour qualification exam is administered at the end of the course.

OUTCOMES:

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

- Explain the investigation specialist's general role, duties, and the importance of coordination and communication with field personnel and engineers
- Explain the purpose of geotechnical subsurface investigations and why adequate, consistent, and quality investigations are important
- Identify the major components of the typical subsurface investigation plan
- Identify common drilling rigs, uses, and components
- Explain the importance of accurate borehole logging and documentation
- Describe the importance of accurate groundwater investigations
- Discuss drill rig operation safety issues

TARGET AUDIENCE:

Drillers, drilling inspectors, engineers, geologists, and technicians involved in field data collection and quality assurance of subsurface investigations.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Ben Rivers • (410) 562-3926 • benjamin.rivers@fhwa.dot.gov

See page 178 to find out more about the Universities and Grants Programs.

COURSE NUMBER: FHWA-NHI-132080
COURSE TITLE: Inspection of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes

This course is part of a series to develop a training and qualification/certification program for geotechnical field inspectors. A partial list of topics addressed in the course are MSE wall and RSS types and durability; construction methods and sequences; alignment control; methods of fill and compaction control; plans, specifications, and the geotechnical report; shop drawings; and safety. A two-hour qualification exam is administered at the end of the course.

OUTCOMES:

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

- Identify basic MSE wall and RSS types and design philosophy
- Explain the role and duties of the MSE wall and RSS inspector
- Identify current construction practices for mechanically stabilized earth structure construction
- Define key inspection elements for MSE wall and RSS contract documents to assure compliance
- Explain the logical steps to ensure proper communication with the engineer and responsible field personnel

TARGET AUDIENCE:

Inspectors, engineers, geologists, and technicians involved in field data collection and quality assurance for MSE walls and RSS. Additionally, managers, specification and contracting specialists, bridge/structure, geotechnical and roadway design engineers, and engineering geologists interested in construction aspects of MSE walls and RSS structures are encouraged to attend.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Rich Barrows • (360) 619-7704 • Rich.barrows@fhwa.dot.gov

Video conferencing technology can make instructor-led courses accessible to remote participants without changing the delivery format. Contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov for more information.

COURSE NUMBER: FHWA-NHI-133005A (1.5-Day)
FHWA-NHI-133005B (2-Day)
FHWA-NHI-133005C (3-Day)

COURSE TITLE: Highway Capacity and Quality of Flow

The hosting organization is responsible for providing computers with 133 MHz Intel Pentium III or faster processors with Windows 95, NT or better, color monitors, 20 MB of available disk space, and a minimum of 16 MB RAM. IMPORTANT - Maximum of two participants per computer.

This course provides basic instruction in the use of the 2000 "Highway Capacity Manual" (HCM). Software is employed in most of the capacity analyses performed in the course. Approximately one-half of the course is dedicated to sessions on interrupted flow facilities (i.e., signalized intersections, unsignalized intersections and arterials). The remainder of the course covers freeways, weaving sections, ramps, multilane, and two-lane rural facilities. The course includes lectures describing the procedures for performing capacity analyses on each type of highway facility. Demonstrations and hands-on application of the highway capacity software are used to solve example and workshop problems.

OUTCOMES:

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

- Explain facility characteristics and their limits as used in the HCM 2000 English
- Explain analytical procedures and how to apply them
- Use formulas by inputting data, reviewing and adjusting default values or adjusting factors, as necessary, for project and local conditions
- Determine LOS from results

TARGET AUDIENCE:

State, local, FHWA, contractors, and MPOs who design and analyze intersections, interface with freeways, deal with signal time issues, design and manage operations of urban streets, plan for type of intersections for future needs, work with system(s) monitoring and management of arterial systems; or who conduct operational analysis to determine needs of highway facility, estimate the level of service for new/proposed and existing operations, and manage freeway systems.

FEE: $235 Per Participant (FHWA-NHI-133005A) Interrupted flow facilities only.
LENGTH: 1.5 Days (CEU: 0.9 Units)

FEE: $270 Per Participant (FHWA-NHI-133005B) Choose either interrupted flow or uninterrupted flow facilities.
LENGTH: 2.0 Days (CEU: 1.2 Units)

FEE: $400 Per Participant (FHWA-NHI-133005C)
LENGTH: 3.0 Days (CEU: 1.8 Units)
CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: John Halkias • (202) 366-2183 • john.halkias@fhwa.dot.gov

This course can be taught in different course length formats. See our Web site for details on each course length.

COURSE NUMBER: FHWA-NHI-133010
COURSE TITLE: Computerized Traffic Signal Systems

This course presents current technology and control options available for computerized traffic control, including microcomputer applications. The course covers the technical issues of a computerized traffic control system and steps necessary to develop and manage a system using the systems engineering process. These steps begin with establishing system requirements, followed by understanding and combining system elements, evaluating and selecting the system, installation, as well as operation, maintenance and continuing system evaluation.

OUTCOMES:

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

- Discuss and apply the systems engineering process
- Identify procedures for system feasibility and conceptual design
- Identify signal system functional requirements and capabilities
- Identify system components and configurations
- Discuss signal timing and operational strategies
- Identify system design documents and system implementation process
- Identify operations, maintenance, and performance evaluation elements

TARGET AUDIENCE:

Traffic engineering personnel from State, Federal, and local agencies involved in the technical aspects of traffic engineering. The course will not assume any prior knowledge of computers and thus will describe the theory of operation and the manner in which it can be applied to traffic signal controls.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Pamela Crenshaw • (202) 366-1482 • pam.crenshaw@fhwa.dot.gov

See page 6 in the front of the catalog for course registration information and page 9 for a coordination checklist.

COURSE NUMBER: FHWA-NHI-133028
COURSE TITLE: Traffic Signal Design and Operation

There is a need to understand that the congestion and delays that exist on our streets and roadways can be better managed with a thorough understanding of effective traffic signal timing and optimization. Well-developed, designed, implemented, maintained, and operated traffic signal control projects are essential to this process. Engineering tools are available to design, optimize, analyze, and simulate traffic flow. This course addresses the application of the "Manual of Uniform Traffic Control Devices" (MUTCD) to intersection displays, as well as signal timing, computerized traffic signal systems, control strategies, integrated systems, traffic control simulation, and optimization software. The course is divided into two primary parts: Traffic Signal Timing and Design, and Traffic Signal Systems.

OUTCOMES:

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

- List the steps required to plan, design, and implement a signalized intersection
- Devise an appropriate data collection plan for planning, designing, and operating a signalized intersection
- Perform a warrant analysis using the MUTCD warrants, including local policies
- Design basic phasing of the intersection - which movements will get a separate phase, and how they are numbered
- Calculate signal timing at the design stage for both actuated and coordinated operational strategies, including pedestrian clearance intervals
- Determine location of signal displays
- Select signal-related signs and pavement markings, including turning-movement signs and advance warning signs

TARGET AUDIENCE:

The course is intended for those who will design and operate traffic signals within agencies. Examples of target participants include:

Transportation professionals without previous traffic signal experience, particularly those that might be in charge of traffic signal programs and need a solid introduction to the topic

Recent engineering graduates and engineers moving into traffic signal design and operation from other disciplines

Traffic signal technicians who are responsible for the design or operation of traffic signals

Experience with simple engineering arithmetic is required. Some of the workshops include calculations that can be performed by hand or with a simple hand-held calculator. A few of the subjects are presented using mathematical formulas requiring experience with basic algebra.

Participants should have good skills in converting units, such as kilometers/hour to meters/second and miles/hour to feet/second.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Pamela Crenshaw • (202) 366-1482 • pam.crenshaw@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-133048 (1-Day)
FHWA-NHI-133048A (2-Day)
COURSE TITLE: Managing Traffic Incident and Roadway Emergencies

This course is part of the core ITS curriculum established by the ITS Professional Capacity Building (PCB) program. For more information on the core curriculum, go to www.pcb.its.dot.gov/Catalogs/ITSCurriculum.htm#section2. This course addresses institutional and technical aspects of safe and efficient resolutions of traffic incidents and other roadway emergencies. The course focuses on practices to obtain good interagency and interdisciplinary understanding and cooperation.

OUTCOMES:

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

- Recognize the program elements needed for a formalized multiagency program to manage traffic incidents and roadway emergencies
- Formulate techniques for effective onsite management of incidents
- Identify technological solutions to facilitate the management of incidents
- Develop a short-term list of 'next step' actions to improve multiagency response to both major and minor traffic incidents

TARGET AUDIENCE:

Persons at mid- or upper-management levels in various agencies who direct the resources of their agencies at the scene of a traffic incident or in response to an incident. Agencies that should be represented at workshops include law enforcement, fire and rescue (including emergency medical), emergency communications, transportation (including traffic management and highway maintenance), planning, towing and recovery, traffic reporting media, hazardous materials contractors, and other emergency management personnel responding to traffic emergencies on freeways and arterial streets.

FEE: $4,500 Per Course (FHWA-NHI-133048)

LENGTH: 1.0 Days (CEU: 0.6 Units)

FEE: $6,900 Per Course (FHWA-NHI-133048A)

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 35

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: David Helman • (202) 366-8042 • david.helman@fhwa.dot.gov

This course can be taught in different course length formats. See our Web site for details on each course length.

COURSE NUMBER: FHWA-NHI-133075 (2-Day)
FHWA-NHI-133075A (3-Day)

NEW COURSE

COURSE TITLE: Freeway Traffic Operations

The purpose of the Freeway Management and Operations training course is to provide participants with an appreciation of the key policies, institutional issues, challenges and barriers, technical and other issues to consider in the planning, design, implementation, management, operation, evaluation, and marketing of freeway facilities. The course is divided into 19 sessions, based on the information presented in the new "Freeway Management and Operations Handbook." The course may be conducted in either a 3- or a 2-day format as determined by the local training coordinator.

OUTCOMES:

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

- Identify the types and causes of congestion on freeway facilities
- Compare the potential to improve traffic flow between roadway improvements vs. shorter-term/lower-cost operational improvements on freeway facilities
- Describe the range of ramp management and control strategies and the conditions under which they might be warranted
- Describe the range of lane management and control strategies and the conditions under which they might be warranted
- List strategies for mitigating the impacts associated with planned special events
- Identify the range of functions and elements of a transportation management system
- List detection and surveillance techniques used to support freeway management and operations activities

TARGET AUDIENCE:

Federal, State, and local transportation professionals involved in planning, design, and implementation of freeway improvement projects and the day-to-day management of travel and control of traffic on freeway facilities.

FEE: $270 Per Participant (FHWA-NHI-133075)

LENGTH: 2.0 Days (CEU: 1.2 Units)

FEE: $400 Per Participant (FHWA-NHI-133075A)

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Jessie Yung • (202) 366-4672 • jessie.yung@fhwa.dot.gov

This course can be taught in different course length formats. See our Web site for details on each course length.

COURSE NUMBER: FHWA-NHI-133078
COURSE TITLE: Access Management, Location and Design

This course covers access management along streets and highways. General benefits as well as the social, economic, political and legal implications of access control are examined. Existing access management practices and policies from States and jurisdictions are used as examples of what types of programs have been implemented and how effective they have been. Through indepth discussion, access management techniques and the warrants for their use are reviewed. Guidelines for design and application of these access management techniques are described in detail. Strategies for developing and implementing retrofit programs to improve existing access control are presented. The course presents several "before" and "after" case studies, which show the impacts of retrofit programs on local businesses. Techniques and procedures for evaluating the impacts of access control on the safety and operations of the highway system are also covered.

OUTCOMES:

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

- Recognize the various elements involved in planning, developing, implementing, and administering an effective access management program
- Assess the safety and operational impacts of alternative access management techniques
- Demonstrate convincingly the merits of obtaining and maintaining good access management along streets and highways

TARGET AUDIENCE:

This course is designed for Federal, State, and local planners and engineers who are currently involved or expect to be involved in decisions on, and/or design of, access to existing or new sites.

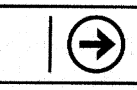
FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Neil Spiller • (202) 366-2188 • neil.spiller@fhwa.dot.gov

Got questions?
Contact the NHI Training Team for more information.



COURSE NUMBER: FHWA-NHI-133098
COURSE TITLE: Advancing Transportation Systems Management and Operations

NEW COURSE

The transportation challenges of the 21st century require a significant cultural shift in the way transportation systems are managed and operated. This means moving from limited interactions between planners and operators to a solid linkage that facilitates data sharing, joint development of regional operations opportunities, resource sharing, and supportive institutional arrangements.

From an operations perspective, this cultural shift requires anticipating user needs 24/7, focusing on customers, and changing policies and procedures to be performance-based. To be successful, the new norm requires a cross-jurisdictional, multiagency, and multimodal perspective. From a planning standpoint, this cultural shift means bringing "operations thinking" into the planning process. Smart planning requires that ongoing operations be considered in regional planning and investment decisions.

This course provides an understanding of Transportation Systems Management and Operations (TSM&O) in a regional context. It explores 21st century transportation challenges and how to advance TSM&O through a cultural shift in operations and planning. Throughout this course, collaboration and coordination among transportation professionals and related stakeholders are emphasized as key components to reshaping the culture and enabling the advancement of TSM&O. A five-part framework for collaboration and coordination is described to assist transportation professionals and related stakeholders in working together in a meaningful and sustained way.

NOTE: There is a 2-hour Executive Summary Seminar available to State and local elected and appointed officials. Please contact your FHWA Division office for more information about this seminar.

OUTCOMES:

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

- State the importance of a regional perspective in TSM&O
- Describe the cultural shift needed among operators, planners, and decision makers to affect TSM&O
- Identify the opportunities to link planning and operations
- Formulate a Regional Concept for Transportation Operations
- Describe a framework for enabling the advancement of TSM&O

TARGET AUDIENCE:

This 1-day course is intended for anyone who has an interest in transportation planning and operations, including those responsible for making day-to-day decisions on transportation management and operations within their respective organizations. The target audience includes transportation managers, service providers, public safety officials, public works directors, and business sector members of chambers of commerce. It also includes both operators and planners from States, cities, and counties, as well as MPOs and other authorities and agencies. A mixed audience is extremely important to this course, as the idea of regional TSM&O requires a significant cultural shift from today's practice. While there are no academic/training prerequisites for participation in this course, familiarity with regional transportation planning, operations, and ITS initiatives is helpful.

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Wayne Berman • (202) 366-4069 • wayne.berman@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-134001 (2-Day)
FHWA-NHI-134001A (3-Day)
FHWA-NHI-134001B (4-Day)
FHWA-NHI-134001C (5-Day)

COURSE TITLE: Principles of Writing Highway Construction Specifications

This course addresses the engineering and legal aspects and linguistics of writing specifications. THIS IS NOT A COURSE IN TECHNICAL WRITING! The course addresses issues of how to draft new specifications or rewrite existing ones in clear, readable, and definitive statements of contract requirements. Classroom activities include lectures, case studies, workshops, and writing assignments.

The course covers method and end-result specifications; innovative methods to deliver, procure, and manage construction; general provisions and a section on end-result related specifications. The course also includes a discussion of the importance of obtaining feedback from all the entities involved in interpreting and using the specifications in order to make them work better in the field.

An additional resource for highway specifications: The National Highway Specifications Web site is now available at www.specs.fhwa.dot.gov

OUTCOMES:

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

- Recognize and apply the principles of writing clear, concise, complete, and technically correct specifications
- Write specifications in the active voice imperative mood
- Write specifications without ambiguities and with measurable standards
- Describe the difference between traditional methods specifications and statistically based quality assurance specifications
- Identify newer types of procurement and contracting methods
- Demonstrate appreciation for the importance of specifications for highway construction contracting

TARGET AUDIENCE:

Personnel working in contract administration, design, materials selection and quality control, and the management of highway construction, including contribution of information in contract provisions. This includes specification writers who use the information in writing the formal contract documents.

PREREQUISITES: This course is not for beginners! Participants must have experience (five years minimum) in at least one of the following disciplines: contract administration, materials, specification writing, roadway or bridge design, roadway or bridge construction.

For this course, fees and lengths are shown on page 72.
This course can be taught in different course length formats.
See our Web site for details on each course length.

FEE: $270 Per Participant
LENGTH: 2.0 Days (CEU: 1.2 Units)

FEE: $400 Per Participant
LENGTH: 3.0 Days (CEU: 1.8 Units)

FEE: $530 Per Participant
LENGTH: 4.0 Days (CEU: 2.4 Units)

FEE: $650 Per Participant
LENGTH: 5.0 Days (CEU: 3.0 Units)
CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Ken Jacoby • (202) 366-6503 • ken.jacoby@fhwa.dot.gov

You don't need to be a government agency to host a course. For instructions on how to host a course, please see page 7.

COURSE NUMBER: FHWA-NHI-134005
COURSE TITLE: Value Engineering Workshop

Value engineering is the systematic process of review and analysis of a project during its design/development phase to provide suggestions for reducing its total cost while providing an equal or better quality project. A value engineering review is made by a multidisciplined team who: (1) investigate/analyze the design of an existing project; (2) analyze project functions and costs; (3) creatively speculate on alternative ways to perform the various functions; (4) evaluate the best and/or least life-cycle alternatives; (5) develop acceptable alternatives into fully supported recommendations; and (6) present the team's recommendations to management. This workshop provides the value engineering education necessary for the participants to successfully participate in future value studies. It also encourages formation of interactive value engineering teams at the State and division office levels. The workshop incorporates value analysis of actual projects furnished by the host agency.

OUTCOMES:

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

- Recognize the difference between value engineering and other cost-reduction or problem-solving techniques
- Identify areas where the application of value engineering techniques have potential for savings in financial or material resources
- Participate in a value engineering team and provide guidance to team members who have less experience
- Support the use of value engineering, recognizing it as a management tool for product improvement and cost reduction

TARGET AUDIENCE:

Professional and technical staff of FHWA and State highway/transportation departments, including officials of local transportation agencies involved in recurrent Federal-aid work.

FEE: $650 Per Participant

LENGTH: 5.0 Days (CEU: 3.0 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Donald Jackson • (202) 366-4630 • donald.jackson@fhwa.dot.gov

Ready to request a course? Please complete the On-Site Course Request Form (FWHA Form 1530) located in the back of the catalog or submit an electronic copy via the NHI Web site.

COURSE NUMBER: FHWA-NHI-134006
COURSE TITLE: Highway/Utility Issues

This course is designed to include participants from highway agencies and from utilities. Hosting agencies should make every effort to ensure both are present.

This course presents the fundamentals of effective coordination of utility relocation and accommodation issues throughout the planning, design, construction, and maintenance phases of a highway project. Participants from both highway and utility communities will be involved throughout the course, demonstrating their knowledge through workshops, exercises, and other activities. The course includes methods for measuring the attainment of learning objectives. Two instructors will facilitate the course, one experienced in highway matters, the other in utility matters.

OUTCOMES:

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

- Locate utility issues and concerns during the project development process and flag opportunities for early coordination
- Identify the critical processes related to utilities for permits, relocation, and project construction
- Read a plan and profile sheet
- Use templates for creating a simple plan for establishing the proper traffic control plan (TCP)
- Describe successful practices that might be considered as options for each phase of a project

TARGET AUDIENCE:

Federal, State, and local highway agencies, and public/private utility companies responsible for highway/utility coordination.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Roger McClellan • (202) 366-6765 • roger.mcclellan@fhwa.dot.gov

Video conferencing technology can make instructor-led courses accessible to remote participants without changing the delivery format. Instruction is delivered to a video camera and broadcast to video conferencing sites in areas close to participants, eliminating or greatly reducing the need for travel. Contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov for more information.

COURSE NUMBER: FHWA-NHI-134029
COURSE TITLE: Bridge Maintenance Training

This course focuses on cost-effective bridge maintenance and repair procedures performed by typical transportation agency crews. Included are step-by-step instructions for preparing for and performing maintenance and repair on common bridge elements. Bridge preservation is emphasized throughout. While engineers often attend, the material is designed for bridge crew supervisors and technicians.

OUTCOMES:

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

- Justify, develop and implement a cost-effective preservation strategy for a group of bridges
- Identify maintenance or repair needs and select the best remedial strategy. Understand properties and preservation options involving common bridge materials such as concrete, steel and timber
- Describe the step-by-step tasks required to accomplish proven preservation procedures on the various bridge elements
- Identify critical members and avoid procedures that might result in damage such as field welding repairs on fracture critical tension members
- Recognize problems that warrant specialized expertise, for example, soliciting the involvement of a qualified structural engineer when repairing structural damage
- Exercise effective management techniques (such as planning, scheduling, monitoring and reporting) during daily bridge maintenance operations.

TARGET AUDIENCE:

State and local bridge maintenance technicians and supervisors.

FEE: $530 Per Participant

LENGTH: 4.0 Days (CEU: 2.4 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Wade F. Casey • (202) 366-4606 • wade.casey@fhwa.dot.gov

If your interested in this course, you may also want to take advantage of another NHI construction and maintenance course.

130088 Bridge Construction Inspection

COURSE NUMBER: FHWA-NHI-134037A
COURSE TITLE: Managing Highway Contract Claims: Analysis and Avoidance

NEW COURSE

This course is an updated version of a previously offered 3-day course on the subject of claims avoidance, claims handling, and preparation of legal actions by both the State and the individuals involved. The course is structured such that emphasis can be give to scheduling (using CPM) or to documentation and preparation of legal actions caused by claims. This option should be stated when requesting the course. The course manual and classroom instruction addresses the following areas:

1. Philosophy/Concept of Construction Contracting, Changes and Claims Competitive Bidding/Reliance on Plans and Specifications Why Claims Have Increased
2. Construction Contracts in Laymen's Language Basic Contract Principles Significant Contract Clauses Changes, Differing Site Conditions, Liquidated Damages, Suspension of Work, Termination, Inspection, Acceptance Indemnification Clauses
3. Strengths and Weaknesses of State Highway Contracts
4. Preparing Contract Documents
5. Contract Administration Directed and Constructive Changes Procedures (Notice, Equitable Adjustment/Force Account, Timeliness Scheduling Cost Evaluations6. Delay Claims/Inefficiency/Damages Exculpatory Language, Excusable and Inexcusable Delays Acceleration, Disruptions, Interferences, Performing Delay Analysis, Damage Calculations (mitigation)
7. Documentation and Record keeping Bid Documents, Periodic Reports, Schedules, Internal and External Correspondence, Photographs; Use asEvidence
8. Managing Claims Identification, Procedures, Preparation/Claim Defense Plan Strategy, Claim Presentation
9. Negotiation Timing, Strategy, Team Approach (Workshop)
10. Design Consultant Liability
11. Disputes Resolution Litigation, Arbitration, Administrative Procedures Alternate Disputes Resolution
12. How to Prepare for Trial/Arbitration Depositions, Trial, Preparation of Exhibits/Consultants Working with Attorneys

OUTCOMES:

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

- Define the recommended terminology associated with claims and the accompanying dispute resolution process
- Identify the three key elements of a claim
- Determine whether or not a change has occurred
- Measure the impacts of the change
- Calculate the resultant cost of the change
- Explain the value of a systems approach to claims avoidance
- Identify the dispute resolution procedures available to the host

TARGET AUDIENCE:

This course is intended for FHWA, State, and local highway design and construction engineers, resident engineers, or individual one step above the project level involved in project development, specification writing, and individuals involved in the preparation for the defense of a construction claim.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Chris Newman • (202) 366-2023 • christopher.newman@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-134042
COURSE TITLE: Materials Control and Acceptance - Quality Assurance

The course provides participants with an understanding of the basic elements of a statistically based quality assurance program. The following sessions are included in the course: Introduction, Sampling Theory, Organization of Data, Analysis of Data, The Normal Distribution, Sources of Variability, Process Control, Acceptance Plans and Risks, Percent Within Limits Acceptance Plans, Implementation and Summary.

OUTCOMES:

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

- Recognize the importance of organizing data, necessary forms of data organization, and how to plot frequency histograms
- Recognize how a sample relates to the population, including the myth of a single representative sample, establish and use random stratified sampling plans
- Calculate population and sample means standard deviations and coefficient of variation
- Recognize the relationship between single and multiple samples
- Recognize basic probability concepts, illustrate the relationship of histograms to probability density functions, and calculate areas under normal distribution curves
- Explain the meaning of the terms precision, accuracy, and bias
- Identify sources of variability and how to use precision and bias statements
- Develop and apply process control plans, including how to calculate control chart limits and to plot and interpret statistical control charts
- Recognize the strengths and weaknesses of acceptance plans based on sample means and percent within limits
- Recognize the different types of specifications and how they work, including the inputs to specifications and requirements for the use of contractors
- Recognize the elements of acceptance plans, including buyer and seller risks
- Recognize the elements of a quality assurance system

TARGET AUDIENCE:

Federal, State, and local highway agency engineers in materials, construction, research and other highway fields and technicians involved in specification development, laboratory, and field testing of highway materials.

FEE: $600 Per Participant

LENGTH: 4.5 Days (CEU: 2.7 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Michael Rafalowski • (202) 366-1571 • michael.rafalowski@fhwa.dot.gov

Look on the inside back cover to read about the International Association for Continuing Education and Training (IACET).

COURSE NUMBER: FHWA-NHI-134049
COURSE TITLE: Use of Critical Path Method (CPM) for Estimating, Scheduling and Timely Completion

This training course is designed to educate State highway, FHWA, and industry project staff about the availability of effective construction and maintenance planning and scheduling tools that can help in providing visual representation of current project status, completed tasks, and expected completion of all activities. These tools can be focused to accelerate construction and minimize impact on the traveling public.

OUTCOMES:

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

- Create a CPM chart for a sample project using these basic components: a project definition, milestones and a Gantt chart, work schedules (including work breakdown schedules), and an activity network
- Calculate resource needs and reserves, and propose resource leveling strategies
- Prepare a risk analysis/management plan for the sample project
- Use a complex CPM to determine the status of the project, identifying slack or float and delays
- Describe methods for managing multi-project scheduling

TARGET AUDIENCE:

Federal, State, local, and private contractor project engineers/managers and related field personnel.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Celso Gatchalian • (202) 366-1342 • celso.gatchalian@fhwa.dot.gov

See page 182 for more information about Instructor Certification.

COURSE NUMBER: FHWA-NHI-134056
COURSE TITLE: Pontis Bridge Management

Pontis is a computer software program, owned and licensed by AASHTO, designed to assist bridge managers and practitioners in analyzing bridge data to predict future bridge conditions and needs, determine optimal policies, and recommend projects and schedules within budget and policy limitations. The course covers entering and editing inspection data, developing a bridge preservation policy, performing bridge network level analyses, developing bridge projects, running Pontis reports, and refining Pontis results. The course focuses on an agency's business process steps, key concepts of bridge management and their application to Pontis, using the software, instructor demonstration exercises, and practical student exercises. Each participant will receive a participant notebook. Six laptop computers containing the PONTIS 4.3 software and sample training database are furnished by the NHI for use in the training course.

In addition to the 2.5-day training, a 2-hour session has been developed as part of the course to serve as an introduction to the attributes and benefits of the Pontis program. This introduction is designed for Federal, State and local executives and upper- and mid-level highway agency professionals responsible for an agency's bridge/highway program. Executives and management officials are encouraged to attend the opening introduction and overview sessions.

OUTCOMES:

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

- Use Pontis to support bridge management
- View, enter, and edit bridge inspection and inventory data
- Develop, update, optimize, and interpret a preservation policy
- Enter program simulation inputs, run network analyses and interpret results
- Create and rank bridge projects
- Generate and interpret reports
- Customize Pontis to support agency business practices

TARGET AUDIENCE:

This course is designed for bridge program managers, bridge management engineers, bridge maintenance engineers, bridge inspectors, and project planning and programming personnel.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

CLASS SIZE: Minimum: 10; Maximum: 20

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Wade Casey • (202) 366-4606 • wade.casey@fhwa.dot.gov

With NHI courses, learn new skills that can be quickly applied to your job.

COURSE NUMBER: FHWA-NHI-134058
COURSE TITLE: Alternative Contracting

NEW COURSE

This course addresses the legal aspects, and potential program implications of using alternative project delivery strategies and nontraditional contracting practices. This includes alternative project delivery methods such as design-build, construction manager at risk, and performance contracting. It also includes the use of nontraditional contracting provisions such as warranties, multiparameter bidding, incentive-disincentive provisions for contract time, lane rental, alternate pavement type bidding, and many other nontraditional contracting techniques. The course has certain required modules; however, the requesting agency may customize the course by selecting from additional modules. Classroom activities include lectures, case studies, workshops, and writing assignments.

OUTCOMES:

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

- Identify alternative project delivery, procurement, and contract management methods for highway construction
- Identify objectives for the use of alternative project delivery, procurement, and contract management methods
- Differentiate among traditional design-bid-build and alternative project delivery, procurement, and contract management methods based on relative advantages and risks
- Define how project risks are reallocated using various project delivery, procurement, and contract management methods
- Select appropriate alternative contracting methods for use with a given project or select appropriate projects for use with a given alternative contracting method or methods
- Idenitify contract requirements appropriate for alternative contracting methods

TARGET AUDIENCE:

Personnel working in contract administration, project development and design, and the management of highway construction, including contribution of information in contract provisions.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Jerry Yakowenko • (202) 366-1562 • gerald.yakowenko@fhwa.dot.gov

We want to hear from you about the NHI catalog. Please complete the catalog survey card in the back of the catalog.

COURSE NUMBER: FHWA-NHI-135010
COURSE TITLE: River Engineering for Highway Encroachments

The course provides training in the theory and application of alluvial channel flow, fluvial geomorphology, sediment transport, and river mechanics to the planning, location, design, construction, maintenance, and operation of highways. Material for this course comes from "Hydraulic Design Series 6 (HDS-6): River Engineering for Highway Encroachments - Highways in the River Environment." The course includes detailed coverage on how to estimate rates of sediment transport by selecting appropriate equations for use in the computations. Additional topics include sediment properties and sediment measurement techniques. Case histories provide practical examples of problems that occur at highway crossings and encroachments of streams and rivers. A computer generated 360-degree virtual tour site visit is used for a comprehensive workshop. Example problems in sediment transport will be worked by the course participants.

OUTCOMES:

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

- Apply open channel flow equations and concepts to flow in alluvial channels
- Determine resistance to flow and sediment transport at highway crossings
- Apply sediment transport and sediment continuity relationships for the analysis of streambed degradation and aggradation
- Evaluate the inter-relationships between fluvial (river) geomorphology and highway hydraulic design

TARGET AUDIENCE:

Engineers who are responsible for the evaluation of stream stability and the design of highway hydraulic structures. The course is designed for graduate engineers (BS) who have been trained in basic hydraulics of rigid-boundary, open channel flow.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Larry Arneson • (720) 963-3200 • larry.arneson@fhwa.dot.gov

Earn Continuing Education Units with NHI courses.

COURSE NUMBER: FHWA-NHI-135027 (3-Day)
FHWA-NHI-135027A (4-Day)
COURSE TITLE: Urban Drainage Design

This course provides a detailed introduction to urban roadway drainage design. Design guidance for solving basic problems encountered in urban roadway drainage design is provided. The topics are hydrology including rational equation, soil conservation method, regression equations, and synthetic hydrographs; and highway drainage including gutter flow, roadway inlet interception, storm drain systems, energy and hydraulic grade lines, detention ponds, and stormwater management.

The 4-day course includes the basic 3-day course, plus presentation of the 1-day course FHWA-NHI-135028 Stormwater Pump Station Design.

OUTCOMES:

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

- Determine runoff (peak flows and volumes) from urban watersheds
- Apply basic hydraulic principles to urban drainage design
- Perform roadway drainage designs using various roadway inlets
- Size and/or analyze storm drain conveyance systems
- Establish the energy and hydraulic grade lines for storm drains
- Design and/or analyze detention basins
- Perform hydraulic design of pumping stations (with optional day four)

TARGET AUDIENCE:

Highway designers with limited experience in drainage design, but familiar with mathematical concepts such as algebra and geometry and have some working background in hydrology and hydraulics.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

FEE: $530 Per Participant

LENGTH: 4.0 Days (CEU: 2.4 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Dan Ghere • (708) 283-3557 • dan.ghere@fhwa.dot.gov

There are multiple delivery options for this course. Check our Web site for information on each delivery option.

COURSE NUMBER: FHWA-NHI-135028
COURSE TITLE: Stormwater Pump Station Design

This course provides an overview of the location and type selection of stormwater pump stations. A major portion of the course is devoted to recommended hydraulic design procedures for sizing and optimizing stormwater pump stations. This course is also offered as a 1-day add-on to FHWA-NHI-135027 Urban Drainage Design. Topics to be discussed include, site considerations, hydrology, storage, pump configuration, mass curve routing, pump selection, sump dimensions, and mechanical and electrical considerations.

OUTCOMES:

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

- Determine locations where pump stations are appropriate
- List types of pumps and pump stations
- Apply basic hydraulic principles to accomplish graphical mass curve routing
- Size pumps and determine start/stop elevations
- Determine storage volume needed
- Size wet wells according to industry standards

TARGET AUDIENCE:

Highway designers with some experience in storm drainage design, familiarity with mathematical concepts such as algebra and geometry, and a working background in hydraulics and hydrology.

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Dan Ghere • (708) 283-3557 • dan.ghere@fhwa.dot.gov

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COURSE NUMBER: FHWA-NHI-135041 (3-Day)
FHWA-NHI-135041A (3.5-Day)
COURSE TITLE: HEC-RAS, River Analysis System

The host is responsible for providing 15 computers with the following minimum configuration: 850 MHz Intel Pentium III Processor or equivalent with 128 MB RAM, Windows NT 4.0 with Service Pack 6a or 98 Second Edition or 95 (SR-1), 100 MB available disk space, CD-ROM drive, and 1024 x 768 color video display.

HEC-RAS is a computer program designed as the successor to the U.S. Army Corps of Engineers' Hydraulic Engineering Circular HEC-2, Water Surface Profiles program (WSPRO). The program incorporates the Standard Step Method for Water Surface Profile computations, bridge hydraulics, including the method presented in WSPRO, culvert hydraulics, flood encroachments, design of open channel flow, analyzing split flow options and sub- and supercritical flow computations. The program can be used to compute bridge pier and abutment scour following the HEC-18 guidelines. The program is Windows-based and uses a graphical user interface for file management, data entry and editing, program execution and output display. It provides easy conversion from English to metric units and vice versa.

Both courses provide an overview and hands-on experience with the computer program, including modeling of bridges, but the 3.5-day version adds coverage of culvert modeling or multiple-opening bridges. A representative from the host agency is encouraged to contact the instructor when setting up the course to determine which length course would best suit the needs of the course participants and if the 3.5-day version is requested whether coverage of culverts or multiple-opening bridges is preferred. Each participant will receive a notebook containing the course notes, and a CD containing user documentation, HEC-RAS software, and example computer workshops.

OUTCOMES:

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

- Apply the conservation of mass, energy and momentum to computations of water surface profiles, hydraulics of bridges, and the hydraulics of culverts
- Create cross section, bridge, and culvert data files
- Create flow files
- Run the HEC-RAS computer program to solve all applications as presented in this course
- Troubleshoot the output data to determine the validity of the results

TARGET AUDIENCE:

Federal, State, and local hydraulic engineers who have responsibility for the design and analysis of river systems and stream crossings. Participants should have experience in using the Windows environment and knowledge of the fundamentals of open channel flow, including basic understanding of HEC-2 or WSPRO.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

FEE: $460 Per Participant

LENGTH: 3.5 Days (CEU: 2.1 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Larry Arneson • (720) 963-3200 • larry.arneson@fhwa.dot.gov

There are multiple delivery options for this course. Check our Web site for information on each delivery option.

COURSE NUMBER: FHWA-NHI-135046
COURSE TITLE: Stream Stability and Scour at Highway Bridges

This course provides comprehensive training in the prevention of hydraulic-related failures of highway bridges. The effects of stream instability, scour, erosion, and stream aggradation and degradation are covered. Material for the 3-day course comes primarily from two Hydraulic Engineering Circulars (HEC), "Evaluating Scour at Bridges" (HEC-18), and "Stream Stability at Highway Structures" (HEC-20).

The course provides training in conducting a stream stability classification and qualitative analysis of stream response. Quantitative techniques are provided for estimating long-term degradation, and calculating the magnitude of general and local scour at bridge piers and abutments for simple and complex substructures. A comprehensive workshop integrates qualitative analysis and analytical techniques to determine the need for a plan of action for correcting stream instability and scour problems.

FHWA-NHI-135048 Countermeasure Design for Bridge Scour and Stream Instability is a recommended subsequent course that provides training in the selection and design of countermeasures for stream instability and scour problems, including development of a plan of action and an introduction to fixed and portable instrumentation for scour monitoring.

See the listing for FHWA-NHI-135047 Stream Stability and Scour at Highway Bridges for Bridge Inspectors for a description of the 1-day course for bridge inspectors.

OUTCOMES:

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

- Identify stream instability and scour problems at bridges
- Define problems caused by stream instability and scour
- Estimate the magnitude of scour at bridge piers and abutments and in the bridge reach

TARGET AUDIENCE:

Federal, State, and local highway hydraulic, structural, and geotechnical engineers and bridge inspectors responsible for maintaining the integrity of highway bridges against possible hydraulic related problems. Consultants who do bridge engineering work are encouraged to attend.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Larry Arneson • (720) 963-3200 • larry.arneson@fhwa.dot.gov

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COURSE NUMBER: FHWA-NHI-135047
COURSE TITLE: Stream Stability and Scour at Highway Bridges for Bridge Inspectors

This course is an abbreviated presentation of FHWA-NHI-135046 Stream Stability and Scour at Highway Bridges. The course provides an understanding of and assistance in detecting hydraulic-related problems at highway bridges. The effects of steam instability, scour, erosion, and stream aggradation and degradation are covered. Countermeasures to these problems are discussed. This course concentrates on visual keys to detecting scour and stream instability problems and provides an introduction to portable scour monitoring instrumentation. The course emphasizes inspection guidelines to complete the hydraulic and scour-related coding requirements of the National Bridge Inspection Standards (NBIS). This course can be offered as a 1-day module in conjunction with the 3-day FHWA-NHI-135046 or as a stand-alone presentation.

OUTCOMES:

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

- Identify stream instability and scour problems at bridges
- Conduct field evaluations for scour and stream instability problems and properly code the results in the National Bridge Inventory
- Recognize countermeasures for stream instability and scour

TARGET AUDIENCE:

Federal, State, and local highway bridge inspectors responsible for detecting possible hydraulic-related problems that may threaten the integrity of highway bridges. Consultants who do bridge inspection work for the States may attend if space is available.

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Larry Arneson • (720) 963-3200 • larry.arneson@fhwa.dot.gov

See page 6 in the front of the catalog for course registration information and page 9 for a coordination checklist.

COURSE NUMBER: FHWA-NHI-135048 (2.5-Day)
FHWA-NHI-135048A (3-Day)

COURSE TITLE: Countermeasure Design for Bridge Scour and Stream Instability

This course provides an overview of countermeasures to highway related failures from the effects of stream instability, scour, erosion, and stream aggradation and degradation problems. Material for the 2.5-day course comes primarily from Hydraulic Engineering Circular (HEC) "Bridge Scour and Stream Instability Countermeasures - Experience, Selection, and Design Guidance" (HEC-23).

Given a stream instability and scour problem, participants will select appropriate countermeasures to correct the problem. The course provides training in recommended strategies for developing a plan that includes appropriate countermeasures, including alternatives to conventional riprap and filter design.

Participants will apply hydraulics analysis techniques to countermeasure design for seven design guideline workshops. The course provides an introduction to fixed and portable instrumentation for scour monitoring using slides and video demonstrations. Participants will receive training in designing a monitoring program to reduce the risk from scour.

NHI Course 135046 provides training in identifying and analyzing stream instability and scour problems at highway bridges and is recommended as a prerequisite for this course.

OUTCOMES:

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

- Develop a plan of action for a scour critical bridge
- Propose countermeasures for stream instability and scour problems
- Identify countermeasures for bridge scour and stream instability using the HEC-23 countermeasures matrix
- Design selected countermeasures with HEC-23 design guidelines

TARGET AUDIENCE:

Federal, State, and local highway hydraulic, structural, and geotechnical engineers and bridge inspectors responsible for maintaining the integrity of highway bridges against possible hydraulic-related problems. Consultants who do bridge engineering work are also encouraged to attend.

FEE: $335 Per Participant

LENGTH: 2.5 Days (CEU: 1.5 Units)

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Larry Arneson • (720) 963-3200 • larry.arneson@fhwa.dot.gov

There are multiple delivery options for this course. Check our Web site for information on each delivery option.

COURSE NUMBER: FHWA-NHI-135056
COURSE TITLE: Culvert Design

This course provides participants with the recommended design procedures for the hydraulic design of culverts. Material for the 3-day course comes primarily from "Hydraulic Design of Highway Culverts," Hydraulic Design Series No. 5 (HDS-5), which is provided to participants. "Hydraulic Design of Energy Dissipators for Culverts and Channels" (HEC-14) is discussed, but not provided. Culvert Hydraulic Design/Analysis Computer Program (HY-8) is discussed and demonstrated. However, this is not a "hands-on" computer course. A portable hydraulic flume is set up in the classroom for the participants to observe hydraulic principles and the hydraulic effects of culverts, improved inlets, pipe slope, material roughness, and various end treatments. The participants measure velocity, discharge, and headwater in the flume under various conditions and use the information to make actual design calculations.

OUTCOMES:

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

- Identify design alternatives based on culvert type, material, shape, and service-life considerations
- Describe the factors that govern inlet and outlet control and describe how each factor influences culvert performance
- Calculate tailwater depth and velocity and describe how tailwater affects culvert performance
- Design conventional culverts using HDS-5
- Improve culvert performance for inlet control culverts by designing an improved inlet using HDS-5
- Evaluate culvert outlet velocity and the need for energy dissipators, and select alternative energy dissipators using HEC-14
- Identify appropriate computer programs for culvert and energy dissipator design

TARGET AUDIENCE:

The course is suitable for entry-level personnel who have some drainage design experience or have taken FHWA-NHI-135065A and is valuable as a refresher course for those with previous culvert design training or experience.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Joe Krolak • (202) 366-4611 • joseph.krolak@fhwa.dot.gov

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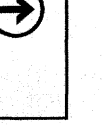

COURSE NUMBER: FHWA-NHI-135065
COURSE TITLE: Introduction to Highway Hydraulics

This course is based on Hydraulic Design Series No. 4 (HDS-4), "Introduction to Highway Hydraulics." The objective of the course is to provide a broad overview of basic highway drainage concepts. Fundamental hydraulic concepts are discussed, followed by open-channel flow principles and design applications of open-channel flow in highway drainage, including the design of stable channels, and pavement drainage. Closed-conduit concepts and applications in highway drainage include the application of culvert and storm drainage design. The presentation concludes with an introduction to concepts and design of energy dissipators. Detailed design criteria are drawn from other Hydraulic Design Series manuals and Hydraulic Engineering Circulars (HECs), providing a broad overview of all components of highway drainage design with an emphasis on practical applications. A portable hydraulic flume is set up in the classroom for the participants to observe numerous hydraulic principles. The participants take velocity and discharge measurements from the flume while in various setups and use the information to make design calculations.

OUTCOMES:

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

- Calculate design discharge using the rational method or regression equation procedures
- Apply the continuity and energy equation to solve practical design problems
- Use the Weir equation to calculate the flow overtopping a roadway embankment
- Use Manning's equation to calculate velocity or flow depth in simple or compound channels and recognize when this equation cannot be appropriately applied
- Evaluate channel flow conditions (subcritical, critical, or supercritical) using the Froude number
- Design a stable channel using basic hydraulic concepts and Hydraulic Engineering Circular HEC-15
- Apply basic pavement drainage concepts in calculation procedures described in HEC-22
- Design a simple culvert crossing using the procedures in HDS-5
- Design a simple storm drain and calculate the Hydraulic Grade Line (HGL) using the energy equation and HEC-22
- Describe which energy dissipaters are useful for culvert or storm drain applications based on HEC-14

TARGET AUDIENCE:

Entry-level engineers or engineering technicians who are performing highway drainage calculations on transportation facilities. It will also be useful as a refresher course on hydraulic fundamentals for experienced personnel.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Jorge Pagan • (202) 366-4604 • jorge.pagan@fhwa.dot.gov

Need course registration information? See page 6 in the front of the catalog.

COURSE NUMBER: FHWA-NHI-135067
COURSE TITLE: Practical Highway Hydrology

The course provides engineers and designers with the background and skills necessary for the practical application of hydrologic principles to highway design. Participants will be required to work example problems that stress actual design situations. The course is based on the Hydraulic Design Series (HDS) No. 2, "Highway Hydrology" which is also used in the course as a reference manual.

Participants will learn how to select and effectively implement techniques for estimating peak flows and flood hydrographs in gaged and ungaged streams for watersheds of the size typically encountered in highway drainage design. Through a series of optional modules, additional topics including channel routing, wetland hydrology, arid lands hydrology, and snowmelt hydrology are available given host agency preferences.

The overall course objectives enhance the understanding of basic hydrologic concepts and principles as they pertain to highways, and enable application of appropriate hydrologic concepts and tools in the design of drainage facilities and hydraulic structures.

OUTCOMES:

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

- Identify which peak flow design methods are suitable for given watershed characteristics and design requirements
- Estimate times of concentration
- Apply the SCS, regression and rational methods for peak flows
- Analyze gage flows using Log-Pearson III Frequency Analysis
- Develop hydrographs using the unit hydrograph and other techniques
- Perform storage routing calculations
- Design a storm water management facility

TARGET AUDIENCE:

Highway engineers and designers who are responsible for designing channels, storm drains, and stormwater detention, as well as those involved in the hydraulic design of bridges and culverts. Attendees will benefit from, but are not required to have, a basic knowledge of hydrologic science. The course is a useful primer for those new to the subject and a thorough review for experienced hydrologic and hydraulic engineers.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Joseph Krolak • (202) 366-4611 • joseph.krolak@fhwa.dot.gov

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COURSE NUMBER: FHWA-NHI-135071
COURSE TITLE: Surface Water Modeling System with Flo2DH and SMS

The host is responsible for providing 15 computers with the following minimum configuration: 850 MHz Intel Pentium III Processor or equivalent with 128 MB RAM, Windows NT 4.0 with Service Pack 6a or 98 Second Edition or 95 (SR-1), 100 MB available disk space, CD-ROM drive, and 1024 x 768 color video display.

The course presentation provides a balance of hydraulic theory, background of the finite element method, data requirements necessary to operate the Flo2DH module of the Finite Element Surface Water Modeling System (FESWMS) computer program and to use of Surface-Water Modeling System (SMS) in the development of input data files and the analysis of the data output.

The Flo2DH is a depth averaged two-dimensional surface water model for analyzing complex flow patterns in river or tidal situations. The program has been designed for modeling bridges and hydraulic structures commonly found in highway hydraulic applications. The program is capable of modeling bridges, bridges in pressure flow, culverts, weir flow over the roadway, and general and local scour through the reach being analyzed. The model is capable of handling steady and unsteady flow through hydraulic systems. Because of the intensive input data requirements and large amounts of output generated by the Flo2DH computer program, the pre- and post-processing program SMS is used in the course. SMS is capable of interactively building finite element networks, including the input data files necessary to use the Flo2DH computer program. The program is also capable of graphically presenting the output from Flo2DH, using a variety of formats.

Participants will receive a notebook that includes course materials, a Flo2DH user's manual and SMS user's manual, including copies of the software used in the course. Non-State highway agency course participants will receive a demonstration version of the proprietary SMS computer program.

OUTCOMES:

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

- Apply the fundamentals and use the capabilities of the Flo2DH computer program to develop two-dimensional water surface elevations and velocity fields
- Develop input data necessary for use in the Flo2DH computer program
- Use SMS as a pre- and post-processing program for the Flo2DH computer program
- Use SMS to build finite element networks and input data files for use with the Flo2DH computer program, including to graphically view and manipulate the output

TARGET AUDIENCE:

Federal, State, and local hydraulic engineers who have responsibility for the design and analysis of highway stream crossings. In order to derive the most benefit from this training, course participants should have knowledge of the fundamentals of open channel flow and should be familiar with the general concepts associated with two-dimensional surface water flow modeling. Experience with Windows-based computer programs is helpful.

FEE: $650 Per Participant

LENGTH: 5.0 Days (CEU: 3.0 Units)

CLASS SIZE: Minimum: 20; Maximum: 26

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Larry Arneson • (720) 963-3200 • larry.arneson@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-135080
COURSE TITLE: Hydrologic Analysis and Modeling with WMS

This course is designed as a hands-on, application-oriented training course using the Watershed Modeling System (WMS) to make hydrologic estimates using a variety of techniques. It will provide attendees with the knowledge and tools necessary to use data derived from geographical information systems (GIS) to develop hydrologic estimates and model runoff from watersheds. The course also teaches how to use digital terrain data for the development of watershed parameters that are required by most commonly used hydrologic analysis programs.

The WMS is a comprehensive environment for hydrologic analysis. It is developed by the Environmental Modeling Research Laboratory (EMRL) of Brigham Young University, and has been licensed for use by all State and Federal highway agencies. WMS makes it possible to take advantage of the wealth of digital terrain, land use, soil, and other GIS data readily available from government and private agencies. This data can then be used for preparing input files for several commonly used hydrologic models. Models supported by the interface include HEC-1 (HMS), TR-20, TR-55, and the Rational Method. This course also includes instruction in use of the regional regression equations contained in the National Flood Frequency (NFF) database. This course teaches the techniques and methods necessary to locate and use GIS data so that labor intensive processes such as delineating watershed boundaries and calculating modeling parameters from paper maps can be avoided when computing design flows and developing flow hydrographs at bridges and culverts.

Participants will receive a notebook that includes course materials, a WMS User's Manual, and copies of the software, workshops, and tutorials used in the course. Non-State highway agency course participants will receive a demonstration version of the proprietary WMS computer program.

OUTCOMES:

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

- Automate basin delineation in WMS with GIS vector data, DEMs, and TINs
- Efficiently use digital watershed data for hydrologic modeling parameter development
- Locate and obtain digital data sources for watershed delineation and hydrologic model development
- Use WMS to build hydrologic input data files for use with HEC-1 (HMS), TR-20, TR-55, regional regression equations, and Rational Method programs, including instruction on how to graphically view the output

TARGET AUDIENCE:

Federal, State, and local hydrologic/hydraulic engineers who have responsibility for the design and analysis of highway stream crossings. In order to derive the most benefit from this training, course participants should have knowledge of the fundamentals of hydrology and hydrologic modeling. Experience with one of the aforementioned hydrologic modeling computer programs would be helpful.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 25

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Larry Arneson • (720) 963-3200 • larry.arneson@fhwa.dot.gov

Earn Continuing Education Units with NHI courses.

COURSE NUMBER: FHWA-NHI-135081
COURSE TITLE: Introduction to Highway Hydraulics Software

This course requires computers with the following minimum configuration: 1.6 GHz Intel Pentium III Processor or equivalent with 512 MB RAM, 100 MB available disk space, CD-ROM drive, and Windows XP. One computer is required for every two participants.

The course provides engineers and designers with hands-on computer experience in the selection and application of software tools commonly applied for highway hydraulics including estimating peak flows and hydrographs, as well as the analysis and design of storm drains, culverts, detention basins, and channels. The Watershed Modeling System (WMS) will be the Windows interface used for most applications. Software covered in the course includes:

1. NFF (National Flood Frequency Program)
2. SCS TR-55
3. HEC-1/HEC-HMS
4. FHWA Storm Drain for design of pipes and inlets
5. HY8 for culvert and energy dissipator analysis and design
6. WMS detention basin and channel calculators for detention basin and channel design

OUTCOMES:

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

- Define a drainage outlet and delineate a watershed using WMS
- Compute peak flows using NFF and TR-55
- Perform normal depth and stability calculations using the WMS channel calculator
- Design a culvert using HY8 and the HY8 input generator
- Select and size an energy dissipator using the HY8 energy dissipator software
- Design and analyze storm drain inlets and pipes using WMS and the FHWA storm drain program
- Route a hydrograph through a detention basin using the WMS detention basin calculator

TARGET AUDIENCE:

Highway engineers and designers responsible for the hydrologic and hydraulic aspects of designing storm drains, culverts, detention basins, and channels. Attendees should have a basic knowledge of hydrology and hydraulics. The course will briefly review theory, but will focus on hands-on problem solving.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 14; Maximum: 20

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Joseph Krolak • (410) 962-0091 • joseph.krolak@fhwa.dot.gov

We want to hear from you about the NHI catalog. Please complete the catalog survey card in the back of the catalog.

COURSE NUMBER: FHWA-NHI-137001
COURSE TITLE: ITS Awareness Seminar

This course is also available as a Web-based course at the Consortium for ITS Training and Education (CITE) located at www.citeconsortium.org/registration.html

This course provides an overall understanding of Intelligent Transportation Systems (ITS) and the ITS infrastructure. The course illustrates the ITS infrastructure components by showcasing those systems that are deployed around the country and discussing multimodal systems that will benefit from the use of the ITS infrastructure. Institutional and technical issues involved in deploying ITS infrastructure are also presented. Topics covered include planning, design, architecture, standards, procurement, installation and construction, operation and maintenance, and funding of ITS systems. The benefits associated with various types of ITS deployment are presented and explained.

The one-hour executive summary developed for elected and appointed officials may be requested through the National Resource Center, or the FHWA Division. Questions concerning this offering should be addressed to the technical information contact.

OUTCOMES:

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

- Define ITS by discussing the elements, functions, and benefits of ITS
- Identify essential stakeholders and the need for interaction between them
- Explain the importance of integrating systems throughout a region
- Compare and contrast two case studies of ITS deployments
- Identify information resources, such as Web sites, other training, or data libraries, for more information on ITS

TARGET AUDIENCE:

This course is intended for traffic engineers, State, Federal and local transportation planners, metropolitan planning organizations (MPOs), transit and highway operators, public safety responders (enforcement, fire, EMS, towing, public works), transportation management center (TMC) specialists, motor carrier managers, environmental groups, IT personnel, college and university faculty and students, consultants and contractors. Other groups belong in the audience as well, namely on the "technical/professional" side: ITS (and even nontraditional ITS) vendors, practitioners in ITS-related fields, such as those in financial, marketing, media and others who are increasingly valued ITS partners. Executives and managers, elected officials, and the general public will be served well by the executive summary specified in the course description.

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Ron Giguere • (202) 366-2203 • ron.giguere@fhwa.dot.gov

A list of NHI contacts is located on the inside front cover of this catalog.

COURSE NUMBER: FHWA-NHI-137002
COURSE TITLE: Deploying Integrated ITS - Metropolitan

This course is part of the core Intelligent Transportation Systems (ITS) curriculum established by the ITS Professional Capacity Building (PCB) program. For more information on the core curriculum, go to www.pcb.its.dot.gov/Catalogs/ITSCurriculum.htm#section2.

This course supports integrated intelligent transportation system infrastructure deployment with consideration of the National ITS Architecture. The regional context in which the public components of ITS infrastructure will be implemented and integrated is emphasized. The course combines the technical and institutional components of integrated ITS infrastructure. The importance of each component is discussed and placed in context with the regional decision that must be made by State and local agencies.

Transportation program managers will obtain an understanding of the technical and institutional implications for deploying integrated infrastructure within the framework of a regional architecture.

OUTCOMES:

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

- Identify the needs that can be addressed by ITS strategies
- Select the best practices for planning and programming integrated ITS in a metropolitan area
- Relate the need for a Regional Architecture and use of standards to ensure integrated ITS deployment
- Select the best practices for ITS project planning, design, construction, and implementation
- Explain the systems engineering approach to ITS project implementation
- Describe the use of a "concept of operations" to plan for integrated systems
- Identify typical costs and benefits of different types of ITS deployments

TARGET AUDIENCE:

This course is intended for State agencies, metropolitan planning organizations (MPOs) and city/local/county transportation professionals who implement ITS deployment schedules as part of the planning process, deal with public safety, plan for highway and transit; ITS specialists who provide information or recommendations in operations; and those who fulfill regulations (oversight), manage ITS or operations providers, coordinate projects and programs, review specifications, develop regulations and specifications, and design systems; engineers; regional architecture developers; systems integrators; and private sector people associated with these tasks.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Barry Zimmer • (202) 366-4082 • barry.zimmer@fhwa.dot.gov

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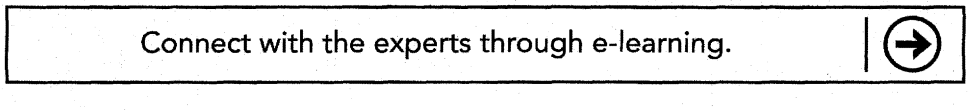


COURSE NUMBER: FHWA-NHI-137005
COURSE TITLE: ITS Telecommunications Overview

This course is part of the core Intelligent Transportation Systems (ITS) curriculum established by the ITS Professional Capacity Building (PCB) program. For more information on the core curriculum, go to www.pcb.its.dot.gov/Catalogs/ITSCurriculum.htm#section2.

This course provides a broad introduction to telecommunications technologies, the associated issues, and practical lessons learned in the applications for such technologies of ITS.

OUTCOMES:

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

- Recognize and deal with the current issues associated with the deployment and application of telecommunications infrastructure within the context of transportation project development, design, operations, and management
- Plan and conduct a requirements analysis to match devices and components to telecommunications technologies
- Make use of regional ITS architectures for telecommunications planning
- Explain the fundamentals of telecommunications at a basic level
- Define some of the key terminology and concepts used in transportation telecommunications
- Generalize a frame of reference to help in identifying and defining the institutional and organizational issues associated with the effective use of telecommunications technology in an advanced transportation context

TARGET AUDIENCE:

Public and private-sector transportation professionals (project planners, engineers, managers, and senior technicians) involved in ITS transportation planning and ITS deployment, such as MPOs transit agencies, municipalities, State highway agencies, FHWA Division and Resource Center offices, FTA personnel, and systems integrators.

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: William S. Jones • (202) 366-2128 • william.s.jones@fhwa.dot.gov

An FHWA Divisions and State Highway Agencies contact list is located on page 183.

COURSE NUMBER: FHWA-NHI-137007
COURSE TITLE: Rural ITS Toolbox

This course is part of the core Intelligent Transportation Systems (ITS) curriculum established by the ITS Professional Capacity Building (PCB) program. For more information on the core curriculum, go to www.pcb.its.dot.gov/Catalogs/ITSCurriculum.htm#section2.

This course describes many ITS-related practices and techniques that have been successfully applied to rural transportation problems. These successes are documented in the Rural ITS Toolbox (Toolbox). The training goes further into what is provided in the Toolbox, including problem solving techniques and training for the participant to describe the Toolbox contents to their stakeholders. The Rural ITS Toolbox training will be helpful to identify ITS solutions that can have a low-cost/high-return impact on rural transportation.

OUTCOMES:

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

- Define ITS by discussing the elements and functions of ITS
- Comprehend the value of the Rural ITS Toolbox for articulating rural ITS deployment strategies
- Discuss local examples of regional ITS projects
- Explain the benefits of rural ITS
- Recognize the need to identify stakeholders and the importance of fostering interaction among them
- Identify information resources, such as Web sites, other training, data libraries, etc., for more information on ITS
- Tailor portions of the Rural ITS Toolbox for presentation/discussion with other rural stakeholders so that they recognize their roles in rural ITS deployment

TARGET AUDIENCE:

County, municipal, and town executives; traffic engineers; State, Federal, and local transportation planners; MPOs' transit and highway operators; public safety responders (enforcement, fire, EMS, towing, public works); Transportation Management Center (TMC) operators; motor carrier managers; environmental groups; IT personnel; college and university faculty and students; and consultants and contractors.

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: James Pol • (202) 366-4374 • james.pol@fhwa.dot.gov

You don't need to be a government agency to host a course. For instructions on how to host a course, please see page 7.

COURSE NUMBER: FHWA-NHI-137013
COURSE TITLE: Deploying the National Intelligent Transportation System (ITS) Architecture

NEW COURSE

This course is part of the core Intelligent Transportation Systems (ITS) curriculum established by the ITS Professional Capacity Building (PCB) program. For more information on the core curriculum, go to www.pcb.its.dot.gov/Catalogs/ITSCurriculum.htm#section2.

This course is designed to be an interactive workshop to demonstrate how to apply the National ITS Architecture tools and methodologies when developing regional and project ITS architecture. A copy of the National ITS Architecture 4.0 is provided on CD-ROM for course use and student retention.

OUTCOMES:

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

- Use the National ITS Architecture as a tool when developing regional and project ITS architectures
- Identify integration opportunities while developing regional and project ITS architectures
- Use the National ITS Architecture CD-ROM to find definitions
- Identify the difference between user service and user service requirements, and describe how these relate to the National ITS Architecture
- Identify the types of projects that must comply with USDOT policies regarding consistency with ITS architecture and standards, and describe the key requirement for compliance
- Define the systems engineering process as it is used with the National ITS Architecture

TARGET AUDIENCE:

Public-sector audiences involved in ITS planning and deployment, as well as systems integrators and private-sector transportation professionals who develop ITS solutions.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Pam Kordenbrock • (505) 820-2023 • pamela.kordenbrock@fhwa.dot.gov

Do you have a suggestion for a new training course? Please complete the 'How can we help?' card in the back of the catalog.

COURSE NUMBER: FHWA-NHI-137015 Web-Based
COURSE TITLE: Introduction to National ITS Architecture

This Web-based course is approximately 6 hours long and is available 24 hours a day, 365 days a year via the Internet. This course is available at the Consortium for ITS Training and Education (CITE) located at www.citeconsortium.org/registration.html. Please go to the CITE Web site to register for the course.

The course is intended to provide students with a broad overview of the National ITS Architecture and the role it plays in ITS planning, designing, and implementation processes. It provides some background (what the National ITS Architecture consists of, how it is defined, why it was established, and what its aims and objectives are) and introduces the notion of user service. The physical architecture is explained using examples of local implementations of the National ITS Architecture. Specific elements of the physical architecture, such as subsystems and terminators, are presented in some detail.

OUTCOMES:

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

- Define the systems engineering process, as it is used with the National ITS Architecture
- Develop an understanding of the context within which the architecture is to be applied to the ITS planning, design, and implementation process
- Disseminate updated information on the evolving standards and protocols being developed to support the architecture
- Recognize the content and procedures associated with the National ITS Architecture

TARGET AUDIENCE:

Public-sector audiences involved in ITS planning and deployment, as well as systems integrators and private-sector transportation professionals who develop ITS solutions.

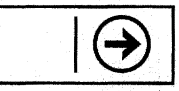
FEE: $100 Per Participant

LENGTH: 6.0 Hours (CEU: 0.6 Units)

CLASS SIZE: Minimum: N/A; Maximum: N/A

Deborah Gwaltney • (202) 366-9379 • debbie.gwaltney@fhwa.dot.gov
Technical Information: Ron Giguere • (202) 366-2203 • ron.giguere@fhwa.dot.gov

Got questions?
Contact the NHI Training Team for more information.



COURSE NUMBER: FHWA-NHI-137019
COURSE TITLE: ITS Software Acquisition

This course is part of the core Intelligent Transportation Systems (ITS) curriculum established by the ITS Professional Capacity Building (PCB) program. For more information on the core curriculum, go to www.pcb.its.dot.gov/Catalogs/ITSCurriculum.htm#section2.

This course provides a general understanding of the many issues involved in ITS software development and acquisition processes. It is focused specifically on ITS software issues. It is also a companion course to FHWA-NHI-137020, ITS Procurement.

OUTCOMES:

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

- Describe the basic technologies used in software development
- Describe the private sector view of software development
- Describe the intellectual property rights and how they must be considered
- Manage the procurement of ITS software
- Write a Request for Proposal for software procurement
- Describe quality assurance issues

TARGET AUDIENCE:

Federal, state, and local transportation professionals who are involved in the planning, decision making, and implementation of ITS projects which have a significant software component, or who are involved in coordinating these ITS projects.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: William S. Jones • (202) 366-2128 • william.s.jones@fhwa.dot.gov

See page 178 to find out more about the Universities and Grants Programs.

COURSE NUMBER: FHWA-NHI-137020
COURSE TITLE: Intelligent Transportation System (ITS) Procurement

This course is part of the core Intelligent Transportation Systems (ITS) curriculum established by the ITS Professional Capacity Building (PCB) program. For more information on the core curriculum, go to www.pcb.its.dot.gov/Catalogs/ITSCurriculum.htm#section2.

Deployment of ITS introduces new challenges to State and local transportation agencies that operate under traditional procurement practices developed to support the design and construction of roads and bridges or to design and construct rail projects. The traditional practices do not readily accommodate the special needs of ITS procurement that is focused on operations. For this reason, the transportation professional must recognize the special considerations required in ITS procurements, and understand how they can be accommodated. This seminar is intended to heighten awareness of the challenges in procuring ITS within the traditional construction project environment. It combines lectures with presentations of case studies to describe the lessons learned from past ITS projects and to help ensure successful ITS procurement. This seminar is a companion to, but not a prerequisite for FHWA-NHI-137019 ITS Software Acquisition.

OUTCOMES:

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

- Describe the nature of intelligent transportation systems and explain why procuring intelligent transportation systems is different from traditional construction procurements
- Describe the potential barriers that may arise from procuring intelligent transportation systems within the traditional construction- oriented environment
- Describe lessons learned from previous ITS projects
- Apply innovative contracting mechanisms and flexibilities in existing regulations to mitigate barriers
- Apply lessons learned to existing policies and procedures to achieve improvements in procuring intelligent transportation systems

TARGET AUDIENCE:

Federal, State, and local transportation professionals who are directly involved in procuring ITS systems. Specifically, those personnel who are responsible for developing and reviewing statements of work for ITS procurement, including program managers, contracting officers, and attorneys.

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: William S. Jones • (202) 366-2128 • william.s.jones@fhwa.dot.gov

You don't need to be a government agency to host a course. For instructions on how to host a course, please see page 7.

COURSE NUMBER: FHWA-NHI-137022
COURSE TITLE: CORSIM Traffic Simulation Model Training

The hosting organization is responsible for providing computers with the following minimum requirements: 200 MHz Intel Pentium II Processor or equivalent with 64 MB RAM, Windows 95 (SR-1) or NT 4.0 with Service Pack 6a, color monitors, 50 MB of available disk space. NOTE: Maximum of two participants per terminal.

This course provides an understanding of CORSIM - a tool that simulates traffic and traffic control conditions on combined surface street and freeway networks. CORSIM determines how traffic engineering and control strategies impact a prescribed network's operational performance, as expressed in terms of various measures of effectiveness (MOEs). The MOEs (such as speed, travel time, volume, and delay) provide insights into the effects of the applied strategy on traffic operations and provide the basis for optimizing the applied strategy. CORSIM, the simulation package within the Traffic Software Integrated System (TSIS) suite of tools, is a powerful tool that can be applied to wide areas of interest including:

1. Practical traffic engineering activities such as signal retiming, traffic impact studies, analysis of major traffic events, stadium operations, corridor traffic operations, and freeway incident impacts
2. Evaluating ITS technologies, such as real time traffic adaptive control, real time traveler information and route guidance, and network-wide dynamic traffic assignment

OUTCOMES:

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

- Describe CORSIM features (including advantages and disadvantages)
- Determine appropriate uses for CORSIM
- Identify types and sources of data
- Given real-world data, prepare a link-node diagram, then code for input to CORSIM
- Input data, run CORSIM, and interpret output for arterial, freeway, and combined networks
- Identify circumstances and procedures for calibrating models
- Interpret and fix common error messages
- Use CORSIM to simulate traffic improvements

TARGET AUDIENCE:

Traffic engineers in the public and private sectors, as well as in academia, who are involved in ITS planning and deployment.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: John Halkias • (202) 366-2183 • john.halkias@fhwa.dot.gov

Need to find a FHWA Division or State Highway Agency contact? See the contact list on page 183.

COURSE NUMBER: FHWA-NHI-137024
COURSE TITLE: Introduction to Systems Engineering for Advanced Transportation

This course is part of the core Intelligent Transportation Systems (ITS) curriculum established by the ITS Professional Capacity Building (PCB) program. For more information on the core curriculum, go to www.pcb.its.dot.gov/Catalogs/ITSCurriculum.htm#section2.

This course is an introduction to systems engineering for ITS project managers and project staff. It provides a high-level view of a broad and rich topic area, introducing basic concepts to individuals who are working on ITS projects. The goal is to allow these individuals to understand the benefits of applying systems engineering approaches as a means of developing quality systems. The course covers technical practices such as modeling, prototyping, trade-off analysis and testing, and management practices such as risk assessment and mitigation, which make up "best practices" in the systems engineering arena. A combination of lecture and classroom exercises, with transportation systems examples, is used to illustrate the basic concepts and to introduce the topics to students.

OUTCOMES:

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

- Define systems engineering and its application to ITS
- Describe the system's life cycle and its relationship to systems engineering
- Develop, derive, and validate requirements for a system
- List the systems engineering tools available to mitigate risk
- Define and apply the concept of earned value as a tracking mechanism
- List three alternative strategies that may be applied to decision making under uncertainty
- Identify where to find appropriate standards for developing ITS projects
- Identify resources that may help project personnel to look at systems as a whole

TARGET AUDIENCE:

Transportation engineers and other practicing ITS professionals or technical persons at all levels of government and in the private sector. ITS project managers, technical team members, contractors, and staff are all appropriate participants. Project managers would particularly benefit from it since they direct the efforts of many people. Professionals involved in ITS at any level may attend to broaden their understanding of complex systems beyond current technical knowledge.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Ron Giguere • (202) 366-2203 • ron.giguere@fhwa.dot.gov

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COURSE NUMBER: FHWA-NHI-137026
COURSE TITLE: Managing High Technology Projects in Transportation

NEW COURSE

This course is also available as a Web-based course at the Consortium for ITS Training and Education (CITE) located at www.citeconsortium.org/registration.html.

This course is part of the core Intelligent Transportation Systems (ITS) curriculum established by the ITS Professional Capacity Building (PCB) program. For more information on the core curriculum, go to www.pcb.its.dot.gov/Catalogs/ITSCurriculum.htm#section2.

The course is designed to improve project management skills of both public and private-sector personnel who are responsible for managing the implementation of technology-intensive transportation projects. The course provides training related to the fundamental principles and practices of good project management; the steps to be taken for the planning, design and implementation of transportation systems projects; the types of project management tools available for managing transportation systems projects; and the basic skills required to be a good project manager.

This course covers project management techniques associated with all phases of system acquisition, from planning through acceptance. The skills required for the ongoing operation and maintenance of systems that are somewhat different are not explicitly covered in this course.

OUTCOMES:

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

- Describe why tailored project management techniques are critical to success in managing advanced transportation projects
- Define key components in planning the project
- Identify the primary participants that need to be involved throughout the development of a project
- Identify the stages of the process and the management tools that are applicable at each stage
- Identify and describe key general management skills that are applicable to managing projects for advanced transportation systems

TARGET AUDIENCE:

Current and prospective project managers from State DOTs and State and local transportation agencies, as well as those in the private sector who support the implementation of advanced transportation projects.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Pam Kordenbrock • (505) 820-2023 • pamela.kordenbrock@fhwa.dot.gov

FHWA Mission – Enhancing mobility through innovation, leadership, and public service.

COURSE NUMBER: FHWA-NHI-137029A
COURSE TITLE: Turbo Architecture Software Training

NEW COURSE

The hosting organization is responsible for providing computers with the following minimum requirements: at least 400MHz CPU, 64 MB of RAM, 150MB hard-disk space available, external mouse, CD-ROM drive, and Diskette Drive (1.44MB); Windows 98SE, 2000, or XP; and Workstation monitors configured for 1024x768 resolution. NOTE: Maximum of two participants per terminal.

This course provides training on the Turbo Architecture tool, which is a high-level, interactive software training program to assist transportation planners and systems integrators in the development of regional and project architectures using the National Intelligent Transportation Systems (ITS) Architecture as a starting point. Turbo Architecture helps users integrate multiple project architectures both with each other and with a regional architecture. In addition, Turbo Architecture provides an initial start toward both architecture development and consistency with the National ITS Architecture.

PREREQUISITES:
1. Windows skills - The ability to traverse directories, open/close/resize/minimize windows, switch between open windows, and launch and navigate browser
2. ITS knowledge - Knowledge of common ITS concepts and terminology
3. Architecture knowledge - The ability to translate all ITS elements in their region into architecture entities (subsystems, terminators, architecture flows), and to translate their regions' transportation services into market packages
4. National ITS Architecture CD-ROM skills - Proficiency in using the architecture CD to find information on subsystems, terminators, architecture flows and market packages

OUTCOMES:

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

- List the preparatory decisions and assembly of information needed to create a Regional Architecture or a Project Architecture
- Describe the six steps in the process used by Turbo Architecture to create a Regional Architecture or Project Architecture
- Use Turbo Architecture software to create and modify a simple Regional Architecture or Project Architecture, including entering inventory data, selecting Market Packages, reconciling inventory inconsistencies, building the architecture, customizing interconnects and architecture flows, and printing reports and diagrams
- Merge a Project Architecture with a Regional Architecture database
- Describe in general terms how to extend the Regional or Project Architecture by adding architecture flows, subsystems and terminators beyond those defined by the National ITS Architecture

TARGET AUDIENCE:

State DOT and local-agency staff from metropolitan planning organizations (MPOs) and city/county transportation agencies, as well as private sector consultants, who are developing Regional and Project Architectures. Their responsibility is to assemble ITS inventory data for their regions or for their projects, and to use Turbo to build and customize their regional or project architectures.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Robert Rupert • (202) 366-2194 • robert.rupert@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-137042
COURSE TITLE: Configuration Management (CM) for Traffic Management Systems

Configuration management (CM) is the practice of handling changes systematically so that a system maintains its integrity over time. CM involves the policies, procedures, techniques, and tools to manage, evaluate proposed changes, track the status of changes, and maintain an inventory of system and support documents as the system changes. The need for and use of CM plans has increased significantly as a result of the rapid deployment of ITS projects and the development of traffic management systems. Many agencies are unaware of the need for, importance, and value of CM programs and plans to the continued operation and maintenance of their systems.

OUTCOMES:

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

- Discuss the potential benefits and value of CM
- Describe how CM supports the management and operation of traffic management systems
- Identify the role and potential CM applications have in relation to traffic management systems
- Explain the differences between maintenance, testing and acceptance procedures, and CM
- Discuss the key CM issues to consider for field devices, traffic control software, agency, and regional applications
- Identify the types of CM tools that are available and their potential applications

TARGET AUDIENCE:

This course is designed for any individual who is engaged with, or responsible for, the planning, design, implementation, management, operation, or maintenance of transportation management systems. The course is suited for managers, supervisors, technical specialists (e.g., system engineers, designers, telecommunications, IT personnel, software engineers, etc.), and technicians who are directly involved with integrating the consideration of CM into the activities. These individuals may be from MPOs, TMCs, municipalities, counties, state DOTs, FHWA (e.g., Divisions or Resource Centers), colleges or universities, contractors or consultants.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Jon Obenberger • (202) 366-2221 • jon.obenberger@fhwa.dot.gov

Web conferencing allows individuals to conduct live interactive presentations, demonstrations, meetings, classes, or training sessions via the Internet while simultaneously communicating through an audio conference bridge. Contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov for program assistance.

COURSE NUMBER: FHWA-NHI-139001
COURSE TITLE: Integrating Freight in the Transportation Planning Process

Freight transportation issues can be complex and involve many different stakeholders, all of whom have different perspectives on how they view the freight transportation system. The challenge faced by many public-sector transportation planners is how to best incorporate these freight issues and perspectives into the transportation planning process, which will result in a safe and efficient transportation system for both people and goods. This course will provide a better understanding of freight transportation, its stakeholders, and its issues so that public-sector transportation planners will be better able to incorporate freight into their respective transportation planning processes and programs.

OUTCOMES:

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

- Identify the stakeholders involved in freight transportation
- Explain the role of different modes in freight transportation
- Describe some trends affecting freight transportation, and their impact on a State's transportation system and communities
- Discuss some of the common issues that prevent freight from being fully incorporated in the planning process
- Identify key resources to help guide statewide and metropolitan freight planning efforts

TARGET AUDIENCE:

Transportation planners and freight transportation planners from State DOTs, MPOs, local governments and Federal agencies.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Carol Keenan • (202) 366-6993 • carol.keenan@fhwa.dot.gov

A list of NHI contacts is located on the inside front cover of this catalog.

COURSE NUMBER: FHWA-NHI-139002
COURSE TITLE: Uses of Multimodal Freight Forecasting in Transportation Planning

NEW COURSE

This course is an "about" course on freight forecasting and describes different forecasting techniques for facility-specific, metropolitan and statewide needs. The course will identify freight planning questions that are commonly addressed by transportation planners, demonstrate the use and value of different freight forecasting techniques to answer those questions, and review notable practices on freight forecasting techniques used by metropolitan and State transportation agencies. It also provides the participant with a basic understanding of freight transportation practices, the key parameters that influence growth and distribution of freight traffic, and currently available tools and data to forecast future freight traffic.

OUTCOMES:

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

- Explain why freight forecasting is important in the transportation planning process
- Discuss the roles of different freight transportation modes
- Describe the economic trends that influence freight growth
- Describe the role of intermodal terminals and their impacts on local traffic
- Identify the impacts that freight has on travel demand forecasts
- Identify publicly and privately available sources of key freight data and understand the data sources' strengths and limitations as they relate to freight forecasting and planning

TARGET AUDIENCE:

State and metropolitan planning organization (MPO) officials who are involved in transportation planning and/or forecasting; staff of State and local agencies, including DOTs, MPOs, port authorities, and local jurisdictions, who are involved in the development and management of freight projects and plans; and staff of Federal agencies, including FHWA, FRA, FAA, and other modal agencies that assist State and local agencies involved in transportation and/or freight planning and funding.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov
Technical Information: Bob Gorman • (202) 366-5001 • robert.gorman@fhwa.dot.gov
Technical Information: Carol Keenan • (202) 366-6993 • carol.keenan@fhwa.dot.gov

This course has been updated to reflect recent changes in the Uniform Act regulations.

COURSE NUMBER: FHWA-NHI-141029
COURSE TITLE: Basic Relocation

The course is designed for the beginning relocation agent or for those persons interested in a basic knowledge of the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (Uniform Act). The purpose is to answer questions, meet technical needs, and broaden the knowledge of those engaged in the relocation of persons as a result of the acquisition of real property required for a Federal or Federally funded project. The course covers all functional areas of the relocation assistance program, with emphasis on residential displacements.

OUTCOMES:

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

- Explain the principles that govern provisions of the Uniform Act and implementing regulations
- Provide advisory services within his/her area of expertise
- Identify services available from other agencies
- Explain requirements for comparability to include decent, safe, and sanitary housing
- Compute moving costs and replacement housing payments
- Explain the basic concept of last-resort housing
- Explain the appeal procedures for those displaced

TARGET AUDIENCE:

Federal, State, and local public agencies, FHWA personnel, and other interested persons.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Rebecca Bennett • (202) 366-2039 • rebecca.bennett@fhwa.dot.gov

Video conferencing technology can make instructor-led courses accessible to remote participants without changing the delivery format. Instruction is delivered to a video camera and broadcast to video conferencing sites in areas close to participants, eliminating or greatly reducing the need for travel. Contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov for more information.

COURSE NUMBER: FHWA-NHI-141030
COURSE TITLE: Advanced Relocation

UPDATED COURSE

Prerequisites: FHWA-NHI-141029 and the Web course FHWA-NHI-141045 Real Estate Acquisition Under the Uniform Act: An Overview

This course will go beyond the basic functional areas of relocation assistance and concentrate on areas of specific concern, such as: comparability, mortgage interest differential payments, last resort housing, multiple use, tenants, farms, and non-residential moves-- including businesses. The course has been modularized to allow flexibility in adjusting the subject material to meet the needs of the requesting agency.

OUTCOMES:

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

- Explain the principles that govern relocation provisions of the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (Uniform Act) and implementing regulations
- Describe at least three factors involved in difficult relocation subject areas
- Describe issues that may arise when developing an advisory assistance plan for difficult relocation cases
- Determine challenging issues when calculating complex non-residential moving costs
- Assess the calculation of complex, non-residential moving costs

TARGET AUDIENCE:

Federal, State, and local public agencies, FHWA personnel, and other interested persons. Broad knowledge of the requirements of the Uniform Act and the implementing regulations of 49 Code of Federal Regulation (CFR) Part 24 and completion of FHWA-NHI-141029 Basic Relocation or approximately one year of experience working in the relocation program is recommended.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 35

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Rebecca Bennett • (202) 366-2040 • rebecca.bennett@fhwa.dot.gov

How can we help? We want to assist you with your training needs. Please complete the 'How Can We Help' survey card in the back of the catalog.

COURSE NUMBER: FHWA-NHI-141031
COURSE TITLE: Business Relocation

This course provides comprehensive information on the various aspects of business relocation and is designed to address the relocation of businesses, farms, and nonprofit organizations. The main topics include eligibility, moving payments and benefits, advisory services, actual direct loss of tangible personal property, searching expenses, fixed payments or in lieu of (ILO) payments, and re-establishment expense.

OUTCOMES:

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

- Explain the factors involved in difficult subject areas, such as move-cost estimating, farms, nonprofit organizations, fixed or ILO payments, and re-establishment payments
- Provide direct advisory assistance in relocating businesses, farms, and nonprofit organizations or assist others in providing advisory assistance
- Identify the sources and assembling of moving-cost data including inventories, specifications, profit and loss relationships, bids, and estimates

TARGET AUDIENCE:

State departments of transportation, local public agencies, FHWA personnel, and other Federal agency personnel. Participants must have a basic knowledge of the relocation program.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Rebecca Bennett • (202) 366-2041 • rebecca.bennett@fhwa.dot.gov

Earn Continuing Education Units (CEUs) with NHI courses.

COURSE NUMBER: FHWA-NHI-141045 Web-Based
COURSE TITLE: Real Estate Acquisition Under the Uniform Act: An Overview

Recommended System Specifications:

1. 600 MHz Intel Pentium III processor or equivalent with a minimum of 128 MB RAM
2. Windows 98 Second Edition, ME, NT, 2000, or XP
3. Audio capability with speakers
4. Microsoft Internet Explorer v6, Netscape v7, Mozilla v1.1 or higher with JavaApplet and ActiveX enabled
5. Flash 5 or higher plug-in installed
6. Minimum screen resolution 800x600, thousands of colors (16-bit) display settings properties.
7. DSL or faster connection strongly recommended (Audio/animations may be slow at dial-up modem speeds)

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), is the basis for Federally-funded real estate acquisition programs. The goal of this Web-based course is to help participants recognize what they need to know when acquiring real estate for a Federally-funded project.

OUTCOMES:

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

- Provide a basic overview of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act)
- Discuss the three key elements of the Uniform Act: Valuation/Appraisal, Acquisition and Relocation
- Explain how to develop an estimate of just compensation through the use of the appraisal process or appraisal waiver procedure(s)
- Define the process through which real estate is acquired
- Identify relocation benefits and services required by the Uniform Act
- List places to obtain relevant resource documents/materials

TARGET AUDIENCE:

Federal, State and local government employees and consultants who acquire real estate; who serve as program/project managers; who serve as grant administrators or grant recipients. This includes acquisition and relocation agents, appraisers, realty specialists, attorneys, engineers, planners, etc. Participant must register online at www.nhi.fhwa.dot.gov/registerdl.asp. Participant information, billing address, and credit card information must be provided when registering online. Participants will have a userid and password sent to them via e-mail after authorization in order to log in to the course from the distance learning page on the CITE website at www.citeconsortium.org.

FEE: Free

LENGTH: 6.0 Hours (CEU: 6.0 Units)

CLASS SIZE: Minimum: N/A; Maximum: N/A

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Rebecca Bennett • (202) 366-2042 • rebecca.bennett@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-142005
COURSE TITLE: NEPA and Transportation Decision Making

This course considers FHWA's policies and procedures for applying the National Environmental Policy Act (NEPA) to the project development and decision-making processes related to transportation facilities. The course examines the evolution of environmental policy and the integration of social, environmental and economic factors into the framework of laws, regulations, policies, and guidance, which assist in achieving a decision on a transportation project that is in the best overall public interest.

The course emphasizes utilization of the Council on Environmental Quality and FHWA's regulations and guidance for implementing NEPA and Section 4(f) of the Department of Transportation Act, as well as initiatives for interagency coordination and streamlining the project development process. Also emphasized are public involvement, Title VI/Environmental Justice, FHWA's policy for mitigation and enhancement, and the role of transportation in achieving sustainable development.

OUTCOMES:

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

- Use the NEPA principles in the development of transportation projects
- Use the NEPA umbrella concept in transportation decision making
- Explain the roles and responsibilities of participants in the NEPA process
- Employ a reasoned, collaborative process when developing and evaluating alternatives
- Practice balancing an array of interests and values in making transportation decisions
- List the milestones in transportation planning that link to the NEPA project development process
- Describe documentation requirements of the NEPA process
- Employ environmental streamlining concepts of leadership, stewardship, and conflict resolution in managing the NEPA process

TARGET AUDIENCE:

FHWA, State DOT (including consultants acting on behalf of the State), Federal and State environmental resource agencies, local government, and MPOs who participate in the transportation decision making process. We strongly encourage the sponsoring organization to invite a mix of planning and environmental staff from these agencies.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 35

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Aung Gye • (202) 366-2167 • aung.gye@fhwa.dot.gov

Learn the basics of NEPA–whenever and wherever–by registering for the newly-developed, Web-based NEPA course: FHWA-NHI-142052 Basics of NEPA and Transportation Decison Making. Designed as a basic overview of the National Environmental Policy Act (NEPA) and the transportation project development process, this course presents information on environmental impact analysis, mititgation requirements, alternatives analysis, public involvment, interagency coordination, and documentation. This course is a pre-requisite for advanced NEPA training offerings.

COURSE NUMBER: FHWA-NHI-142007
COURSE TITLE: Fundamentals and Abatement of Highway Traffic Noise

This course covers the requirements of 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise, and the noise requirements of the National Environmental Policy Act of 1969. The course provides both technical and policy training.

OUTCOMES:

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

- Perform existing noise measurements with a sound level meter
- Utilize noise fundamentals to accomplish highway traffic noise prediction
- Identify highway traffic noise impacts
- Conduct analyses of noise abatement measures, including preliminary noise barrier analyses
- Prepare all necessary documentation to fulfill FHWA noise requirements
- Communicate the results of highway traffic noise analyses in meetings, correspondence, phone calls, conversations, etc.

TARGET AUDIENCE:

Federal, State, and local personnel responsible for the analysis and abatement of highway traffic noise impacts.

FEE: $460 Per Participant

LENGTH: 3.5 Days (CEU: 2.1 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Bob Armstrong • (202) 366-2073 • robert.armstrong@fhwa.dot.gov

A new 2.5-day basic Highway Traffic Noise course is under development. Look for Spring 2006 availability.

COURSE NUMBER: FHWA-NHI-142018
COURSE TITLE: Functional Assessment of Wetlands

This course provides an introduction to assessing wetlands impacts and mitigation planning based on hydrogeomorphic principles of wetlands analysis. A brief overview of recent changes in wetland regulations is included. The course is comprised of both classroom and field exercises demonstrating the wetlands assessment and analysis techniques including wetland regulations, wetland ecology, and mitigation planning.

OUTCOMES:

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

- Recognize requirements and basic principles for regulatory compliance, wetlands impact assessment, and mitigation under National Environmental Policy Act of 1969 (NEPA) and Section 404, Clean Water Act, including the 404b(1) guidelines
- Identify different wetland types, and be familiar with common definitions, delineation requirements, and wetlands classification, including the U.S. Fish and Wildlife Service and Hydrogeomorphic (HGM) functional classifications
- Describe the common ecological functions and values of wetlands
- Identify principles, approaches, and policies for compensatory mitigation, including wetland banking and in lieu fee plans
- Recognize the HGM Assessment methodology
- Demonstrate functional assessments of wetlands for alternatives analysis and selection for impact assessment according to principles of HGM, Evaluation of Planned Wetlands (EPW), and Wetland Evaluation Techniques (WET)
- Apply HGM, WET, EPW methods to planning and development of wetland mitigation projects

TARGET AUDIENCE:

State DOT personnel who have professional/technical responsibilities relating to managing wetlands and impacts in a transportation environment. Other Federal, State, local government and industry personnel with related responsibilities may be permitted to attend on a space-available basis. A basic understanding of Federal regulations concerning wetlands will be helpful. In addition, participants need at least one of the following: (1) experience in the highway project development process; (2) experience in highway project planning and design; (3) experience in natural resources regulation and management; or (4) experience in ecological assessment and mitigation design.

FEE: $530 Per Participant

LENGTH: 4.0 Days (CEU: 2.4 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Paul Garrett • (720) 963-3071 • paul.garrett@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-142036
COURSE TITLE: Public Involvement in the Transportation Decision-Making Process

Public involvement is much more than public hearings and involves creative thinking, the willingness and ability to interact openly, and sensitivity to the public's preferred forms of communication and participation. Public involvement is about giving the public an opportunity to influence transportation decision making. The public should have a role in every phase of decision making, including the design of the public involvement plan itself. Successful public involvement means addressing the public's procedural, psychological, and substantive needs. By focusing on interests–rather than positions–public involvement can become more meaningful, as well as useful.

OUTCOMES:

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

- Identify key decision points where the public can and should be involved
- Describe different publics and engage them through targeted techniques
- Select and apply a variety of specific techniques to get information out to the public, as well as to obtain input from the public
- Differentiate between positions and interests and ask questions that will elicit interests and lead toward problem solving
- Identify and adapt to different cultural sensitivities
- Develop public involvement plans
- Integrate the public-involvement process with the decision-making process

TARGET AUDIENCE:

Federal, State, and local transportation agency staff, metropolitan planning organization personnel, transit operators, consultants, and others who are responsible for planning, implementing, or participating in any phase of the public involvement process.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Brenda Kragh• (202) 366-2064 • brenda.kragh@fhwa.dot.gov

This course has been blended with the National Transit Institute's Public Involvement course to provide consistent content for all participants.

COURSE NUMBER: FHWA-NHI-142042
COURSE TITLE: Fundamentals of Title VI/Environmental Justice

UPDATED COURSE

Environmental justice and Title VI apply to every stage of transportation programs. USDOT and its partners are committed to nondiscrimination in all Federal-aid programs. Many opportunities exist to establish partnerships with other public and private organizations to create more livable communities. This course presents a framework for using a variety of approaches and tools for accomplishing environmental justice goals.

OUTCOMES:

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

- Define environmental justice and describe its relationship to Title VI of the Civil Rights Act of 1964
- Explain the fundamental principles of environmental justice
- Apply the principles of environmental justice to transportation decisions
- Identify how environmental justice applies to every stage of transportation decision making
- Describe the benefits of environmental justice in transportation decision making
- Develop proactive strategies, methods, and techniques to implement environmental justice in transportation programs and projects

TARGET AUDIENCE:

Federal, State, and local transportation agency transit or planning personnel (including consultants acting on their behalf) who interact with minority and low-income communities. State and local agency personnel providing community services. Elected officials and their representatives.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: David Kuehn • (202) 366-6072 • david.kuehn@fhwa.dot.gov

Online courses consist of interactive instructional material in Web-based format that can be accessed from any computer with an Internet connection. Log into your courses at a time that is convenient for you and proceed through the course at your own pace. For more information about online courses contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov.

COURSE NUMBER: FHWA-NHI-142043
COURSE TITLE: The CMAQ Program: Purpose and Practice

This is a newly developed course in concert with the EPA, Department of Energy, and Federal Transit Administration.

This course provides an overview of the Congestion Mitigation and Air Quality Improvement (CMAQ) Program, a $14 billion funding program dedicated to improving air quality in the country's nonattainment and maintenance areas. The course explains the underlying principles of the CMAQ program, including how it fits within the overall Federal-aid Highway Program; the programs objectives under Title 23 of the United States Code; and its relationship to the Clean Air Act and air quality planning. Finally, the course will describe eligibility for the CMAQ program, reporting requirements, and discuss how the program is being implemented across the country.

OUTCOMES:

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

- Explain the underlying principles, including the genesis and background of the CMAQ program
- Outline the roles and responsibilities of Federal, state, and local agencies in implementing the CMAQ program
- Explain how CMAQ funding levels are established at the Federal and State levels and how States distribute CMAQ funding throughout the State
- Apply eligibility requirements
- Describe CMAQ project selection procedures and methods, including solicitation of proposals for CMAQ funding, project selection, and programming in the metropolitan and statewide Transportation Improvement Program (TIP)
- Describe CMAQ implementation requirements, including obligation of funds, reimbursement, the need for matching funds, reporting of estimated emissions benefits and evaluation

TARGET AUDIENCE:

Staff from State and local transportation agencies; State and local air quality agencies; metropolitan planning organizations; FHWA, FTA, EPA, and DOE. Clean Cities coordinators, potential project sponsors from the public and private sectors, and consultants working in transportation/air quality.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Michael Koontz • (202) 366-2076 • michael.koontz@fhwa.dot.gov

See the inside front cover of the catalog for a list of NHI contacts.

COURSE NUMBER: FHWA-NHI-142044
COURSE TITLE: Implications of Air Quality Planning for Transportation

The Clean Air Act Amendments (CAAA) of 1990, the Intermodal Transportation Efficiency Act of 1991 (ISTEA), and the Transportation Equity Act for the 21st Century (TEA-21) reinforced the close linkage between clean air goals and transportation investments. These statutes also specify requirements that apply to transportation and air quality agencies throughout the United States. However, after more than ten years of implementation, it is clear that more educational opportunities are needed to explain how clean air and transportation rules and regulations interrelate. This course was developed to provide this linkage.

The course goes beyond the statutes to explain how the integrated transportation and air quality planning process has been defined and reinforced over the past decade by regulations, guidance, and litigation. It provides a context for the various statutory and regulatory requirements, including a comprehensive review of the 1990 CAAA requirements, Environmental Protection Agency (EPA) policies related to transportation, and the process of developing State Implementation Plans (SIPs). It also provides information on emission trends, forecasting techniques, technology improvements, emerging issues, and demonstrates how transportation planning and air quality planning fit together under the Transportation Conformity Rule. Finally, it includes hands-on information based upon practitioners' experiences, a review of key court cases, and practical exercises which enable participants to reinforce the classroom instructional materials through addressing real-life challenges they may face within their organizations or agencies.

OUTCOMES:

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

- Explain to agency officials, elected officials, and others why clean air requirements exist
- Identify key Federal laws, regulations, and policies related to transportation-air-quality planning activities
- Describe how vehicle emission budgets and transportation control strategies are developed and their relationship to the SIP
- Identify agency conformity responsibilities, and explain how key conformity objectives relate to other transportation-air-quality planning processes
- Describe key components of the transportation planning and project development processes related to air quality planning
- Describe how stakeholder interactions affect air quality and transportation planning

TARGET AUDIENCE:

The course is intended for transportation and air quality planners and engineers from State and local departments of transportation (DOT), metropolitan transportation organizations (MPO), transit agencies, Federal agencies (e.g., Federal Highway Administration, Federal Transit Administration, Environmental Protection Agency, Department of Energy, etc.), and State and local environmental agencies. Others include transportation and environmental consultants, public officials and staff members, community and interest groups, as well as other stakeholders in the planning process (e.g., Clean Cities, environmental organizations, chambers of commerce, Fleet Managers, etc.).

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Michael Koontz • (202) 366-2076 • michael.koontz@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-142045
COURSE TITLE: Pedestrian Facility Design

UPDATED COURSE

This course was developed to provide information and application opportunities for those involved in the design of pedestrian facilities. The Americans with Disabilities Act (ADA) requires newly constructed and altered sidewalks to be accessible and usable for people with disabilities, and accessibility improvements need to be implemented for existing facilities. To emphasize the importance of planning for pedestrians, the instruction centers on two case examples: one involving corridor design issues, one involving intersection design issues. Participants are engaged through lecture, discussion, video demonstrations of problem areas in corridors and intersections, small group problem identification, and the development of design alternatives.

OUTCOMES:

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

- List the characteristics of pedestrians and motorized traffic that influence pedestrian facility design
- Apply the concepts of universal design and applicable design reference material to redesigning an existing location and/or designing a new location that meets the needs of motorized and nonmotorized users
- Use the reference manual provided in the course to support design decisions for the case example
- Given a case example, identify potential conflicts between pedestrians and other traffic and propose design options that improve access and safety
- Given a case example, analyze the network for improvement options to meet the needs of pedestrian and other traffic

TARGET AUDIENCE:

Engineers with planning, design, construction, or maintenance responsibilities; pedestrian and bicycle specialists; planners; disability and orientation specialists, transportation planners, architects, landscape architects, as well as decision makers at the project planning level.

FEE: $310 Per Participant (Fee includes one copy of the AASHTO guide described below.)

LENGTH: 1.5 Days (CEU: 0.9 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: John Fegan • (202) 366-5007 • john.fegan@fhwa.dot.gov

This course was recently updated to complement a new AASHTO publication, "Guide for the Planning, Design, and Operation of Pedestrian Facilities." The course length is now 1.5 days.

COURSE NUMBER: FHWA-NHI-142046
COURSE TITLE: Bicycle Facility Design

UPDATED COURSE

Bicycle facility design is an emerging subject. The availability of Federal, State, and local transportation funding for bicycle facilities that serve transportation and recreational users is resulting in a dramatic increase in the number of facilities being planned and built. Although there are no Federal design standards for bicycle facilities, a newly adopted "American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities," or a modification thereof, is being used by many States and localities as the design guide. However, designing bicycle facilities often requires not only the use of the AASHTO guide as well as other documents, but also the application of engineering judgment where specific information is not provided. This course will assist planners and designers in learning how to apply the existing standards and how to deal with other technical issues involved.

OUTCOMES:

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

- List the needs of bicyclists as facility users
- Identify common roadway and traffic conditions that affect bicyclists
- Describe the characteristics of a roadway and a shared-use path that are designed to accommodate bicyclists
- List the benefits to the transportation system of accommodating bicyclists with different abilities
- Recognize opportunities to accommodate bicyclists during the planning, design, construction, and operational phases of a project

TARGET AUDIENCE:

Federal, State, or local engineers with planning, design, construction, or maintenance responsibilities; bicycle specialists; transportation planners; landscape architects, as well as decision makers at the project planning level.

FEE: $260 Per Participant (Fee includes a copy of the AASHTO Guide for the Development of Bicycle Facilities.)

LENGTH: 1.5 Days (CEU: 0.9 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: John Fegan • (202) 366-5007 • john.fegan@fhwa.dot.gov

This course was recently updated and expanded to 1.5 days.

COURSE NUMBER: FHWA-NHI-142047
COURSE TITLE: Water Quality Management of Highway Runoff

NEW COURSE

Surrounding land uses, vehicle fleets, dust fall and even precipitation are among major sources of highway runoff pollutants. Vehicles contribute to the pollutant load through normal operations, spills of oil and gas, leakages and traffic crashes. Highway maintenance activities such as applications of road de-icing agents, fertilizers, pesticides and herbicides also contribute to the pollutant loading from highways. And the most common resulting contaminants in highway runoff are heavy metals, inorganic salts, aromatic hydrocarbons and suspended solids that accumulate on the road surface. Highway and other urban runoff have significantly degraded the water quality of thousands of miles of streams nationwide.

In reaction to the impact of human activity on water quality, the Clean Water Act (CWA) was passed in 1972 in order to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The CWA set a national goal that all waters of the U.S. be fishable and swimmable. The Act regulates discharges to waters of the United States through permits issued under the National Pollution Discharge Elimination System (NPDES) permitting program. This permitting program addresses stormwater discharges associated with urban areas and certain industrial activities, including transportation facilities, and has placed extensive requirements on State Transportation Agencies for managing runoff water quality. Understanding the legal responsibilities (Total Maximum Daily Loads, NPDES Phase II, Section 404, etc.), terminology, and the general roles of players in the regulatory process is critical in order to properly plan for, budget and implement water quality management.

The intent of the course is to provide a basic understanding of water quality parameters, processes, requirements, and Best Management Practices (BMPs) in order to provide guidance to the transportation community on how to mitigate impacts and protect water quality. This course shares approaches and technologies for the water quality management of highway stormwater runoff, including the effective maintenance, inspection and performance evaluation of BMPs.

OUTCOMES:

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

- Identify and characterize the quantity and quality of highway runoff
- Describe how highway runoff can affect ecosystems
- List major Federal requirements that apply to management of highway runoff
- Explain how to select a mitigation strategy from a watershed perspective
- Describe design concepts and considerations in selecting and siting appropriate Best Management Practices (BMPs) for controlling highway runoff
- Develop conceptual designs for various BMPs considering: treatment targets, design requirements, BMP performance goals, siting and maintenance considerations, etc.
- Explain how to integrate mitigation of highway runoff impacts into the project development process
- Discuss the importance of BMP inspection, performance evaluation, monitoring, and maintenance

TARGET AUDIENCE:

This course is designed for individuals involved with managing highway runoff water quality. The audience includes Federal, State and local environmental and maintenance specialists, hydraulic and design engineers, State and local regulators, consultants, and others involved in transportation-related water quality issues.

FEE: $270 Per Participant (Bring a basic calculater to class.)

LENGTH: 2.0 Days (CEU: 1.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Patricia Cazenas • (202) 366-4085 • patricia.cazenas@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-142049
COURSE TITLE: Beyond Compliance: Historic Preservation in Transportation Project Development

NEW COURSE

The revised regulation implementing Section 106 of the National Historic Preservation Act (NHPA) has fundamentally changed the way in which Federal agencies address effects to places of historical and cultural importance in transportation planning and project development. The new Section 106 regulation strongly encourages early and close coordination between Section 106 activities and the requirements of the National Environmental Policy Act (NEPA), as well as clarifying consultation with Native Americans, local communities, and the public. It gives agencies greater flexibility and streamlines the Section 106 consultation process by ending routine review of projects by the Advisory Council on Historic Preservation (ACHP) and by establishing a number of "program alternatives" that allow agencies to customize and streamline their Section 106 compliance process.

This course is designed to help transportation professionals meet the new requirements of the Section 106 regulations and take advantage of the greater flexibility and autonomy offered by the recent revisions. The course focuses on the fundamentals of NEPA, Section 106, and Section 4(f) of the Department of Transportation Act, and provides techniques for coordinating transportation planning, project development and compliance with these three laws. The emphasis is on practical approaches for real-world situations and the importance of balancing stewardship and project delivery.

OUTCOMES:

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

- Identify key historic preservation laws and other authorities
- Describe the NEPA transportation decision-making process
- Describe the Section 106 process
- Define roles and responsibilities of all parties in the Section 106 process
- Describe the relationship among Section 106, NEPA project development and Section 4(f)
- Identify principles and opportunities for environmental streamlining and stewardship

TARGET AUDIENCE:

Those involved or affected by the Federal-aid Highway program, including, staff from State DOTs, MPOs, FHWA headquarters and field offices, City and County governments, Tribal governments, Consultants, State and Tribal Historical Preservationists (SHPO/THPO), and other Federal and State resource agencies that deal with transportation issues.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: MaryAnn Naber • (202) 366-2060 • maryann.naber@fhwa.dot.gov

Have questions about training and scheduling?
Contact the NHI Training Team for more information.

COURSE NUMBER: FHWA-NHI-142050
COURSE TITLE: Context Sensitive Solutions

NEW COURSE

Context sensitive solutions (CSS)–also known as Context sensitive design–is a collaborative, interdisciplinary approach to a transportation project that involves stakeholders in the development of a transportation facility that equally addresses safety, mobility, and the preservation of scenic, aesthetic, historic, and environmental resources and community values. Implementation of the CSS process will deliver benefits to an agency, for example, effective and timely decisions, gaining public trust and support, building positive relationships with resource agencies, delivering safe and financially feasible project solutions, and improving the overall project delivery process.

FHWA's key strategy is to work with its partners to ensure that highway facilities balance local, regional, and national concerns with the scenic, aesthetic, historic, and natural environment, and that they add value to the community. FHWA provides technical assistance to State DOTs in applying CSS concepts within their agencies. FHWA also directly applies CSS concepts within its agency via the Federal Lands Highway (FLH) office, which has an established reputation and expertise in planning, designing and constructing context sensitive transportation facilities.

This course will provide participants with tools and techniques to effectively deliver timely and successful transportation projects.

OUTCOMES:

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

- Explain the CSS' collaborative, interdisciplinary approach to a transportation project (planning through construction stage) and its associated benefits
- Describe the importance of effective and timely decision making by ensuring early and continuous involvement of all project stakeholders
- Describe the flexibility afforded in applying industry design standards (e.g. AASHTO "Greenbook") while maintaining or improving roadway safety performance
- Explain the importance of achieving environmental sensitivity
- Discuss how aesthetics and incorporation of community values and themes are an integral part of a good design
- Name the FLH and the CSS pilot States "best practices"
- Apply flexibility in highway and bridge design without compromising safety
- Describe the tools and techniques available to obtain consensus among all the project's stakeholders
- Apply the course materials and related tools to deliver timely and successful CSS projects

TARGET AUDIENCE:

The target audience for this course is broad and includes Federal, State, and local highway and transportation agencies located within the U.S., consulting firms, private industry, universities, and other national and international entities engaged in any aspect of the planning, design, construction, and management of transportation projects. Professionals such as transportation planners, environmental specialists, highway, bridge, construction, design engineers, and agency managers should attend.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 40

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Jack VanDop • (703) 404-6201 • Jack.VanDop@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-142054
COURSE TITLE: Design and Implementation of Erosion and Sediment Control

A joint effort between FHWA and the Environmental Protection Agency (EPA), this course reflects the agencies' commitment to providing education and training on planning, design, implementation, enforcement, inspection, and maintenance strategies to control erosion and sediment on highway construction projects, as well as to ensure that regulatory issues are addressed accurately and uniformly. Each discipline involved in a highway construction project has a different set of priorities. Reflecting NHI's commitment to learner-centered training, the course offers participants opportunities for discussion and joint problem solving, through which they will gain information about the roles and responsibilities of other team members.

OUTCOMES:

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

- Describe the components of an erosion and sediment control (ESC) plan
- List the sources of information for the ESC plan
- Identify management practices and related management measures that are appropriate for typical situations and for a case example
- List typical construction and inspection problems. Describe both suitable prevention strategies and remedies for failure
- Lind Federal and State environmental regulations to the components of the ESC plan

TARGET AUDIENCE:

A mix of Federal, State, and local highway design, construction, inspection and maintenance staff; environmental agency respresentatives, as well as consultants and members of the construction industry are encouraged to attend to provide their perspectives, learn each other's responsibilities, and explore an array of options to erosion and sediment control.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Patricia Cazenas • (202) 366-4085 • patricia.cazenes@fhwa.dot.gov

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COURSE NUMBER: FHWA-NHI-151018
COURSE TITLE: Application of the FHWA Traffic Monitoring Guide

This course covers the application of procedures used as published in the FHWA's "Traffic Monitoring Guide" (TMG) and other recent developments in traffic monitoring, including:

1. An overview of the application of the TMG procedures to develop data and information needed to support State and national programs including the Highway Performance Monitoring System (HPMS), pavement management, safety management, congestion management, and environmental management
2. Discussion with attendees on specific issues that impact the application of the TMG procedure in traffic counting, vehicle weighing, etc.
3. Discussion of automated procedures for data collection and analysis and presentation of examples
4. Discussion of the AASHTO guidelines for traffic monitoring and the coordination of data collection to other Federal and national programs
5. Discussion of Traffic Monitoring System required in Intermodal Surface Transportation Efficiency Act (ISTEA)

OUTCOMES:

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

- Describe the purpose and appropriate use of the TMG procedures
- Use the procedures for obtaining data for Federal and State programs
- Apply the data obtained to answer specific questions on Federal and State issues regarding traffic monitoring

TARGET AUDIENCE:

FHWA field office planners and State transportation or planning personnel responsible for or interested in traffic counting, vehicle classification, or truck weight data programs.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Harshad Desai • (202) 366-5047 • harshad.desai@fhwa.dot.gov

Have questions about training and scheduling?
Contact the NHI Training Team for more information.

COURSE NUMBER: FHWA-NHI-151021
COURSE TITLE: Administration of FHWA Planning and Research Grants

UPDATED COURSE

The course covers the responsibilities and relationships among Federal, State, and local agencies involved in administration of FHWA planning grants to States and State subgrants to metropolitan planning organizations (MPOs) and local governments. It provides a forum for FHWA planning and financial staff, State, MPO, and other local agency staff to discuss the Federal requirements associated with highway planning program grant administration.

The course covers current changes to relevant administrative regulations and directives including Office of Management and Budget (OMB) Circular A-102; 49 Code of Federal Regulation (CFR) Part 18, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and local governments (USDOT's regulations implementing Circular A-102); and 23 CFR Part 420 (FHWA's regulations for highway planning and research funds). Limited coverage of allowable costs, cost allocation plans, and audit requirements is also included.

OUTCOMES:

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

- Identify basic principles of grant administration
- Describe the hierarchy of laws, regulations, requirements, and the relationships among them
- Define the roles and responsibilities of those involved in grant administration
- Explain terminology associated with grant administration
- Apply Federal laws and regulations to administer grant funds
- Explain terminology associated with grant administration
- Locate the most current resource material
- Identify basic audit requirements
- Identify basic cost principles
- Define the basic principles of federalism in the Common Grant Rules

TARGET AUDIENCE:

FHWA, State Department of Transportation (DOT), Metropolitan Planning Organization (MPO) and other agency staff who expend or administer FHWA planning and research grants, including planning and fiscal staff. We strongly encourage a mix of staff from multiple agencies to foster our objective of cooperation among all affected parties.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Kenneth Petty • (202) 366-6654 • kenneth.petty@fhwa.dot.gov

This course was recently updated and the length is now 2.0 days.

COURSE NUMBER: FHWA-NHI-151038
COURSE TITLE: Introduction to Statewide Transportation Planning

The course is a collaborative effort among the FHWA Office of Planning, the National Highway Institute, the Federal Transit Adminstration, the National Transit Institute and various statewide planning, transit and industry representatives to develop a basic–yet comprehensive–course that will serve as an introduction to statewide transportation planning. Designed as an instructor-led, 2-day presentation, the overall course objective is to transfer to participants the necessary knowledge and skills for them to constructively participate in the statewide transportation planning process.

OUTCOMES:

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

- Explain the relationship of statewide planning to Federal regulations and differing State and local requirements
- Describe the major elements of a statewide transportation plan
- List the players, their roles, and the issues involved in the statewide transportation planning process
- List the required products of the statewide transportation planning process
- Discuss the variety of methods, techniques, and strategies used to implement the plan
- Recognize how evaluation methods and performance measures are used in the statewide transportation planning process
- Recognize noteworthy statewide planning processes

TARGET AUDIENCE:

New planners (recent graduates without a transportation background); urban planners; DOT staff who are actively involved in statewide planning; engineers who are assigned planning duties but lack academic background in planning; metropolitan planning organization staff; Rural/Regional planning Organization staff; Regional Development Commissions staff; transit agency staff; those from other Federal resource or regulatory agencies: EPA, Federal Lands, Tribal Governments; college graduates without planning degrees; and consultants involved in transportation planning activities.

FEE: $ Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Robert Ritter • (202) 493-2139 • robert.ritter@fhwa.dot.gov

The On-Site Course Request Form (FWHA Form 1530) is located in the back of the catalog. Please make copies of the form for future use.

COURSE NUMBER: FHWA-NHI-151039
COURSE TITLE: Applying GIS and Spatial Data Technologies to Transportation

This course was developed by FHWA–in cooperation with the Bureau of Transportation Statistics–to train participants in how to implement transportation planning applications that rely on spatial data technologies. Examples of applications using today's major spatial data technologies are described. Aspects of the example applications (i.e., level of effort for development, technological challenges, training needs, and evaluation measures) are discussed. Particular emphasis is placed on crosscutting implementation issues, both technological and organizational. Exercises are focused on how to make use of spatial data technologies in an environment where data sharing and cooperative agreements are essential components for success. Reflecting NHI's commitment to learner-centered training, the course offers participants opportunities for discussion and joint problem solving, through which they will gain information about the roles and responsibilities of other team members.

The overall course goal is to prepare participants to evaluate and plan for the implementation of a variety of transportation planning applications that rely on spatial data technologies.

OUTCOMES:

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

- Recognize emerging/current spatial data technologies
- List the technologies
- List the benefits and limitations of each technology
- Benchmark the trends in terms of high, medium, and low risk for implementation
- List reasons a transportation planner would want to apply the technology
- Describe specific examples of applications utilizing spatial data technologies in transportation decision making
- Identify common obstacles when implementing each technology.
- Recognize the value of cooperative efforts-both internal and external-when implementing the technologies

TARGET AUDIENCE:

Participants should have a basic understanding of geographic information systems (GIS) or have completed course FHWA-NHI-151029 Applications of GIS for Transportation. Various professional users of spatial data technologies from State departments of transportation, metropolitan planning organizations, county/city governments; professional staff from State/Federal agencies that have cooperative efforts with other agencies such as environmental data warehouses (e.g., Florida, North Carolina, etc.); transit agencies; airport/port authorities; and consultants.

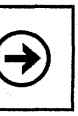
FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Mark Sarmiento • (202) 366-4828 • mark.sarmiento@fhwa.dot.gov

You don't need to be a government agency to host a course. For instructions on how to host a course, please see page 7.



COURSE NUMBER: FHWA-NHI-151041
COURSE TITLE: Linking Planning and NEPA: Towards Streamlined Decision Making

The Federal Highway Administration and the Federal Transit Administration are offering a new opportunity to foster change in the culture that underlies transportation planning and project development. Linking Planning and NEPA: Towards Streamlined Decision Making is a two part series of facilitated workshops focused on identifying the current process for performing planning and NEPA studies in support of project-level decisions, and developing strategies for achieving greater integration in this work.

Designed for Federal and State transportation and environmental resource agencies, participants will work together to build a framework for project development decision making that ensures environmental quality through a clear sequence of decisions made with the right information by the right people at each decision point.

The first in the series is a 4-hour, facilitated, interagency executive session for key managers and directors that are involved in the planning and NEPA decision-making processes. In collaboration, key managers will describe the existing planning and project development processes within their State or region, as well as identify available strategies for improving integration of these processes. At the end of this session, they will develop a charge for process change for their respective staff who will be participants in the subsequent managers workshop.

The managers workshop is for project managers and other key managers who participate in transportation planning and project development studies, as well as those who draft related documents. Managers workshop participants will discuss "how to" techniques for carrying out a seamless and collaborative process. The product of the managers workshop will be an action plan listing steps that will bring about better planning and decision making, which leads to enhanced environmental stewardship and streamlined delivery of transportation projects.

OUTCOMES:

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

Executive Session:

- Discuss the case for linking planning and the NEPA process by identifying the breakdown points within their current processes
- Identify the benefits that a seamless decision-making process would bring to their organizations and their respective stakeholders
- Distinguish the pertinent enablers and constraints that need to be addressed in order to link planning and NEPA
- Formulate the key issues, tools, strategies, and "must do's" that are essential to accomplish the link within their respective organizations
- Empower their managers to implement the decisions and agreements reached in this session

Managers Workshop:

- Describe their planning and project development process, identifying the series of decisions that occur within the process and the important linkages between phases of the process
- Identify barriers to collaboration and describe techniques that other organizations use to overcome similar barriers and avoid duplication between planning and NEPA
- Explain the changing nature of alternatives at various points within their process and describe the kinds of information needed for sound and sustainable decision making at each phase
- Adopt a set of basic planning principles that support a sound analysis of alternatives and guide staff in the use of these principles to inform decision making
- Accept environmental stewardship as a legitimate and beneficial goal for transportation agencies and explain how this goal will be manifested in their process
- Manage a multifaceted, seamless, and linked planning and project development process
- Develop an action plan for linking planning and the NEPA process into a seamless framework for decision making

TARGET AUDIENCE:
This course is limited to representatives of the host State only. Every effort must be made to include key Federal, State, and other managers with relevant responsibilities for particular geographic areas because a transportation agency cannot independently change the way that planning and the NEPA process are used to make decisions. Specifically, this course is for staff from:

Transportation agencies: the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), State departments of transportation (DOTs), metropolitan planning organizations (MPOs), transit agencies, State/county/local planning agencies, and tribal governments.

Environmental resource agencies: the Environmental Protection Agency, the Army Corps of Engineers, the Fish and Wildlife Service, National Park Service, State departments of environmental resources, State and local air quality agencies, State historic preservation office, and tribal governments.

The executive session is aimed at upper-level managers and directors–from both planning and resource agencies–with responsibilities for transportation planning, environmental analyses, and/or project development.

The managers workshop is intended for key managers who lead transportation planning and project development studies, as well as planning and environmental managers from the USDOT modal administrations.

FEE: FHWA is funding six sessions of this course.

LENGTH: 3.0 Days (CEU: 2.4 Units)

CLASS SIZE: Minimum: 20; Maximum: 50

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Rob Ritter • (202) 493-2139 • robert.ritter@fhwa.dot.gov

Online courses consist of interactive instructional material in Web-based format that can be accessed from any computer with an Internet connection. For more information about online courses contact Debbie Gwaltney at (202) 366-9379 or debbie.gwaltney@fhwa.dot.gov.

COURSE NUMBER: FHWA-NHI-151042
COURSE TITLE: Safety Conscious Planning: Planning it Safe

NEW COURSE

This course was jointly developed in cooperation with the FTA and the National Transit Institute.

This course is designed to identify opportunities for improving the manner in which safety is integrated as a key planning factor and performance measure in all transportation plans and programs.

OUTCOMES:

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

- Identify the benefits of addressing safety early and throughout the transportation planning process
- Identify the key safety factors of surface transportation modes (e.g., bus, rail transit, passenger motor vehicles, commercial vehicles and commercial motor carriers, walking, and bicycle)
- Discuss data availability, analysis, and performance measures to address local, corridor, and area-wide safety problems
- Identify safety strategies related to users, vehicles, infrastructure, and system operations
- Illustrate approaches for including and evaluating transportation safety projects in transportation plans and programs
- Identify key traditional and nontraditional safety partners and opportunities for collaboration
- Discuss how to organize and implement an effective safety-conscious plan and how to monitor implementation progress

TARGET AUDIENCE:

This course is intended for transportation planning and safety professionals representing MPOs, State DOTs, transit agencies, FTA, FHWA, local planning organizations, motor carrier safety offices, law enforcement; State highway safety specialists; representatives from State Governors' highway safety offices, infrastructure programs, public utility commissions, and consultants.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 35

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov

Do you have a suggestion for a new training course? Please complete the 'How can we help?' card in the back of the catalog.

COURSE NUMBER: FHWA-NHI-152054
COURSE TITLE: Introduction to Urban Travel Demand Forecasting

The hosting organization is responsible for providing MS-DOS microcomputers with color graphics, color monitors and at least 10 MB hard disk space. There should be no more than two participants per computer station.

This is a 4-day introductory course in travel demand forecasting. Through classroom lecture and interactive workshops, the course covers the traditional four-step planning process of trip generation, trip distribution, mode choice and traffic assignment. It also includes presentations on the development of land use forecasts, network and zone structures, and use of geographic information systems. The course also includes software applications to problems previously solved manually to reinforce the concepts taught in the classroom.

The course is offered in the field upon request and is periodically sponsored by the FHWA Resource Center.

OUTCOMES:

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

- Identify the principles of trip generation, trip distribution, mode choice, and traffic assignment
- Apply the input data necessary for each of the models
- Illustrate the significance of the outputs and results of travel demand forecasting models
- Describe the role of urban transportation planning in decision making

TARGET AUDIENCE:

Relatively new Federal, State, and local planners who wish to gain a better understanding of the principles and techniques of travel demand forecasting. Computer experience is required.

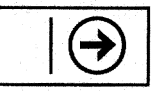
FEE: $530 Per Participant

LENGTH: 4.0 Days (CEU: 2.4 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Michael Culp • (202) 366-9229 • michael.culp@fhwa.dot.gov

FHWA Mission – Enhancing mobility through innovation, leadership, and public service.



COURSE NUMBER: FHWA-NHI-152069
COURSE TITLE: Metropolitan Transportation Planning

This course provides a general introduction and overview of the metropolitan transportation planning process, underscoring its relationship to informed decision making. Aspects covered include key elements of the planning process; planning requirements; visioning, goals, objectives and measures of effectiveness; program and project development; alternatives and tools for their analysis.

OUTCOMES:

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

- Explain why the metropolitan transportation planning process exists and why it is important
- Identify the requirements of the metropolitan transportation planning process and describe the products
- Identify the players in the process and describe their roles and responsibilities
- Distinguish among vision, goals, objectives, and measures of effectiveness (MOEs) and describe the proper use of each
- Explain how to identify transportation needs and problems and how to analyze and evaluate alternative strategies
- Recognize the components of the transportation plan and the transportation improvement program
- Explain the relationship between planning and project development

TARGET AUDIENCE:

Planning, transportation planning, programming, or project development staff working or participating in the metropolitan transportation planning process. These include participants from metropolitan planning organizations, State or local departments of transportation, transit agencies, or the Federal DOT. In addition, Federal or State resource and regulatory agencies, (e.g., EPA, Army Corps of Engineers, US Coast Guard, Fish And Wildlife Service, or Park Service, etc.).

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 35

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Sherry Ways • (202) 366-1587 • sherry.ways@fhwa.dot.gov

See the inside front cover of the catalog for a list of NHI contacts.

COURSE NUMBER: FHWA-NHI-152071
COURSE TITLE: Estimating Regional Mobile Source Emissions

The transportation conformity provisions of Clean Air Act Amendments of 1990 (CAAA) and planning provisions of the Transportation Equity Act for the 21st Century (TEA-21) require areas that violate the National Ambient Air Quality Standards (NAAQS) to demonstrate that through the transportation conformity process, transportation investments have air quality impacts consistent with the clean air goal of the State Implementation Plan (SIP). Estimating the amount of mobile source emissions is a crucial part of this process. Metropolitan planning organizations (MPOs) and State departments of transportation (DOTs) have the responsibility of creating mobile source emissions estimates to support transportation conformity determinations in areas that violate NAAQS. These emissions estimates are based on travel demand models, highway performance monitoring system (HPMS) data, and emission rate models. In addition, planners from air agencies are responsible for developing mobile source emissions inventories based on a similar set of assumptions and techniques. It is in the interest of the MPOs and DOTs as well as air agencies to perform this analysis using best practice analysis techniques. The focus of this training course is to develop the skills of planners and practitioners responsible for estimating mobile source emissions so that they can incorporate these techniques their areas of practice. This course has been developed in coordination with the US Environmental Protection Agency (EPA).

OUTCOMES:

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

- Develop estimates of vehicle miles traveled (VMT) by speed
- Develop MOBILE 6 emissions factors
- Develop regional emissions estimates
- Describe techniques to estimate emission benefits of selected transportation control measures (TCMs)

TARGET AUDIENCE:

Participants should have one to three years of experience in travel demand forecasting, conformity or air quality analysis, or have completed FHWA-NHI-152054 Introduction to Travel Demand Forecasting and/or the National Transit Institute's Introduction to Transportation/Air Quality Conformity course. This course is targeted to transportation planning staff from State DOTs and MPOs; staff from other governmental agencies who are responsible for developing mobile source emissions estimates to support conformity determinations; FHWA, FTA, and EPA staff involved in the conformity process as it relates to travel demand forecasting and mobile source emissions estimates; transit operators who participate in developing mobile source emissions estimates; and consultants who are involved in this field.

FEE: $460 Per Participant

LENGTH: 3.5 Days (CEU: 2.1 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Michael Culp • (202) 366-9229 • michael.culp@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-152072
COURSE TITLE: Highway Program Financing

UPDATED COURSE

This course covers the various aspects of Federal-aid highway financing unique to the FHWA program. Topics include, but are not limited to the content and policy implication of authorizing and appropriating legislation; the way Federal-aid highway funds are distributed to the States, including discussion of contract authority, apportionment and allocation, deductions, earmarking, transferability, and obligation; the effect of policy and budget considerations on the use of Federal-aid funds, especially as manifested through obligation limitations; the operation of the Highway Trust Fund and its significance to the funding level for the Federal-Aid Highway Program.

OUTCOMES:

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

- Describe the flow of Federal financing from authorization to reimbursement
- Explain authorization, appropriation, apportionment, allocation and obligation limitation
- Discuss the impact contract authority and obligation limitation have on the use of Federal funds
- Explain how the Federal budgetary process applies to the Federal-aid Highway Program
- Describe the significance of the Highway Trust Fund to the funding levels for the Federal-aid Highway Program

TARGET AUDIENCE:

Federal, State, regional and local government employees, as well as contractors and others from the private sector interested in the the process by which the Federal-aid Highway program is authorized and how the funds are distributed. We encourage a mix of participants at each session.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 40

NHI Training Program Manager: Mila Plosky • (703) 235-0527 • mila.plosky@fhwa.dot.gov
Technical Information: Bob Meredith • (202) 366-6786 • robert.meredith@fhwa.dot.gov

Ready to request a course? Please complete the On-Site Course Request Form (FWHA Form 1530) located in the back of the catalog.

COURSE NUMBER: FHWA-NHI-310108
COURSE TITLE: Federal Lands 101

During these times of economic expansion and growth, there are dramatic workforce changes taking place. With the passage of TEA-21, the program for Federal Lands Highway (FLH) nearly doubled and there is the prospect that it will again increase under pending transportation reauthorization. Due to this change, coupled with the increasing demand by our partners and customers for more technical assistance, FLH needs to develop the knowledge of their new/mid-career hires in the area of FLH operations and regulations.

Therefore, the overall course goal is to provide FLH employees with an overview of how FLH operates in order to administer programs, deliver projects, develop and transfer technology, and provide external training.

OUTCOMES:

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

- Identify the role and authorities of FLH within the FHWA and its interactions with Federal-aid divisions
- Describe unique aspects of FLH customers and programs
- Describe how FLH delivers projects
- Describe how FLH conducts business, including processes and resources

TARGET AUDIENCE:

New hires to FLH in all positions and grades and Federal-aid (particularly new employees) and Federal Lands Management Agency employees upon request.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Don Tuggle • (703) 404-6276 • donald.tuggle@fhwa.dot.gov

Any transportation organization can host a course.
For hosting instructions, see page 7.

COURSE NUMBER: FHWA-NHI-310109
COURSE TITLE: Federal-Aid 101 (FHWA Employee Session)

During this time of economic expansion and growth, there are dramatic workforce changes taking place. Given the increasing demand by our partners and customers for more technical assistance, FHWA needs to develop the knowledge of their new/mid-career hires in the area of the Federal-aid processes and regulations.

Therefore, the overall course goal is to provide FHWA employees, particularly mid-career hires, with an overview of the key elements of the Federal-Aid Highway Program. Specifically, this course focuses on general requirements and laws that govern the Federal-Aid Highway Program, processes and procedures followed in the project development, and identifying flexibility inherent in the Federal-Aid Program.

OUTCOMES:

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

- Identify the key elements of the overall project development process
- Identify the FHWA civil rights programs (i.e., Title VI, Disadvantaged Business Enterprise (DBE), EEO Contract Compliance, Title VII, Americans with Disabilities Act (ADA), Indian Outreach) and their relationship to the Federal-Aid Highway Program and the Federal/State relationships
- Integrate environmental justice into all aspects of project planning, development, and construction
- Develop a flowchart of the project development process from the initial planning concept through the environmental and right-of-way processes, on to construction and opening to traffic
- Identify the roles of safety, intelligent transportation systems, operations, research, and development in the Federal-Aid process
- Identify ways used for public involvement early in the process
- Learn the fundamentals of several innovative financing techniques that will maximize the use of Federal-Aid funds
- Develop a network of professionals that can be contacted for help
- Discuss how the Federal-Aid laws and regulations relate to other laws (i.e., NEPA, Uniform Act, the Davis Bacon Act, OMB Circular A-87, 49 CFR Part 18 (Common Rule))

TARGET AUDIENCE:

New/mid career hires from all disciplines (i.e., planners, engineers, environmental specialists, financial specialists or managers).

FEE: $460 Per Participant

LENGTH: 3.5 Days (CEU: 2.1 Units)

CLASS SIZE: Minimum: 25; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Michael Graf • (202) 366-1329 • michael.graf@fhwa.dot.gov

Do you have a suggestion for a new training course? Please complete the 'How can we help?' card in the back of the catalog.

COURSE NUMBER: FHWA-NHI-310110
COURSE TITLE: Federal-Aid Highways 101 (State Version)

During this time of economic expansion and growth, there are dramatic workforce changes taking place. Given the increasing demand by our partners and customers, it is critical to develop the knowledge of State DOT employees in the area of the Federal-aid highway development processes and regulations.

Therefore, the overall course goal is to provide participants with an overview of the key elements of the Federal-Aid Highway Program. Specifically, this course focuses on general requirements and laws that govern the Federal-Aid Highway Program; processes and procedures followed in the entire project development process, including financing, planning, environment, right of way, highway and bridge design, construction, operations/ITS, maintenance, and technology; and identifying flexibility inherent in the Federal-Aid Program.

OUTCOMES:

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

- Identify the key elements of the overall highway project development process
- Identify the elements and requirements of the Federal-Aid Highway Program and the associated Federal/State relationships
- Develop a flowchart of the project development process from the initial planning concept through the environmental and right-of-way processes, on through design, construction, and opening to traffic
- Identify the roles of safety, intelligent transportation systems, operations, research, and development in the Federal-aid process
- Identify the need for public involvement early in the process, opportunities for application of the principles of environmental justice/civil rights, context sensitive solutions, etc.
- Learn the fundamentals of Federal-aid financing, including several innovative financing techniques that will maximize the use of Federal-aid funds
- Develop a network of professionals that can be contacted for help
- Discuss how the Federal-aid laws and regulations relate to other laws (i.e., NEPA, Uniform Act, the Davis Bacon Act, OMB Circular A-87, 49 CFR Part 18 (Common Rule)) and the application of FHWA regulations, policies, technical guidance, etc.

TARGET AUDIENCE:

State and local government employees and private-sector participants interested in the process by which the Federal-Aid Highway Program is carried out.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Michael Graf • (202) 366-1329 • michael.graf@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-310111
COURSE TITLE: Conducting Reviews that Get Results (FHWA)

A limited number of sessions are being sponsored by the Offices of Infrastructure and Corporate Mangement with no participant fee charged to the hosting Division Office. This is a hands on workshop, 1.5 days in length (can be tailored from 0.5 to 2.0 days), covering the plan, design and tools needed to make the review have the maximum impact.

To accomplish FHWA's Stewardship Mission, units at every level and in every program area need the expertise to plan, design and carry out, often jointly with partners, reviews to ensure that operational processes are consistent with established standards and expectations, performing at the most effective and efficient level, and that best practices are captured and made available to units at all levels.

Building on FHWA experience and expertise gained through PR/PE's, Process Reviews, and Continuous Process Improvement Reviews, an improved workshop, tailored to the unit's needs, is now being offered through a partnership between the Offices of Infrastructure and Corporate Management, with input from the Resource Center and several Division Offices.

The Workshop consists of assistance, focused on your reviews, in the form of consultation, training and hands on assistance in the methodology and tools for conducting successful reviews.

OUTCOMES:

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

- Use the Team Charter to build partnerships and confidence in the review approach
- Explain the methods of review planning to identify desired results and needed information
- Describe effective data collection methodology
- Describe effective data analysis methodology
- Describe effective presentation and marketing methodology
- Describe how to formulate recommendations that can be implemented.

TARGET AUDIENCE:

Division Offices looking to charge up their review programs and Review Teams established and charged with conducting unit process or program reviews, compliance verification reviews, improvement reviews, and/or National Program Reviews. The workshop can be conducted at any critical stage of the review, from planning to implementation.

FEE: Free (FHWA only)

LENGTH: 1.5 Days (CEU: 0.9 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Lesley Bolden • (703) 235-0553 • lesley.bolden@fhwa.dot.gov
Technical Information: Denise Bednar • (708) 283-3503 • denise.bednar@fhwa.dot.gov
Technical Information: Chris Newman • (202) 366-2023 • christopher.newman@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-361019
COURSE TITLE: On the Road to Equality: Women in Highway Construction

This course provides State highway agencies (SHAs) and construction contractors with information and tools which will aid them in increasing the employment and retention of women in the skilled trades in the highway construction workforce. A variety of instructional techniques are employed, including lectures, group discussions, case studies, team consensus, and visual aids. Each participant receives a copy of the manual "On the Road to Equality: Women in Highway Construction," which serves as a valuable reference.

The course host agrees to provide 20 to 40 participants, at least one-third of them construction contractors. For the purpose of a short panel presentation on the second day, the host agrees to provide three to four women currently working in the skilled crafts of construction.

OUTCOMES:

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

- Describe the past and current status of women in highway construction
- Describe the benefits of having women in highway construction
- Identify and interpret the current and specific laws and regulations that impact women in highway construction
- Identify ways to increase employment opportunities and the strategies necessary to retain women in highway construction
- Identify methods and techniques to prevent sexual harassment in highway construction
- Identify skills training and understand the need for training women in highway construction
- Recognize the importance of contractor equal opportunity compliance reviews and provide strategies to correct identified deficiencies relative to women in construction
- Identify national and local agencies and groups that can assist contractors and women to increase women's involvement in highway construction work

TARGET AUDIENCE:

State personnel and highway construction contractors. The State personnel should have responsibility for assuring equal employment opportunity in highway construction. Community-based organizations that provide orientation for women in nontraditional occupations are invited.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 40

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Teresa Banks • (404) 562-3592 • teresa.banks@fhwa.dot.gov

For more information about distance learning see page 180.

COURSE NUMBER: FHWA-NHI-361020
COURSE TITLE: Partnering for Native American Employment in Highway Construction

This course provides State transportation agencies (STAs), highway construction contractors, and tribal representatives with information and tools which will assist them in working together to increase the employment and retention of Native Americans in the highway construction workforce. A variety of instructional techniques are employed, including lectures, group discussion, team consensus, and visual aids. Emphasis is placed on the creation of an "Action Plan" for the host State to increase the employment of Native Americans in highway construction. Participants receive a copy of the "Partnering for Indian Employment in Highway Construction" manual which serves as a valuable reference.

Course sponsors must agree to provide 20 to 30 participants, with a balanced mix of participants from the three groups: State, tribal, and contractor.

The National Highway Institute requires at least three months' advance notice to schedule this course.

OUTCOMES:

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

- Outline the benefits associated with the increased employment of Native Americans in Federal-aid highway construction
- Recognize the need for partnering among tribal, State, and Federal governments, and highway construction contractors
- Identify Federal and State laws, regulations, and directives related to Indian employment preference for Federal-aid highway construction on and near reservations
- Explain the purpose and nature of tribal employment laws and requirements
- Recognize the cultural differences among the stakeholders-tribes, Federal/State governments, and highway construction contractors
- Identify potential employment barriers caused by cultural differences among the stakeholders
- Create practical and innovative strategies to increase the employment of Native Americans in highway construction

TARGET AUDIENCE:

State transportation agencies, tribal employment representatives, and highway construction contractors. The State personnel should have direct or indirect responsibility for assuring equal employment opportunity in highway construction.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Teresa Banks • (404) 562-3592 • teresa.banks@ga.fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-380003 (1-Day)
FHWA-NHI-380003A (3-Day)
COURSE TITLE: Design and Operation of Work Zone Traffic Control

This course provides participants with information on the safest and most efficient work zone traffic controls, including the application of effective design and installation concepts; and using signs and markings for detours, construction zones, and maintenance sites. The legal, administrative, and operational aspects also will be discussed. Classroom presentations include lectures, case histories, and workshops.

OUTCOMES:

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

- Describe each step involved in providing work zone traffic controls
- Identify and apply workable concepts and techniques for designing, installing, and maintaining controls in construction, maintenance, and utility operations
- Identify appropriate principles in the design of traffic control plans
- Apply traffic control plans to site conditions, monitor traffic controls, and make changes indicated by traffic accidents and incidents
- Discuss techniques and procedures used by different agencies
- Assess the legal consequences of action and inaction relative to work zone traffic control and identify risk management procedures

TARGET AUDIENCE:

Design, construction, and maintenance personnel responsible for designing, installing, and monitoring work zone traffic control.

FEE: $200 Per Participant (FHWA-NHI-38003)

LENGTH: 1.0 Days (CEU: 0.6 Units)

FEE: $400 Per Participant (FHWA-NHI-38003A)

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Peter Hatzi • (202) 366-8036 • peter.hatzi@fhwa.dot.gov

This course has different course length options. Visit the NHI Web site for information on each course length.

COURSE NUMBER: FHWA-NHI-380005
COURSE TITLE: Railroad-Highway Grade Crossing Improvement Program

The training provides information on rail-highway crossings, grade crossing components, including program/project development and administration. Workshops will provide the participants a chance to make hands-on applications of the training material, which include such topics as historical background, railroad-highway intersection definition and components, collection and maintenance of data, assessment of crossing safety and operations, identification and selection of alternate improvements, program and project development and implementation, maintenance, and other topics (i.e., private crossings, operation lifesaver).

OUTCOMES:

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

- Develop and implement improvements to railroad-highway grade crossings
- Identify and evaluate techniques and engineering principles used for all crossings

TARGET AUDIENCE:

Federal, State, and local transportation agencies responsible for the design, construction, and/or maintenance of railroad-highway crossings. State and local traffic engineers responsible for highway-railroad grade crossing safety.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Dee Chappell • (202) 366-0087 • debra.chappell@fhwa.dot.gov

If you're interested in this course, you may also want to take advantage of other NHI saftey courses.

151042 Safety Conscious Planning: Planning it Safe
142045 Pedestrian Facility Design
142045 Bicycle Facility Design
137030 Road Weather Management
137044 Improving Highway Safety with Intelligent Transportation Systems (ITS)
133078 Access Management, Location and Design

COURSE NUMBER: FHWA-NHI-380032
COURSE TITLE: AASHTO Roadside Design Guide

This course provides an overview of the AASHTO "Roadside Design Guide." Emphasis is on current highway agency policies and practices. Each student will receive a copy of the AASHTO "Roadside Design Guide" as the course text.

OUTCOMES:

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

- Apply the clear zone concept to all classes of roadways
- Recognize unsafe roadside design features and elements and make appropriate changes
- Identify the need for a traffic barrier
- Select, design, and install a traffic barrier
- Apply safety concepts to roadside features and appurtenance selection/use in work zones
- Compare alternate safety treatments and select a cost-effective design
- Identify policies and practices that are inconsistent with current state-of-the-art
- Apply the clear zone concept to all classes of roadways
- Recognize unsafe roadside design features and elements and make appropriate changes
- Identify the need for a traffic barrier
- Select, design, and install a traffic barrier
- Apply safety concepts to roadside features and appurtenance selection/use in work zones
- Compare alternate safety treatments and select a cost-effective design
- Identify policies and practices that are inconsistent with current state-of-the-art

TARGET AUDIENCE:

Federal, State, and local highway engineers involved in the formulation and/or application of policies and standards relating to the design of safer roadsides.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Richard Powers • (202) 366-1320 • richard.powers@fhwa.dot.gov

Are your primary safety needs for lane departure?
FHWA-NHI-380032 AASHTO Roadside Design Guide – see page 145
FHWA-NHI-380034 (1-Day), FHWA-NHI-380034A (2-Day), FHWA-NHI-380034B (3-Day), Design, Construction, and Maintenance of Highway Safety Appurtenances and Features – see page 146
FHWA-NHI-380070 Safety and Operational Effects of Geometric Design Features for Two-Lane Rural Highways – see page 150

COURSE NUMBER: FHWA-NHI-380034 (1-Day)
FHWA-NHI-380034A (2-Day)
FHWA-NHI-380034B (3-Day)

COURSE TITLE: Design, Construction, and Maintenance of Highway Safety Appurtenances and Features

The course has been developed for a 3-day course presentation but can also be structured into a 1- or 2-day training course. The sponsoring agency will be able to choose the modules for presentation that will best meet its needs. The course covers the design, construction, and maintenance of highway safety appurtenances and features. It covers the purpose and performance requirements of state-of-the-art highway safety features, such as breakaway sign supports, breakaway utility poles, traffic barriers, impact attenuators, traversable terrain, and hardware features such as drainage inlets. The course describes how these features function, what can go wrong, and how to recognize and correct improper installations.

OUTCOMES:

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

- Identify advantages and disadvantages of different types of longitudinal barriers and crash cushions
- Identify National Cooperative Highway Research Program 350 tested safety appurtenances
- Identify application of highway safety appurtenances, why they are used, when and where they should be used, and what is necessary to ensure their function
- Design the placement of, and determine the need for, longitudinal barriers
- Use required installation, construction, and maintenance procedures for proprietary longitudinal barriers, terminals, transitions, crash cushions, bridge railings, and sign supports
- Recognize substandard or potentially hazardous highway appurtenances and features
- Develop alternatives to eliminate, correct, or mitigate unsatisfactory operational characteristics of existing safety devices

TARGET AUDIENCE:

Highway engineers, including local personnel involved in the design, construction, or maintenance of highway safety appurtenances and features. This course is suitable for all local, State, and Federal employees that are involved with the installation and repair of highway appurtenances.

FEE: $200 Per Participant (FHWA-NHI-380034)
LENGTH: 1.0 Days (CEU: 0.6 Units)

FEE: $270 Per Participant (FHWA-NHI-380034A)
LENGTH: 2.0 Days (CEU: 1.2 Units)

FEE: $400 Per Participant (FHWA-NHI-380034B)
LENGTH: 3.0 Days (CEU: 1.8 Units)
CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Harry Taylor • (202) 366-2175 • harry.taylor@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-380060
COURSE TITLE: Work Zone Traffic Control for Maintenance Operations (Short Term)

This course provides guidance and training for field personnel working in the planning, selection, application, and operation of short-term work zones. The course addresses typical short-term maintenance activities occurring on two-lane rural highways and multilane urban streets and highways. The course covers the applicable standards for work zone protection contained in the "Manual on Uniform Traffic Control Devices" (MUTCD), discussing the need for proper application of devices, while addressing liability issues of highway agencies and individuals. Classroom presentation includes practical exercises to plan, set up, operate, and remove work zone safety devices, including appropriate flagging procedures for these operations.

OUTCOMES:

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

- Apply traffic control through short-term and mobile work areas
- Use national work zone standards and requirements as contained in Part VI of the MUTCD
- Use standard traffic control devices in work zones
- Design and install traffic control schemes for short-term and mobile operations on rural two- and multilane streets and highways.
- Apply proper flagging procedures
- Minimize liability exposure for agencies performing utility and maintenance operations

TARGET AUDIENCE:

State, county, and utility personnel, such as maintenance crews, survey crews, and utility crews, who are responsible for establishing traffic controls through short-term, utility, and maintenance work areas.

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Peter Hatzi • (202) 366-8036 • peter.hatzi@fhwa.dot.gov

If you're interested in this course, you may also want to take advantage of other NHI safety courses.

151042 Safety Conscious Planning: Planning it Safe
142045 Pedestrian Facility Design
142045 Bicycle Facility Design
137030 Road Weather Management
137044 Improving Highway Safety with Intelligent Transportation Systems (ITS)
133078 Access Management, Location and Design

COURSE NUMBER: FHWA-NHI-380063 (1-Day)
FHWA-NHI-380063A (1.5-Day)

COURSE TITLE: Construction Zone Safety Inspection

This course provides training in the management of traffic control plans and the inspection of construction zone safety devices. Participants receive instruction in traffic control plan review, inspection of traffic control procedures and safety devices, and the resolution of discrepancies from the traffic control plan, as well as on deficiencies in safety hardware maintenance. The following major topics are covered: iInspection of traffic control plan operation, maintenance of work zone signs and markings, inspection of construction safety hardware, and resolution of discrepancies from contract requirements.

OUTCOMES:

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

- Recognize the importance of construction zone safety devices
- Identify the contract requirements for selected devices
- Inspect the installation and operation of safety devices, including discrepancies and deficiencies in safety devices
- Resolve discrepancies from the contract requirements and ensure corrections in the deficient safety devices

TARGET AUDIENCE:

FHWA safety engineers, FHWA highway engineers, and State and local personnel involved in the management of traffic control plans and the inspection of construction zone safety devices.

FEE: $200 Per Participant (FHWA-NHI-380063)

LENGTH: 1.0 Days (CEU: 0.6 Units)

FEE: $235 Per Participant (FHWA-NHI-380063A)

LENGTH: 1.5 Days (CEU: 0.9 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Peter Hatzi • (202) 366-8036 • peter.hatzi@fhwa.dot.gov

This course has different course length options. Visit the NHI Web site for information on each course length.

COURSE NUMBER: FHWA-NHI-380069
COURSE TITLE: Road Safety Audits and Road Safety Audit Reviews

Participants in this training will learn how to improve transportation safety by applying a new proactive approach "Road Safety Audits (RSA) and Road Safety Audit Review (RSAR)." This technique provides an examination of a future or existing roadway by an independent, qualified audit team. The RSA is a way for your agency to improve safety and to communicate to the public how you are working toward accident reductions.

This course includes "hands-on" application of the training materials which include such topics as road safety audit definition and history, why care about safety, stages of a road safety audit, details on how to conduct a road safety audit, easy-to-use-checklists, and legal considerations.

This training provides practical information on how to conduct a road safety audit. Students will receive a copy of the "Road Safety Audits and Road Safety Audit Reviews Reference Manual."

OUTCOMES:

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

- Express the road safety audit process terminology
- Perform a simple road safety audit, as a member of a team
- Assess the benefits of a road safety audit on a statewide basis

TARGET AUDIENCE:

Federal, State, and local transportation personnel who are likely to serve on a Road Safety Audit team. Consultants who conduct highway safety studies also may attend.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Louisa Ward • (202) 366-2218 • louisa.ward@fhwa.dot.gov

Connect with the experts through e-learning.

COURSE NUMBER: FHWA-NHI-380070
COURSE TITLE: Safety and Operational Effects of Geometric Design Features for Two-Lane Rural Highways

This course provides quantitative safety assessment methods to the design process for two-lane rural highways. Emphasis is on the application of safety research results to design decisions for application of the requirements and guidelines detailed in the 2001 AASHTO Green Book for curvature, lane width, shoulder width, grade, and intersection. Each student will receive a copy of the "Safety and Operation Effects of Highway Design Features for Two-Lane Rural Highways" manual.

IMPORTANT: Participants should bring a scientific notation calculator as we will be doing calculations of decimal value to decimal power for crash prediction values.

OUTCOMES:

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

- Identify changes in geometric design practices detailed in the AASHTO 2001 Green Book
- Recognize the safety effects of geometric design features
- Calculate the quantitative safety measures of geometric design features
- Apply reconstruction to only those segments/features with higher-than-expected crash experience
- Compare alternative designs based upon an assessment of the safety effects of geometric design features

TARGET AUDIENCE:

State and local highway engineers and consultants involved in the design of two-lane rural highways.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Fred Ranck • (708) 283-3545 • fred.ranck@fhwa.dot.gov

Are your primary safety needs for lane departure?
FHWA-NHI-380032 AASHTO Roadside Design Guide – see page 145
FHWA-NHI-380034 (1-Day), FHWA-NHI-380034A (2-Day), FHWA-NHI-380034B (3-Day), Design, Construction, and Maintenance of Highway Safety Appurtenances and Features – see page 146
FHWA-NHI-380070 Safety and Operational Effects of Geometric Design Features for Two-Lane Rural Highways – see page 150

COURSE NUMBER: FHWA-NHI-380071
COURSE TITLE: Interactive Highway Safety Design Model

NEW COURSE

Minimum System Specifications: Operating System - Windows 95, 98, NT 4.0, Me, 2000 Professional or XP; HTML Browser - Microsoft Internet Explorer, Netscape Navigator, Foxfire or Mozilla; Hardware - At least 450 MHz x 86 compatible CPU, 128 MB RAM, 800x600 high colors (16 bit) display; and 300 MB free disk space

There should be no more than two participants per computer.

This course will instruct highway design project managers, planners, designers, and traffic and safety reviewers in the application of the Interactive Highway Safety Design Model (IHSDM) software and will provide guidance on interpretation of the output.

IHSDM is a suite of software tools to evaluate safety of two-lane rural highways. The software, developed for FHWA, was released in 2003 after several years of research and development to provide state-of-the-art techniques for safety analysis. IHSDM contains five tools that can be used to apply the most recent safety analysis techniques in a relatively straightforward and automated manner. For more information about IHSDM, go to www.tfhrc.gov/safety/ihsdm/ihsdm.htm.

OUTCOMES:

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

- Describe key capabilities and limitations of IHSDM
- Evaluate a two-lane rural highway using IHSDM
- Recognize when and how IHSDM can be used in the project development process

TARGET AUDIENCE:

Highway design project managers, planners, designers, and traffic and safety reviewers with at least one or two years of experience with highway design, preferably two-lane rural highway design.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Clayton Chen • (202) 366-4656 • clayton.chen@fhwa.dot.gov
Technical Information: Ray Krammes • (202) 493-3312 • ray.krammes@fhwa.dot.gov

If you're interested in this course, you may also want to take advantage of other NHI safety courses.

151042 Safety Conscious Planning: Planning it Safe
142045 Pedestrian Facility Design
142045 Bicycle Facility Design
137030 Road Weather Management
137044 Improving Highway Safety with Intelligent Transportation Systems (ITS)
133078 Access Management, Location and Design

COURSE NUMBER: FHWA-NHI-380072
COURSE TITLE: Advanced Work Zone Management and Design

The purpose of this course is to provide learners with the skill and knowledge of both technical and non-technical aspects of work zone traffic control practices. The course includes principles of "best practices" for the planning, design, project management, and contract techniques needed to insure high quality work zone traffic control.

This training course is designed for those that understand principles of engineering judgment and studies, have considerable management or design experience in work zone traffic control, and have an understanding of the "Manual on Uniform Traffic Control Devices" (MUTCD) 2003 Edition Parts 1, 5, and 6. The training includes planned student interaction so that unique experiences can be shared and self-teaching can take place.

OUTCOMES:

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

- Apply the latest safety and mobility design concepts as it relates to temporary traffic control (TTC) plans for work zones.
- Identify the latest MUTCD principles as it relates to TTC plans for planning, design, project management, and describe the various contracting issues, e.g., A+B bidding, lane rental, etc. that may need to be resolved.
- Demonstrate knowledge of key concepts in the AASHTO Design Guide and other standards as related to such items as worker and flagger apparel (such as ANSI and similar standard guides).
- Evaluate work zone temporary traffic control designs for nighttime and daytime issues.
- Analyze and evaluate operational, safety and mobility impacts of work zones, including scheduling, scope, phases and alternate routes. This should include: (1) describing data and software available to assist in analyzing the impacts of work zones and alternative strategies and (2) identification of work zone hazards and common risks to adjacent traffic and possible countermeasures to minimize these impacts.
- List elements necessary for successful contracts and identify strategies for resolving contract issues, including best practices in work zone contracting, also identify tools to resolve conflicts with contracting issues.
- Identify and analyze specific (key) issues and concerns that affect work zone design and demonstrate ability to explain safety and mobility issues, impacts and alternatives to peers, public and/or decision makers.

TARGET AUDIENCE:

The target audience will include state and local Design Engineers, Traffic and Safety Engineers, Senior Work Zone Traffic Engineers, Transportation Planners, Employees of Metropolitan. Planning Organizations (MPOs) and Board Members, Regional Planners, Regional Construction Engineers (with work zone experience), and Senior Engineering Technicians.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Peter Hatzi • (202) 366-8036 • peter.hatzi@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-380073
COURSE TITLE: Fundamentals of Planning, Design and Approval of Interchange Improvements to the Interstate System

NEW COURSE

This course presents the fundamentals of planning, design, and approval of interchange improvements to the interstate system. It includes service and system interchange types, 8-point interchange justification process, interchange study and selection process, fundamentals of freeway system operations and planning, urban freeway diagnosis, geometric design considerations, and technical and documentation procedures. The training includes several major work problems.

OUTCOMES:

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

- Compare and contrast the traffic operational and design attributes of different service interchange types
- Develop an understanding of the eight elements of the FHWA policy, including their intents
- Review and apply the 12 Principles of Good Urban Freeway Planning and Design
- Review key geometric features of ramps, terminals, alignment, and cross section
- Understand the application of FHWA design exception policies with respect to interchange design elements, features, and decisions
- Learn who and which FHWA offices are responsible for approvals
- Learn the general contents of an Interchange Justification Report (IJR) and explain the components of a complete operational analysis, including the manner in which safety is assessed

TARGET AUDIENCE:

The target audience for the course is traffic engineers and transportation professionals with one to five years working experience.

FEE: $270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Mark Doctor • (404) 562-3732 • mark.doctor@fhwa.dot.gov

Are your primary safety needs for intersections?
FHWA-NHI-133078 Access Management, Location and Design – see page 69
FHWA-NHI-380005 Railroad-Highway Grade Crossing Improvement Program– see page 144
FHWA-NHI-380073 Fundamentals of Planning, Design and Approval of Interchange Improvements to the Interstate System – see page 153
FHWA-NHI-380074 Designing and Operating Intersections for Safety – see page 154

COURSE NUMBER: FHWA-NHI-380074
COURSE TITLE: Designing and Operating Intersections for Safety

NEW COURSE

This course consists of a series of six modules that can be presented individually, or as an entire package, over a three-day period. This course examines various aspects of design and operations and how they affect the safety of an intersection and its various users. The full course contains a total of six modules: Users and Intersections; Diagnostics and Countermeasures; Geometric Design; Unsignalized Intersections; Signalized Intersections and Case Studies. This course is designed to be interactive with numerous discussions, exercises, and case studies.

OUTCOMES:

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

- List the user groups to consider
- Describe user characteristics and how they affect intersection design and safety
- Describe approaches to balance needs of different user groups
- Review how to determine which intersections have poor crash experience
- Review how to assess causes of high crash experience or high potential
- Describe how to select appropriate countermeasures
- Define intersection design objectives, controls, and focus area
- Identify key safety-related intersection geometric design decisions, applications, and assumptions
- Describe the measured and potential safety improvements that result from key intersection geometrics
- Describe safety issues at unsignalized intersections
- Summarize MUTCD requirements for signalizing an intersection
- Select appropriate countermeasures to address safety issues at unsignalized intersections
- Identify common safety concerns at signalized intersections
- Discuss contributing factors to safety concerns
- Select countermeasures to improve signalized intersection safety

TARGET AUDIENCE:

The target audience for the course is traffic engineers and transportation professionals with one to five years of working experience.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Clayton Chen • (202) 366-4656 • clayton.chen@fhwa.dot.gov

FHWA Mission – Enhancing mobility through innovation, leadership, and public service.

COURSE NUMBER: FHWA-NHI-380075
COURSE TITLE: New Approaches to Highway Safety Analysis

NEW COURSE

The primary purpose of this course is to help attendees gain an understanding of the Highway Safety Improvement Program (HSIP) process, safety engineering principles and human factors issues related to traffic and road safety. It also provides the participant with an explanation of the latest methods for identifying collision causes and selecting cost-effective safety improvements. Finally, this course will serve as a prerequisite for those who will be utilizing SafetyAnalyst, a set of software tools currently under development that are designed to assist State and local agencies to improve the decision-making process in implementing safety improvement projects.

OUTCOMES:

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

- Describe the components of the Highway Safety Improvement Plan (HSIP)
- Explain safety engineering principles relevant to planning for highway safety improvement measures specific to three types of crashes - roadway departures, intersection-related, and pedestrian
- Describe the relevance and impact of human factors in the planning of highway safety improvement measures for three types of crashes - roadway departures, intersection-related, and pedestrian
- Determine strategies for the selection of cost-effective highway safety improvement measures for three types of crashes - roadway departures, intersection-related, and pedestrian

TARGET AUDIENCE:

This course is intended primarily for State DOT staff involved with the Highway Safety Improvement Program, and for FHWA safety specialists. These specialists include engineers, planners, and technicians.

FEE: $400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Kenneth Epstein • (202) 366-4656 • Kenneth.Epstein@fhwa.dot.gov

Ready to request a course? Please complete the On-Site Course Request Form (FWHA Form 1530) located in the back of the catalog.

COURSE NUMBER: FHWA-NHI-380076
COURSE TITLE: Low-Cost Safety Improvements Workshop

NEW COURSE

This course provides a comprehensive synthesis of low-cost, ready-to-use safety improvements. The workshop presents a synthesis of countermeasures and their associated crash reduction factors as identified in the "AASHTO Strategic Highway Safety Plan • NCHRP 500 Guidebooks." Each participant will receive a copy of the NHI "Low Cost Safety Improvements Workshop: Participant Workbook" as the course text.

OUTCOMES:

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

- Identify appropriate engineering countermeasures from crash patterns
- Recognize deficiencies in operation/design and select appropriate countermeasures for roadside hazards
- Recognize deficiencies in safety performance of signing, markings, and lighting, and select appropriate countermeasures
- Recognize deficiencies in operation/design of intersections and select appropriate countermeasures
- Recognize deficiencies in operation/design of traffic signals and select appropriate countermeasures
- Recognize deficiencies in operation/design of railroad grade crossings and select appropriate countermeasures
- Illustrate new and innovative low-cost safety improvement measures developed by State DOTs

TARGET AUDIENCE:

Federal, State, and local transportation, traffic and safety engineers, and planners involved in reducing intersection crashes.

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 35

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: John McFadden • (410) 962-2482 • john.mcfadden@fhwa.dot.gov

If you're interested in this course, you may also want to take advantage of other NHI safety courses.

151042 Safety Conscious Planning: Planning it Safe
142045 Pedestrian Facility Design
142045 Bicycle Facility Design
137030 Road Weather Management
137044 Improving Highway Safety with Intelligent Transportation Systems (ITS)
133078 Access Management, Location and Design

COURSE NUMBER: FHWA-NHI-380077
COURSE TITLE: Intersection Safety Workshop

NEW COURSE

The course provides ready-to-use direct-application safety measures for rural unsignalized intersections and for signalized intersections. The workshop presents a synthesis of countermeasures and their associated crash reduction factors as identified in the "AASHTO Strategic Highway Safety Plan - NCHRP 500 Guidebooks." Each participant will receive a copy of the NHI "Intersection Safety Workshop: Participant Workbook" as the course text.

OUTCOMES:

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

- Apply models (equations) to predict number of crashes for an intersection based upon traffic volumes
- Identify high crash intersections and recognize appropriate engineering countermeasures
- Identify crash reduction factors/crash modification factors associated with countermeasures
- Describe safety performance of intersection geometric design features and the models to quantify the safety effect
- List regulatory, warning, and guide signing and markings countermeasures and associated safety benefits
- List highway lighting countermeasures and associated safety benefits
- List traffic signal countermeasures and associated safety benefits

TARGET AUDIENCE:

Federal, State, and local transportation, traffic and safety engineers and planners involved in reducing intersection crashes.

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Fred Ranck • (708) 283-3545 • fred.ranck@fhwa.dot.gov

Are your primary safety needs for safety management?

FHWA-NHI-151042 Safety Conscious Planning: Planning it Safe – see page 132
FHWA-NHI-380071 Interactive Highway Safety Design Model – see page 151
FHWA-NHI-380075 New Approaches to Highway Safety Analysis – see page 155
FHWA-NHI-380076 Low-Cost Safety Improvements Workshop – see page 156
FHWA-NHI-380077 Intersection Safety Workshop – see page 157
FHWA-NHI-380078 Signalized Intersection Guidebook Workshop – see page 158

COURSE NUMBER: FHWA-NHI-380078
COURSE TITLE: Signalized Intersection Guidebook Workshop

NEW COURSE

This course provides an overview of the new FHWA publication "Signalized Intersections: Informational Guide FHWA-HRT-04-091." Emphasis is on methods for evaluating the safety and operations of signalized intersections and tools to remedy deficiencies. Each participant will receive a copy of the FHWA "Signalized Intersections: Information Guide."

OUTCOMES:

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

- Recognize and apply fundamentals of signalized intersections in terms of user needs, geometric design, traffic design, and illumination
- Describe signalized intersection project process, safety analysis methods, and operational analysis methods
- Describe the five types of signalized intersection treatments and their advantages and disadvantages

TARGET AUDIENCE:

Federal, State, and local transportation, traffic and safety engineers, and planners involved in planning, designing, operating, and remedying crash problems for signalized intersections.

FEE: $200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Fred Ranck • (708) 283-3545 • fred.ranck@fhwa.dot.gov

Are your primary safety needs for bicycles and pedestrians?
FHWA-NHI-142045 Pedestrian Facility Design – see page 120
FHWA-NHI-142046 Bicycle Facility Design – see page 121

COURSE NUMBER: FHWA-NHI-380079
COURSE TITLE: AASHTO Roadside Design Guide, Web-Based

Computer Requirements: You will need a fairly recent version of a browser (such as Internet Explorer 4 or 5 or Netscape 4 with Javascript enabled), the latest versions of Macromedia Shockwave and Flash (download), and a connection to the Internet (at least 56K modem). An older computer such as a Pentium 100 would work but it would just be slower than a Pentium III.

This course provides an overview of the AASHTO "Roadside Design Guide." Emphasis is on current highway agency policies and practices. The AASHTO "Roadside Design Guide" is the textbook for this course. Directions on how to obtain a copy of this book can be found on the NHI Web site

OUTCOMES:

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

- Apply the clear zone concept to all classes of roadways
- Recognize unsafe roadside design features and elements and make appropriate changes
- Identify the need for a traffic barrier
- Select, design and install a traffic barrier
- Apply safety concepts to roadside features and appurtenance selection/use in work zones
- Compare alternate safety treatments and select a cost-effective design
- Identify policies and practices that are inconsistent with current state-of-the-art

TARGET AUDIENCE:

Federal, State and local highway engineers involved in the formulation and/or application of policies and standards relating to the design of safer roadsides. Participant must register online at www.nhi.fhwa.dot.gov/registerdl.asp. Participant information, billing address, and credit card information must be provided when registering online. Participants will have a userid and password sent to them via e-mail after authorization in order to log in to the course from the distance learning page on the CITE website at www.citeconsortium.org.

Registration: Participant must register online at www.nhi.fhwa.dot.gov/registerdl.asp.

FEE: Free

LENGTH: 14.0 Hours (CEU: 1.2 Units)

CLASS SIZE: Minimum: N/A; Maximum: N/A

NHI Training Program Manager: Bill Williams • (703) 235-0539 • bill.williams@fhwa.dot.gov
Technical Information: Richard Powers • (202) 366-1320 • richard.powers@fhwa.dot.gov

To purchase a copy of the RSDG-3 Roadside Design Guide, 3rd, Edition please go to the AASHTO Web site at www.aashto.org.

COURSE NUMBER: FHWA-NHI-420018 (3.5-Day)
FHWA-NHI-420018A (4.5-Day)

NEW COURSE

COURSE TITLE: Instructor Development Course

There are two versions of this course. The 3.5-day is geared to instructors who anticipate teaching from a complete set of training materials (instructor manuals, participant workbooks, and visual aids) developed by training professionals. For instructors who need to create their own courses or modify existing courses, the 4.5-day version of the course teaches you to develop instructionally sound learning OUTCOMES:, instructor manuals, visual aids, exercises, workshops, and assessments.

However, either version of the Instructor Development Course (IDC) will provide new and experienced instructors the knowledge and skills to deliver more effective training. NHI defines training as a "demonstration of acquired skills and knowledge of adult learning principles which necessitates that learning OUTCOMES: be developed and their attainment be measured."

A skilled trainer, therefore, will emphasize the use of experiential learning techniques, such as problem solving analysis, discussion, question and answer sessions, group activities, demonstrations, role-plays, etc. In essence, these learning activities tap into the knowledge and skills that an adult learner brings to the classroom and have the goal of meeting both the learning OUTCOMES: and the participants' expectations.

Pre-Class Assignment:
Training Sessions: You must come prepared to present a 15-minute training session at the beginning of the workshop. The topic for your session should be job related; it can either come from a course you have taught, will be teaching, or are developing. The 15 minutes typically translate to about 5 to 7 minutes of content with time for exercises, activities and/or questions, etc. Visual aids, such as overhead transparencies or handouts should be brought with you. Please bring your own laptop computer if you are planning to do a PowerPoint presentation.

A word of caution, not all training facilities are equipped with the appropriate technical support for a PowerPoint presentation (i.e., in-focus projector or support software) or have the equipment to reproduce overhead transparencies. For this reason, we encourage you to make use of other types of visual aids, such as flip charts, write-on transparencies, and handouts. These nontechnical methods will NOT diminish, but enhance the value of your presentation. Use a holistic approach in your training.

Readings: Read the Instructional Systems Design (ISD) material posed on the NHI Web site. To access the material go to www.nhi.fhwa.dot.gov and click on the "Download Center" button that appears in the menu along the left side of the Web page. When you arrive at the Download Center, select "Instructor Development Course" from the list of courses that appear there. You will find printable downloadable files (PDFs) of all required readings and any other materials related to this course.

OUTCOMES:

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

- Explain the five steps in the ISD system
- Write a behavioral learning outcome
- Present, measure, and review a learning outcome
- Demonstrate at least two forms of interactivity and positive interpersonal skills
- List five training techniques (e.g., Do not talk to the flip chart; do not stand in front of the projector; and do not stand in one place)
- Demonstrate how to reach the three styles of learning
- Deliver a 15-minute training session that demonstrates adult learning principles

TARGET AUDIENCE:
This course is intended for instructors who will be delivering interactive training to adult learners.

FEE: $460 Per Participant
LENGTH: 3.5 Days (CEU: 2.1 Units)

FEE: $750 Per Participant
LENGTH: 4.5 Days (CEU: 2.7 Units)
CLASS SIZE: Minimum: 10; Maximum: 20

NHI Training Program Manager: Larry Jones • (703) 235-0523 • larry.jones@fhwa.dot.gov
Technical Information: Carolyn Eberhard • (703) 235-0010 • carolyn.eberhard@fhwa.dot.gov

This course has different course length options. Visit the NHI Web site for information on each course length.

ACTIVITY AND TOUR-BASED FORECASTING SEMINAR

The Activity and Tour-Based Forecasting Seminar is designed for travel demand modelers with several years of practical experience. The development of activity and tour-based models is a result of recent research into travel demand forecasting procedures and advances in computing technology, which enable more detailed and disaggregate travel demand analysis. The seminar attempts to communicate to travel modeling professionals some of the activity and tour-based modeling procedures developed by their colleagues around the U.S. and abroad, as well as promising techniques that have been or are being researched.

TARGET AUDIENCE:
MPO, DOTR, transit agency planners

LENGTH: 1 Day

CLASS SIZE: 30

Penelope Weinberger (202) 366-4054 E-mail p-weinberger@tamu.edu

BEST PRACTICES FOR PCC PAVEMENTS: LONG-LIFE PCCP DESIGN AND CONSTRUCTION FEATURES WORKSHOP

This is the first in a series of three workshops currently under development. The workshop covers a range of topics, including pavement design, concrete materials and mix designs, construction process and management aides, alternate design and bid approaches, and maintenance, repair and rehabilitation. The workshop is available upon request.

TARGET AUDIENCE:
The workshop can be tailored for State DOT pavement and materials engineers, consulting design engineers, paving contractors, and independent testing/inspection laboratories.

LENGTH: 1–2 days

CLASS SIZE: 30

Sam Tyson (202) 366-1326 E-mail sam.tyson@fhwa.dot.gov

CONSTRUCTION OF PAVEMENT SUBSURFACE DRAINAGE SYSTEMS

This workshop provides participants with techniques for quality construction and maintenance of pavement drainage systems. It provides good guidance for the construction of permeable bases, aggregate separator layer, and edge drain systems. Inspection and maintenance of the system are also covered in the workshop.

TARGET AUDIENCE:
Pavement design engineers, construction, and maintenance personnel.

LENGTH: 1 Day

CLASS SIZE: 35

Angel Correa (404) 562-3907 E-mail angel.correa@fhwa.dot.gov

DESIGNING PEDESTRIAN FACILITIES FOR ACCESSIBILITY

This course, developed by the Federal Highway Administration (FHWA), provides an overview of the Americans with Disabilities Act (ADA) and teaches participants how to apply appropriate guidelines and policies to the public rights-of-way. The following areas are covered:

1. Background to the Americans with Disabilities Act (ADA)
2. Characteristics of pedestrians and the pedestrian environment
3. Legal requirements
4. USDOT and FHWA policies and funding opportunities
5. Accessible design elements – sidewalk corridor, frontage corridor, and pedestrian zone
6. Curb ramps
7. Crosswalks
8. Medians & islands
9. Roundabouts
10. Overpasses and underpasses
11. Temporary facilities and construction site safety
12. Pedestrian signs and signals

In addition to the instruction, the 1.5- and 2-day versions of the course include a field exercise in which participants use wheelchairs and blindfolds to navigate and evaluate several sidewalk and street crossing locations.

TARGET AUDIENCE:

Local, State, and Federal engineers and planners with responsibility for designing and/or building pedestrian facilities; urban designers; public officials; and interested citizens. Note: This course is being taught by the Association of Pedestrian and Bicycle Professionals (APBP).

FEE: $3250/$4000/$4500

LENGTH: 1, 1.5, or 2 Days

CLASS SIZE: 35

Aida Berkovitz (415) 744-2614 E-mail aida.berkovitz@fhwa.dot.gov

ECONOMIC ANALYSIS FOR HIGHWAY DECISION-MAKERS

The Federal Highway Administration (FHWA) Office of Asset Management offers a free workshop on the application of economic analysis to highway decision making. The workshop begins with an explanation of some of the basic concepts required for the economic analysis of highway projects (inflation and discounting) and proceeds to an explanation of economic analysis methodology, especially life-cycle cost analysis and benefit-cost analysis. The workshop then covers the roles of traffic forecasts, risk analysis, and economic impact analysis in the economic analysis process. Time is provided in each subject area to discuss actual examples and answer questions. The workshop does not require prior training in economic analysis.

A longer 1.5-day version of the class, supplemented with hands-on training in FHWA's new Web-Based Benefit-Cost Analysis Model, will also be available.

TARGET AUDIENCE:

The workshop is conducted at the request of State and local highway agencies. It is appropriate for anyone interested in the application of economic analysis to the planning, design, and implementation of highway projects. Potential participants include the managers and staff of the highway agency, the FHWA Division Office, private industry supporting the agencies, and academia.

LENGTH: 6.5 Hours

CLASS Size: 25–30

Eric Gabler (202) 366-4036 E-mail eric.gabler@fhwa.dot.gov

ENGAGING THE PRIVATE SECTOR IN FREIGHT PLANNING

Tailored to audience requirements (topics and length), provides an overview of how to effectively engage the private sector in freight planning, including identification of private-sector stakeholders to engage, and a review of strategies and techniques to initiate cooperative involvement, as well as reviewing approaches to maintaining private sector engagement. A variety of successful approaches at different size state DOT and MPOs are examined.

LENGTH: 1 day

Jodelyn Jones E-mail jocelyn.jones@fhwa.dot.gov

FIBER OPTIC INSTALLATION ON FREEWAY RIGHT-OF-WAY WORKSHOP (FHWA-NHI-137035A)

This 2-day workshop walks participants through project development, design and approval. Participants work with a scale model to see how and why project concepts and principals work together. The workshop is based on the "Design Guide for Fiber Optic Installation on Freeway Right-of-Way," a copy of which is provided to each participant.

OUTCOMES:

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

- Recognize the importance of shared resource agreements for installing fiber
- Describe the issues associated with creating and administering a shared resource project
- Appreciate the perspective of the telecommunication providers
- Describe the impacts of fiber installation on corridor quality
- Discuss the methods of installation
- Delineate the steps and sequence in a fiber optics installation from project development through operations and maintenance
- Navigate the "Design Guide for Fiber Optic Installation on Freeway Right-of-Way"

TARGET AUDIENCE:

The workshop is designed for both State DOT practitioners and telecommunication providers, and welcomes local transportation agency personnel.

LENGTH: 2 Days

CLASS SIZE: 20

Ron Giguere (202) 366-2203 E-mail ron.giguere@fhwa.dot.gov
William Jones (202) 366-2128 E-mail william.jones@fhwa.dot.gov

FHWA CIVIL RIGHTS PROGRAM MANAGEMENT

A basic, yet concentrated overview of the major FHWA civil rights programs and an introduction to the principles of complaints processing and investigation. The course focuses on authorities for each of the programs, as well as how to administer the programs at the Division Office and the State DOT levels, including development, review and approval of State program documents. The course is divided into six separate modules and reference manuals are provided for each module: State DOT Internal EEO/Affirmative Action, EEO Contractor Compliance, Investigation of Discrimination Complaints, Title VI/Environmental Justice, Disadvantaged Business Enterprise, and Americans with Disabilities Act.

TARGET AUDIENCE:

All FHWA, State DOT, and other recipient personnel assigned civil rights responsibilities on either a full or part-time basis. In addition, FHWA division administrators, assistant division administrators, staff officers and State DOT management personnel in any discipline with significant civil rights implications (e.g., planning, contract administration, legal, environment, safety, right-of-way and relocation, research). A minimum of 15, not to exceed 30, participants is required to hold a session.

LENGTH: 4.5 Days

CLASS SIZE: 30

Humberto Martinez (817) 978-3671 E-mail humberto.martinez@fhwa.dot.gov

FREIGHT DATA MADE SIMPLE

Tailored to audience requirements (topics), provides an overview of major freight data sources (public and private) and how they are used to support transportation planning, reviews source and reliability issues and highlights innovative applications.

LENGTH: 1 day

Lisa Randall E-mail lisa.randall@fhwa.dot.gov

FREIGHT PLANNING TECHNICAL ASSISTANCE

Tailored to customer requirements (length and topics), Resource Center specialists provide freight planning technical assistance on a range of issues from freight studies, to private-sector involvement, to data and forecasting.

LENGTH: Depends on customer needs

Lisa Randall E-mail lisa.randall@fhwa.dot.gov
Fawn Thompson E-mail fawn.thompson@fhwa.dot.gov
Jocelyn Jones E-mail jocelyn.jones@fhwa.dot.gov
Robert Radics E-mail robert.radics@fhwa.dot.gov

FREIGHT SECURITY AWARENESS SEMINAR

Tailored to audience requirements (topics and length), provides an overview of FHWA intermodal freight technology and freight security initiatives. Can be offered via nettraining.

LENGTH: 2-8 hours

Crystal Jones E-mail crystal.jones@fhwa.dot.gov
Lisa Randall E-mail lisa.randall@fhwa.dot.gov

HIGHWAY ECONOMIC REQUIREMENTS SYSTEM—STATE VERSION (HERS-ST) WORKSHOP

The Federal Highway Administration (FHWA) Office of Asset Management, in cooperation with the FHWA Division Office and Department of Transportation, offers free, one-day hands on workshop on the application and use of the Highway Economic Requirements System—State Version software. The workshop walks the participants through the step-by-step process in utilizing the software; how to import state highway data, analyze the data and generate reports, charts/graphs, and GIS maps. The workshop does not require prior training other than the participant should be familiar with computers and Windows-based software.

TARGET AUDIENCE:

The workshop is appropriate for anyone interested in the application of economic-engineering analysis to help determine highway infrastructure needs for programming & planning. Potential participants include the managers and staff of the State Department of Transportation, metropolitan planning organizations, the FHWA Division Office, private industry, and academia.

LENGTH: 1-day

CLASS SIZE: 5–25

Robert Mooney (202) 366-4567 E-mail robert.mooney@fhwa.dot.gov
Additional information, visit: http://www.fhwa.dot.gov/infrastructure/asstmgmt/hersindex.htm

HIGHWAY PERFORMANCE MONITORING SYSTEM (HPMS) SOFTWARE WORKSHOP

This workshop will provide hands-on instruction on the use of the newest HPMS software package. Workshops are offered on an as-needed basis.

TARGET AUDIENCE:

State and FHWA field personnel working with the HPMS data program and responsible for preparing or evaluating a State's HPMS submittal package.

LENGTH: 2 Days

Thomas Roff (202) 366-5035 E-mail thomas.roff@fhwa.dot.gov

HIGHWAY TRAFFIC NOISE ANALYSIS AND ABATEMENT WORKSHOP

The workshop provides a basic understanding of highway traffi c noise and FHWA's noise regulations. It addresses the following topics: basic acoustics, regulations, noise measurement, highway traffic noise.prediction, noise mitigation, construction noise, and documentation of noise analysis.

TARGET AUDIENCE:
FHWA, State DOT, and MPO staff; other Federal, State, and local agency staff.

LENGTH: 10 Hours (Two 5-hour days)

Bob Armstrong (202) 366-2073 E-mail robert.armstrong@fhwa.dot.gov

HIPERPAV WORKSHOP

HIPERPAV is a software program that models early-age development of concrete strength and stresses that result from moisture and temperature changes within the pavement. In this workshop the participants will become familiar with using the software and its capabilities to extend the useful life of concrete pavements.

TARGET AUDIENCE:
Pavement engineers, construction and maintenance personnel.

LENGTH: 1 Day

CLASS SIZE: 35

Angel Correa (404) 562-3907 E-mail angel.correa@fhwa.dot.gov

HUMAN FACTORS FOR TRANSPORTATION ENGINEERS

This 1-day workshop includes interactive modules on information reception, decision making, driver responses, and human factors principles. The relationship between specific highway standards and human needs is emphasized. Human skills and capabilities are discussed and demonstrated and micro-case studies are included to allow participants to apply the knowledge they have gained.

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

- Recognize that Human Factors has a role in highway design, operations, and safety decisions
- Describe Human Factors information that is included in today's guidelines and standards
- Identify human capabilities needed for using roadways
- Apply basic human factors principles to resolve issues related to highway design, operations, and safety

TARGET AUDIENCE:
Traffic engineers, highway designers, and traffic safety specialists.

LENGTH: 6.5 Hours

CLASS SIZE: 20

Erin Kenley (202) 366-8556 E-mail erin.kenley@fhwa.dot.gov

ITS FOUNDATION (137036A)

The foundation course provides Federal staff with basic knowledge and skills in the core areas for Intelligent Transportation Systems (ITS). Elements of the ten "core" courses found in the ITS Professional Capacity Building (PCB) curriculum are incorporated in the Foundation course. The courses are FHWA-NHI-137002 Deploying ITS—Metropolitan, FHWA-NHI-137003 ITS Public/Private Partnerships, FHWA-NHI-137005 ITS Telecommunication Overview, FHWA-NHI-137007 Rural ITS Toolbox, FHWA-NHI-137013 Using the National ITS Architecture for Deployment, FHWA-NHI-137019 ITS Software Acquisition, FHWA-NHI-137020 ITS Procurement, FHWA-NHI-137024 Introduction to Systems Engineering, FHWA-NHI-137038 ITS Standards Overview, FHWA-NHI-137026 Managing High Technology Projects for Transportation, and FHWA-NHI-133048 Managing Incidents and Roadway Emergencies. There will be a module that addresses current policies and initiatives in ITS. Also, there will be a primer on the eligibility of Federal-aid funds for ITS deployment. A team of existing course instructors, and a number of Federal ITS officials will present the course.

Note: The Foundation Course should not be considered a substitute for any of the core courses. Typically, the core subjects are presented at a high level in the Foundation Course. ITS specialists should plan on taking most, or all, of the individual core courses in order to develop the appropriate knowledge and skills needed for their jobs.

TARGET AUDIENCE:

This course is intended for FHWA, FTA, and FMCSA headquarters and field staff. It is of considerable value to ITS specialists with limited experience and/or incomplete core knowledge in ITS. In addition, nonspecialists in ITS, as well as those peripherally involved with ITS, could gain valuable knowledge and insight from attending this course.

LENGTH: 4 Days

CLASS SIZE: 30

Ron Giguere (202) 366-2203 E-mail ron.giguere@fhwa.dot.gov

MULTIMODAL FREIGHT FINANCING SEMINAR

This new seminar provides basic information and descriptions of available Federal public funding sources, eligibility criteria, and innovative financing techniques that can be used for multimodal freight projects. Noteworthy practices will be utilized to illustrate the range of freight financing options.

TARGET AUDIENCE:

Mid-level State DOT transportation and freight planners, city and county planners (who deal with freight planning issues), MPO staff, mid- and high-level public-sector transportation and freight planners, consultants, private-sector freight managers and FHWA employees.

FEE: FREE seminar

LENGTH: 6 hours

CLASS SIZE: MINIMUM 20; MAXIMUM 35

Carol Keenan (202) 366-6993 E-mail carol.keenan@fhwa.dot.gov
Prabhat Diksit (720) 963-3202 E-mail prabhat.diksit@fhwa.dot.gov

NONDESTRUCTIVE AND INNOVATIVE TESTING WORKSHOP FOR CONCRETE

The workshop provides participants an overview and theory of the most commonly used nondestructive techniques for measuring the early age properties of concrete. The workshop includes several hands-on modules where the participants will have an opportunity to use the equipment on concrete specimens to gain a better understanding on its operation and analysis of results. The workshop also discusses some emerging technologies and current research activities that might have an effect on the state of the practice.

TARGET AUDIENCE:
Pavement engineers, research engineers, senior technicians, construction and maintenance personnel, contractors, consultants, and academia responsible for the conduct of materials testing to assess concrete performance.

LENGTH: 2 Days

CLASS SIZE: 35

Gary Crawford (202) 366-1286 E-mail gary.crawford@fhwa.dot.gov

PREVENTING DISCRIMINATION IN THE FEDERAL-AID PROGRAM: A SYSTEMATIC INTERDISCIPLINARY APPROACH

A presentation on the creation of a preventive, proactive and inter-disciplinary team strategy to implementing Title VI and Environmental Justice requirements. The inter-relationship between Title VI and Environmental Justice, as well as roles and responsibilities of program and civil rights officials are also covered. A comprehensive reference manual is provided to all participants. Note: In order for the course to be delivered effectively, an inter-disciplinary audience must be guaranteed, and a 1 to 2 hour Executive Session with the State DOT's Chief Administrative Officer and immediate staff must be scheduled on the day prior to the course.

TARGET AUDIENCE:
FHWA, State DOT, MPOs and other recipient personnel involved in the following fields: Civil Rights; Planning; Environment; Engineering and Construction; Right of Way and Relocation; Legal; Research; Contract Administration; or Social Science. In order to schedule a session, a minimum of 15, not to exceed 30, participants is required.

LENGTH: 1.5 - 2 Days

CLASS SIZE: 15

Humberto Martinez (817) 978-3671 E-mail humberto.martinez@fhwa.dot.gov

PAVEMENT LIFE-CYCLE COST ANALYSIS (LCCA) SOFTWARE WORKSHOP

The recipients provide the training facility. This workshop provides instruction on lifecycle cost analysis for pavement design and on the FHWA's pavement Life-Cycle Cost (LCCA) software product. Attendees learn about LCCA, user costs, and probability and risk analysis. Several exercises provide hands-on instruction in how to use the software.

TARGET AUDIENCE:
State DOT pavement design and materials engineers and those who make pavement materials selection decisions.

LENGTH: 12 Hours

CLASS SIZE: 10

Francine Shaw-Whitson (202) 366-8028 E-mail francine.shaw-whitson@fhwa.dot.gov

PRESTRESSED CONCRETE BEAM DESIGN WORKSHOP: LOAD AND RESISTANCE FACTOR DESIGN

This workshop is an introduction to the design of precast prestressed pretensioned concrete beams for bridges using the AASHTO Load and Resistance Factor Design (LRFD) Specifications. The goals of this workshop are to introduce the LRFD specification provisions for common types of prestressed concrete beams and provide hands-on interactive training using design examples and exercises. Time is provided for the host agency to present local LRFD implementation and design practices. The participant's workbook includes copies of the presentation slides, exercise worksheets and a design example of a simple span prestressed concrete beam.

TARGET AUDIENCE:
The primary audience is agency and consultant structural designers. The workshop is intended for engineers who are familiar with the AASHTO Standard Specifications for Highway Bridges and have designed at least two bridges.

LENGTH: 2.5 Days

CLASS SIZE: 30

Jeff Smith (404) 562-3905 E-mail jeff.smith@fhwa.dot.gov

TMIP LAND USE FORECASTING SEMINAR

This course will be sponsored by the Travel Model Improvement Program (TMIP). The focus of the seminar is to discuss different methods used in socioeconomic and demographic forecasting, potential data sources and data reliability.

TARGET AUDIENCE:
MPO, DOT, transit agency planners.

LENGTH: 1 Day

Michael Culp (202) 366-9229 E-mail michael.culp@fhwa.dot.gov

TMIP TRAVEL MODEL CALIBRATION AND VALIDATION SEMINAR

This course will be sponsored by the Travel Model Improvement Program (TMIP) and will be based on the new TMIP publication, Model Validation and Reasonableness Checking Manual. The focus will be on step-by-step fundamentals of calibrating and validating base year models and reasonableness checks for forecasts.

TARGET AUDIENCE:
MPO, DOT, transit agency planners.

LENGTH: 1 Day

Michael Culp (202) 366-9229 E-mail michael.culp@fhwa.dot.gov

TMOBILE6.2: MOTOR VEHICLE EMISSION FACTOR MODELING

This course covers the latest EPA motor vehicle emission factor-modeling program – MOBILE6.2. The first module of the course coves the fundamentals of MOBILE6. Topics ranging from base line emission estimate, Federal Testing Procedure, to Facility Cycle are taught. The practice module, which is the main focus of this introductory course, contains eight sections. In the practice module, participants will learn how to formulate a scenario, develop an input file with both required and optional commands, use external data files, run program, and interpret results. There are ten hands-on exercises in module B. After successful completion of this course, participants will establish a firm understanding of the MOBILE program and be able to conduct effective data and program review / evaluation and basic emission factor modeling and analysis.
The course also covers the latest MOBILE6.2's particulate matter (PM) and air toxic emission factor modeling. The AP42 methods for both paved and unpaved road re-entrained dust emission estimation are cover

TARGET AUDIENCE:
This course is for all State and local government agencies and private consultants actively working on public projects.

LENGTH: 2 Days

CLASS SIZE: 30

Tianjia Tang E-mail tianjia.tang@fhwa.dot.gov

TRANSPORTATION AIR POLLUTANT MODELING AND ESTIMATING

This course provides fundamental training on the use of CALME4 and CAL3QHC to estimate air pollutant concentrations near roadway (both intersections and linear roadway). The course will cover both the fundamental theory and the software application techniques. Participants will be able to code and run real case study examples.

TARGET AUDIENCE:
MPO, DOT, transit agency planners, State DOT and any other transportation project development sponsors involved in the transportation NEPA process.

LENGTH: 1.5 Days

CLASS SIZE: 15

Michael Roberts (404) 562-3928 E-mail michael.roberts@fhwa.dot.gov or
Tianjia Tang E-mail tianjia.tang@fhwa.dot.gov

TRANSPORTATION AIR QUALITY (PROJECT LEVEL-HOT SPOT) MODELING AND ANALYSIS

This course covers both the fundamental aspects and practices of CAL3QHC dispersion modeling program used in SIP/Conformity and NEPA project development processes. In module A, both dispersion and traffic movement theories are taught. There are seven sections in module B. These seven sections cover materials ranging from data collection, data compilation, program runs, result interpretation and regulatory guidance. Methods to code various intersection/ interchange links are covered. Signal timing and phasing are covered in module B too. There are eight hands-on exercises in module B. By successfully completion of the course, participants shall be able to conduct air quality dispersion modeling and analysis independently.

TARGET AUDIENCE:
The course is for all State and local government agencies and private consultants actively working on public projects.

LENGTH: 2 Days

CLASS SIZE: 30

Tianjia Tang E-mail tianjia.tang@fhwa.dot.gov

TRANSPORTATION AIR QUALITY DISPERSION MODELING

This course covers both the fundamentals and practices of CAL3QHC dispersion modeling program. In the first module, both dispersion and traffic movement theories will be taught. There are seven sections in the practice module. These seven sections cover materials ranging from data collection, data compilation, program runs, to results interpretation. There are eight hands-on exercises in this section. The last module is policy guidance related to hot spot analysis. By successfully completion of the course, participants shall be able to conduct quality dispersion modeling and analysis independently.

TARGET AUDIENCE:
MPO, DOT, transit agency planners, State DOT and any other transportation project development sponsors involved in the transportation NEPA process.

LENGTH: 1.5 Days

CLASS SIZE: 15

Tianjia Tang E-mail tianjia.tang@fhwa.dot.gov

TRANSPORTATION AIR QUALITY FUNDAMENTAL (AQ101)

This course provides a comprehensive overview and analysis on related scientific principle, law/regulation, and current practices in transportation air quality. Its breadth-and-depth coverage will benefit both policymakers and technical practitioners. Thirteen chapters give not only a complete picture of air quality, but also the detailed step-by-step real world project/program practices. The material can be also used as references and guides for practicing professional. Over 100 exercises with answers are provided to enhance participant's understanding of the material. The course includes the following topic: (1) Atmospheric Physics; (2) Atmospheric Chemistry; (3) Meteorology; (4) Emission/ Pollutant; (5) Federal Air Quality Legislation History; (6) Legal Obligation: NAAQS, air monitoring, and nonattainment designation; (7)Legal Obligation: State Implementation Plan; (8) Legal Obligation: Transportation Conformity; (9) Tools Required: Emission factor (EF) modeling; (10) Tools Required: Regional Transportation Modeling and Analysis; (11) Tools Required: Project level concentration modeling and methodology; (12) Congestion Mitigation and Air Quality Improvement Program; and (13) Mobile Source Air Toxic

TARGET AUDIENCE:
The course is for all State and local government agencies and private consultants actively working on public projects.

LENGTH: 2 Days

CLASS SIZE: 30

Tianjia Tang E-mail tianjia.tang@fhwa.dot.gov

TRANSPORTATION PLANNING FOR THE PRIVATE SECTOR (EXECUTIVE PRESENTATION)

This new presentation will help public-sector transportation and freight planners provide private-sector freight stakeholders with an overview of the public freight and transportation planning process and areas they can successfully engage in that process.

TARGET AUDIENCE:
Private-sector freight managers.

FEE: FREE scripted presentation for use by State Departments of Transportation, Metropolitan Planning Organizations, and FHWA National Resource Center and Division Offices.

LENGTH: 0.5 hour

Carol Keenan (202) 366-6993 E-mail carol.keenan@fhwa.dot.gov
Eloise F. Powell (202) 366-2068 E-mail eloise.freeman-powell@fhwa.dot.gov
Jocelyn Jones (410) 962-2486 E-mail jocelyn.jones@fhwa.dot.gov

VEHICLE TRAVEL INFORMATION SYSTEM (VTRIS) WORKSHOP

This workshop provides hands-on instruction on the use of the stand-alone VTRIS software and the web version of the VTRIS application, which is used for processing automatic vehicle classification (AVC) and weigh-in-motion (WIM) data for the Truck Weight Study (TWS). Principles of the Traffic Monitoring Guide (TMG) are covered that relate to AVC and WIM programs. Workshops are offered on an as-needed basis.

TARGET AUDIENCE:
State, Federal, Local and private companies working the State agencies to analyze and submit AVC and WIM data for the TWS.

LENGTH: 1day

CLASS SIZE: 20

David Jones, Sr. (202) 366-5053 E-mail david.jones@fhwa.dot.gov

FHWA OFFICE OF PROFESSIONAL AND CORPORATE DEVELOPMENT

Recently, the FHWA Office of Corporate Development was merged with Professional Development, giving this new organization an opportunity to synergize and build new capabilities to serve the training and professional development needs of the transportation community. Known as the Office of Professional and Corporate Development (OPCD), the office is charged with developing the transportation workforce and improving the way to do business, by:

- Delivery and application of knowledge
- Program review and improvement
- Quality

OPCD'S MISSION IS TO:

- Serve as an advocate for promoting professional and corporate development throughout the transportation community
- Serve as a catalyst to strengthen the tie between training/learning and performance
- Provide strategic direction for professional development by developing and delivering a coordinated program that reflects FHWA's vital few: safety, environmental stewardship and streamlining, congestion mitigation and customer needs
- Identify and implement new technologies in learning
- Form partnerships and alliances for learning

WORKFORCE DEVELOPMENT

From 276 million today, the U.S. population is expected to reach 300 million by the year 2020. The number of licensed drivers is nearly 200 million and there are more vehicles per household than licensed drivers. The rate of vehicle miles traveled continues to grow and creates increasing demands on the capacity of the Nation's roadway system. The transportation workforce of the future must address highway safety, traffic congestion, land use, environmental policies, as well as the aging driving population. But there are key workforce challenges facing us:

- 40-50% of the transportation workforce will retire in the next ten years
- Fewer people are entering key transportation fields
- Competition for workers is systemic

Increasing demand, limited resources, and greater expectations will be major concerns for transportation managers and policy makers into the new century. Resource limitations on every front will drive the need for improved efficiencies. Technology innovation is the essence of efficiency and it is only through the application of technology by a skilled workforce that transportation can hope to close the gap between growing demand and available resources.

The Office of Professional and Corporate Development is addressing the growing concern with transportation workforce development by actively pursuing strategies to raise awareness, and by working with its transportation community partners to develop policies and programs to effectively address the issue. The "Transportation Workforce Development" Web site has more information about OPCD and transportation community efforts and can be found at http://www.nhi.fhwa.dot.gov/transworkforce.

NATIONAL HIGHWAY INSTITUTE

The National Highway Institute (NHI) is the training and education arm of the Federal Highway Administration (FHWA). NHI provides leadership and resources for the development and delivery of training and education programs to improve the quality of our Nation's highway system and its intermodal connections. Our mission is to educate, train, and develop the current and future transportation workforce to improve the safety, efficiency, effectiveness, and quality of America's surface transportation system. We actively pursue partnerships with public and private organizations and educational institutions to more effectively meet our mission goals.

Established by Congress in 1970, NHI provides training, resource materials, and educational opportunities to the surface transportation community. NHI programs are structured to meet the Nation's need for qualified and skilled transportation workers. They include:

- Training for professionals and technicians
- Technical assistance for local and Native American tribal agencies
- Educational grants for prospective transportation professionals and college faculty

NHI courses are instrumental in developing core competencies and new skills for the surface transportation workforce and in transferring leading technology and current policies in the U.S. and abroad. Incorporating current adult learning principles, the courses have clear learning outcomes to maximize knowledge and skills development. The courses also provide a learner-centered environment that stimulates useful interaction among participants and instructors.

NHI is authorized to award International Association of Continuing Education and Training continuing education units. We strive to ensure the participant leaves the training not only with additional knowledge but the ability to apply that knowledge to their work. Our instructors contact the host prior to the session to determine local issues or points of significance to emphasize. As a result of their expertise, instructors are able to modify case studies and exercises to make them pertinent to the participants' experiences.

KEY ACCOMPLISHMENTS

In cooperation with our valued partners, we celebrate several key accomplishments this year.

- NHI successfully launched Web-Conference Training and Web-Based Training to thousands of learners.
- In concert with the FHWA Office of Planning and the Federal Transit Administration, our team delivered FHWA-NHI-151041 Linking Planning & NEPA: Toward Streamlined Decision Making (LPN) to twenty States across the country. The LPN training effort involves a 1-day Executive Session for senior leadership, followed by a 3-day Managers Workshop.
- We launched FHWA-NHI-151039 Applying GIS and Spatial Data Technologies to Transportation.
- Our collective FHWA team developed a 3-day course on the application of Context Sensitive Solutions. This practical course, managed by FHWA's Federal Lands Highway Office, provides participants with a variety of tools and techniques to deliver timely projects.
- A very successful course, "Federal-Aid Highways," was developed and presented 25 times. The course focuses on general requirements and laws that govern the Federal Aid Highway Program.
- With leadership from the FHWA's Office of Operations, we launched several new courses in Operations, Freight, and ITS – FHWA-NHI-133075 Freeway Traffic Operations, FHWA-NHI-137044 Improving Highway Safety with ITS, FHWA-NHI-137029 Turbo Architecture Software Training, FHWA-NHI-137026 Managing High Technology Projects in Transportation, FHWA-NHI-139002 Uses of Multimodal Freight Forecasting in Transportation Planning, FHWA-NHI-137013 Deploying the National Intelligent Transportation System (ITS) Architecture.
- In cooperation with the FHWA Office of Infrastructure and a strong group of partners, four new courses were developed – FHWA-NHI-130082 LRFD for Highway Bridge Substructures and Earth Retaining Structures, FHWA-NHI-130088 Bridge Construction Inspection, FHWA-NHI-132078 Micropile Design and Construction, FHWA-NHI-132079 Subsurface Investigation Qualification.
- NHI also updated the acclaimed FHWA-NHI-420018 Instructor Development Course and delivered Developing High Impact Training courses via Web Conference Training.

SAFETEA-LU PROVISIONS

SUPPORT TRAINING, EDUCATION, AND WORKFORCE DEVELOPMENT

A important provision in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), (Sec. 5204(e)) legislation provides that funds from any of five major state core programs may be used to support 100% of activities related to training, education and workforce development; state matching funds will not be necessary. The core programs are the Surface Transportation Program (STP), National Highway System (NHS), Bridge Program, Interstate Maintenance, and Congestion Mitigation and Air Quality (CMAQ).

Funds may be used, at the discretion of the states, for employee training, education and professional development, and for transportation career "pipeline" activities including "surface transportation career awareness, student internships and university or community college support." Professional development could include training programs, academic course study, support for short term work details or "rotational" assignments for the purpose of employee development, but may not include employee salaries.

Other workforce development provisions included in SAFETEA-LU are:

- Garrett Morgan Program: funds program for outreach to elementary school and secondary school students for transportation career awareness. - $1.25 million per year, FY06-09; program established in 1997, funded for the first time in SAFTEA-LU) - Sec. 5204(d).
- Transportation Education Development Pilot Program: establishes funding and pilot program to develop training and education curriculums for surface transportation workers. - $1.875 million per year, FY06-09; 75% federal funding; Sec. 5204(f).
- Freight Planning and Capacity Building Program: establishes program to support enhancements in freight transportation planning to better target investments, and to strengthen the decision making capacity of State transportation departments and local transportation agencies for freight transportation planning and systems. -$875,000 per year, FY06-09; Sec. 5204(h).
- Surface Transportation Congestion Relief Solutions Technical Assistance and Training: establishes program to disseminate the results of the surface transportation congestion solutions research initiatives to assist State transportation departments and local transportation agencies with improving approaches to surface transportation congestion measurement, analysis, and project programming. - $750,000 per year, FY06-09; Sec. 5502(c)(d).
- Transportation Scholarship Opportunities Program: provides authority for the USDOT Operating Administrations and for "non-governmental institutions" to establish scholarship and mentoring programs. Most USDOT Operating Administrations did not have statutory authority in this area prior to SAFTEA-LU. Operating Administration participation is discretionary, funding is not provided; Sec. 5505.

For more information, contact Clark Martin, Federal Highway Administration, Office of Professional and Corporate Development (clark.martin@fhwa.dot.gov).

AFFILIATE PROGRAMS

The Affiliate Programs' mission is to promote education, training, and technology sharing among local, tribal, State, National, and international transportation partners. These programs will enhance existing partnerships and develop new partnerships to create a continuous learning environment for the transportation community. The Affiliate Programs is an umbrella program encompassing the Local Technical Assistance Program (LTAP)/Tribal Technical Assistance Program (TTAP), Partnership Program, and International Program.

LOCAL TECHNICAL ASSISTANCE PROGRAM (LTAP)/TRIBAL TECHNICAL ASSISTANCE PROGRAM (TTAP)

The Local Technical Assistance Program (LTAP) and Tribal Technical Assistance Program (TTAP) play a critical role in the national surface transportation system. They work to advance partnerships with professional associations, provide outreach to local transportation agencies, industry and academia, and further professional development.

There are 58 LTAP/TTAP centers; one in each state, one in Puerto Rico, and seven regional tribal centers serving Native American tribal governments. Averaging around three full-time employees per center, the LTAP/TTAP staff work to foster a safe, efficient, and environmentally sound transportation system by improving the skills and knowledge of the local transportation workforce and decision makers. By capitalizing on their relationships at the local, regional, and national levels, program staff across the country work to efficiently transfer innovative technologies and best practices throughout the transportation workforce community.

Concentrating on the important areas of safety, infrastructure management, and workforce development, LTAP/TTAP Centers deliver value as mission-critical providers of training, technical assistance, and technology transfer in these areas. Program customers are drawn primarily from the 38,000 local agencies and tribal governments across the Nation. Among these partners and customers, LTAP/TTAP Centers provide more than 5,000 training sessions to over 120,000 participants per year.

PARTNERSHIP PROGRAM

Under the Partnership Program the Affiliate Programs Team is responsible for maintaining relationships with the American Public Works Association (APWA), National Association of County Engineers (NACE), and National Institute for Certification in Engineering Technologies (NICET) and for carrying out the professional development aspects of partnerships as well as outreach to industry, affiliates and other members of the transportation community. A major aspect of the APWA partnership is the LTAP/TTAP Clearinghouse, which is operated by APWA under contract with FHWA.

INTERNATIONAL PROGRAM

The Affiliate Programs Team in cooperation with the Office of International Programs coordinates and arranges for international training and professional development activities. These activities inform the U.S. transportation community of technological and innovative programs abroad, promote U.S. transportation expertise internationally, and increase technology sharing between the U.S. and the international community.

UNIVERSITIES AND GRANTS PROGRAMS

The mission of the Universities and Grants Programs (U&GP) is to provide management, leadership, and direction for transportation education and research through university-based programs. U&GP is directly responsible for the administration of the Dwight David Eisenhower Transportation Fellowship Program (DDETFP). The DDETFP is congressionally mandated by legislation (ISTEA , TEA-21 & SAFTEA-LU) and funded at approximately $2 million annually. U&GP works cooperatively with more than 850 colleges and universities, including Minority Institutions of Higher Education.

U&GP'S PRIMARY OBJECTIVES ARE TO:

- Enhance FHWA's university-based programs and other academic programs
- Advance transportation education, research, and workforce development
- Provide fellowships, internships, and partnerships to attract students to pursue degrees and careers in transportation
- Conduct data analyses related to recruitment, diversity, and workforce development
- Track students through the transportation education pipeline into the transportation workforce
- Facilitate coordination and integration for DOT's student transportation education pipeline (STEP) programs

DWIGHT DAVID EISENHOWER TRANSPORTATION FELLOWSHIP PROGRAM (DDETFP)

The goal of the DDETFP is to attract qualified students to the field of transportation education and research, and advance transportation workforce development. Initiated in 1992, the DDETFP awards fellowships to students pursuing degrees in transportation-related disciplines. To date, approximately 2000 fellowships have been awarded. This DOT-wide program is intended to increase the applicant pool for the transportation industry and encompasses all modes of transportation.

In 2005, 165 Eisenhower Fellowships were awarded. Following is a list of the Eisenhower Fellowship categories:

- Eisenhower Graduate (GRAD) Fellowships - enable students to pursue master's degrees or doctorates in transportation-related fields at the university of their choice.
- Eisenhower Grants for Research Fellowships (GRF) - acquaint undergraduate and graduate students with transportation research, development, and technology transfer activities at U.S. Department of Transportation facilities.
- Eisenhower Historically Black Colleges and Universities (HBCU) Fellowships - provide HBCU students with additional opportunities to enter careers in transportation. They also serve as a feeder for other Eisenhower fellowships.
- Eisenhower Hispanic Serving Institutions (HSI) Fellowships - provide HSI students with additional opportunities to enter careers in transportation. They also serve as a feeder for other Eisenhower fellowships.
- Eisenhower Tribal Colleges and Universities (TCU) Fellowships - identify transportation-related activities and provide student fellowship opportunities at TCUs. They also serve as a feeder for other Eisenhower fellowships.
- Eisenhower People with Disabilities (PWD) Fellowships - provide additional opportunities for people with disabilities to enter careers in transportation. The PWD also serves as a feeder program for other Eisenhower fellowships.
- Eisenhower Intern Fellowships (IF) - provides students with opportunities to perform transportation-related research, development, technology transfer, and other activities at public and private-sector transportation organizations.

MAJOR TRANSPORTATION EDUCATION PIPELINE INITIATIVES ARE:

DWIGHT DAVID EISENHOWER TRANSPORTATION FELLOWSHIP PROGRAM (DDETFP)

A DOT-wide program designed to attract qualified students to the field of transportation education and research, and advance transportation workforce development. DDETFP is intended to help upgrade the scope of knowledge of the entire transportation community in the United States and encompasses all modes of transportation. Contact: Ms. Gwen Sutton, NHI, (703) 235-0538, http://www.nhi.fhwa.dot.gov

UNIVERSITY TRANSPORTATION CENTERS PROGRAM (UTCP)

A program that advances US transportation-related technology and expertise through the mechanisms of education, research, and technology transfer at university-based centers of excellence. Contact: Ms. Gwen Sutton, NHI, 703-235-0538, http://utc.dot.gov

SUMMER TRANSPORTATION INTERN PROGRAM FOR DIVERSE GROUPS (STIPDG)

STIPDG is a 10-week college-level summer program for undergraduate, graduate, and law students that involves research as well as hands-on career experiences at the US DOT. Contact: Ms. Lorraine Day, Office of Human Resources, (202) 366-1159, http://www.fhwa.dot.gov/education/stipdg.htm

NATIONAL SUMMER TRANSPORTATION INSTITUTES FOR SECONDARY STUDENTS (NSTI)

The NSTI is a 4-6 week awareness program at 40 college campuses to motivate and to introduce secondary students to professions in the field of transportation. Contact: Ms. Zakiah Latif-Lynch, Office of Civil Rights, (202) 366-1585, http://www.nrc.scsu.edu

GARRETT A. MORGAN TRANSPORTATION AND TECHNOLOGY FUTURES PROGRAM (GAMTTFP)

In 1998, the Secretary of Transportation initiated the GAMTTFP to prepare the workforce for the 21st century by reaching 2 million youth. The GAMTTFP provides a model to increase transportation awareness by emphasizing the relationship between math, science, and technology to the field of transportation. Contact: Ms. Lorraine Day, Office of Human Resources, (202) 366-1150

KNOWLEDGE MANAGEMENT/DISTANCE LEARNING

The mission of the Knowledge Management and Distance Learning Team is to cultivate, nurture, and leverage FHWA's collective knowledge to effectively accomplish agency business goals and objectives. The team provides organizational leadership and direction to FHWA's management and staff to implement knowledge management principles and practices, institutionalize knowledge sharing, and enable creation of a comprehensive learning organization. Innovative tools such as communities of practice, expertise location, and distance learning are used as enablers to:

- Build and maintain networks
- Reduce the learning curve for new employees
- Capture agency expertise and share practices
- Advance corporate and professional development
- Enhance service to our customers and partners across the highway community

Also, working closely with NHI's Training Program Team, Knowledge Management and Distance Learning provides the framework and guidance for blended learning opportunities using a variety of distance learning methodologies including Web-based learning.

DISTANCE LEARNING

Distance Learning continues to receive attention. Development emphasis is currently centered on short courses and those that involve policy or defined processes. Regardless of the delivery medium, NHI courses are taught to the same standard and to the same course outcomes. However, instructional methods are adapted to the delivery medium.
Some of the e-Learn@NHI initiatives:

- Offering Web conferencing services to 70 sites throughout the United States. While in its infancy, the Web conferencing option is proving to be a valuable information and training medium
- Working with several States to deliver video conferencing courses
- Contracting to develop interactive Web-based training. Titles will be announced throughout the year

As more states require CEUs for professional education and development, distance learning may prove to be the methodology of choice for busy engineers. Customers can access courses using a variety of delivery systems without having to leave their home base. Web-based training responds to the professional engineer's need for flexible, time-sensitive, cost-effective training without travel or even time away from work. Courses can be taken anytime from any location with Web access using a 56K modem.

The e-Learn@NHI Team is eager to discuss how our initiatives can help you meet your professional development needs. Please contact Debbie Gwaltney for further information at 202-366-9379.

PROGRAM IMPROVEMENT

The Program Review and Quality Team's mission is to improve customer satisfaction and organizational performance by assisting FHWA leaders and units to improve processes, products, and services. The team has a major responsibility for supporting FHWA's Program Reviews, and helping assure that those reiews are successful. The team also champions the advancement of the Quality Cornerstones (Leadership, Strategic Planning, Customer and Market Focus, Information and Analysis, Human Resource Development, and Business Results) throughout FHWA by applying continuous improvement principles and practices.

The team manages and delivers consultation and training activities to advance the understanding of quality and support the offices as they apply continuous improvement principles. It works with offices throughout the agency to enhance the efficiency and effectiveness of their operations. The team surveys customers to determine how well FHWA is communicating and serving the needs of partners and customers. It assists offices as they review their internal processes and work on developing operational methods that support the performance measures and the FHWA strategic goals.

NHI INSTRUCTOR CERTIFICATION

The NHI Instructor Certification Program is only open to FHWA employees and FHWA contract employees who are actively teaching NHI courses. Anyone may attend FHWA-NHI-420018 Instructor Development Course, and all participants who successfully complete the course will receive a Certification of Completion. They will be considered "Candidates for Instructor Certification" but will NOT be "Conditionally Certified." NHI believes that a key element to certifying an instructor is to actually observe an instructor in the classroom during the delivery of properly designed curriculum material, and to provide immediate feedback for improvement. Since NHI's resources will not allow for the observation of instructors beyond those teaching for NHI, NHI will provide guidance to agencies that want to establish their own instructor certification programs.

WHAT IS THE NHI INSTRUCTOR CERTIFICATION PROGRAM?

NHI has developed a certification process to provide standards for adult instruction and a method for continuous improvement. This approach is built on a set of instructor competencies selected from a validated list of the American Society of Training and Development (ASTD) competencies:

- Application of Adult Learning Theory
- Communication Skills
- Facilitation/Trainer Skills
- Positive Behavior Modeling Skills
- Classroom Management
- Subject Matter Expertise

WHO IS ELIGIBLE TO BECOME AN NHI CERTIFIED INSTRUCTOR?

1. FHWA employees who have been approved for technical competency and subject matter expertise by their Program Office in FHWA Headquarters and who are actively teaching an NHI course.
2. FHWA contract employees who are on a contract list of approved instructors and are actively teaching an NHI course.

HOW TO BECOME AN NHI CERTIFIED INSTRUCTOR?

Step 1. Meet the eligibility requirements above.
Step 2: Submit a request to NHI to be observed for certification by a Master Trainer. The request should be submitted at least 2-3 months in advance of the observation. It must take place at a regularly scheduled course, not a pilot presentation, and the instructor must present multiple lessons during the course. Prior to the observation, the Master Trainer will discuss the requirements for certification with the instructor and will provide the criteria against which the instructor will be evaluated. The observation typically lasts one day. Throughout the observation the Master Trainer will provide feedback during breaks in teaching to discuss what is going well and what areas need to be improved. Upon successfully demonstrating required competencies and skills in an actual teaching situation, an instructor will be awarded NHI Instructor Certification.

If, in the opinion of the Master Trainer, the instructor needs to demonstrate a better grasp of the competencies and skills required for certification, a self-improvement plan would be developed that may include attendance in FHWA-NHI-420018 Instructor Development Course. After completing the self-improvement plan, the instructor may request a second observation.

HOW TO GET RECERTIFICATION?

No, recertification is not a requirement. However, NHI staff will review and evaluate information from multiple sources to validate ongoing performance and adherence to the principles upon which certification was granted.

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Fax: (405) 744-7268
Center E-mail: selfjt@okstate.edu
Web Site: http://clgt.okstate.edu/tribal.htm
Primary Contact: James Self
Director: James Self selfjt@okstate.edu

FEDERAL HIGHWAY ADMINISTRATION LTAP PROGRAM
Office of Professional and Corporate Development, Affiliates Program, 4600 N. Fairfax Drive, Suite 800, Arlington, VA 22203 USA
Web site: http://www.ltapt2.org
Affiliate Programs Team Leader: Al Alonzi (703) 235.0552, Al.Alonzi@fhwa.dot.gov

LTAP CLEARINGHOUSE
American Public Works Association, 1401 K Street NW, 11th Floor, Washington, DC 20005
Telephone: (202) 218-6724, (202) 218-6726
Fax: (202) 218-6725
E-mail: ltap@apwa.net

NATIONAL LTAP ASSOCIATION (NLTAPA)
President: Terry McNinch, Director, Michigan Local Technical Assistance Program, 309 Grover C. Dillman Hall, 1400 Townsend Drive, Houghton, MI 49931-1295
Telephone: (906) 487-2102
E-mail: tlmcninc@mtu.edu
Web Site: www.ltap.org

FORM 1530 INSTRUCTIONS

SECTION A - COURSE REQUEST

The following instructions are for only the sections that need additional clarificaton. Please complete all of section A for a course session request.

1. COURSE INFORMATION

- Course Number - Enter the course number. The course number begins with an FHWA-NHI prefix.
- Course Title - Enter the course title.
- Length - Enter the length of the course in days. This information is particularly important for courses that can be taught in varying lengths.
- Fee - Enter the course fee and indicate whether it is charged "Per Participant" or "Per Course." This information is particularly important for courses that can be taught in varying lengths.
- Number of seats for public - The number of seats that will be made available to the public. This information will be advertised on the NHI Web site.

2. TRAINING LOCATION

- City - Enter the city where training will take place.
- State - Enter the State where training will take place.

4. HOSTING AGENCY

- Hosting Agency - Name of the agency hosting the course.

5. LOCAL COORDINATOR

- Local Coordinator - Name of the person who will be responsible for registration and coordination.
- Phone - The phone number where the local coordinator can be reached.
- Fax - The number where the local coordinator can receive faxes.
- E-mail - The local coordinator's e-mail address.

6. SHIPPING ADDRESS FOR MATERIALS

- Name - The person shipped materials should be addressed to.
- Phone - The phone number of the person shipped materials should be addressed to.

7. BILLING ADDRESS

- Fill out this section only if the billing address is different from the local coordinator's address. If it is the same, please check the "same as above" box. [or whatever the box says]

8. REQUESTING OFFICIAL

- The requesting official is the person authorizing this training session. Fill out this section only if the requesting official and the local coordinator are NOT the same person. If they are the same person, only a signature is necessary.

9. FED TAX ID

- This information is necessary for billing purposes.

SECTION B - CONFIRMATION (TO BE COMPLETED BY NHI TRAINING)

Do not fill out this section. It will be completed by NHI training.

U.S. Department of Transportation
Federal Highway Administration

NATIONAL HIGHWAY INSTITUTE

NATIONAL HIGHWAY INSTITUTE
ON-SITE COURSE REQUEST

Fax this form to the Course Scheduler at (703) 235-0577

Section A - COURSE REQUEST

1. COURSE INFORMATION

Course Number FHWA-NHI- _____ Course Title _____

Length _____ (days) Fee $ _____ ☐ Per Participant ☐ Per Course Number of seats for public: _____

2. TRAINING LOCATION

City _____ State _____

3. REQUESTED DATE _____ **ALTERNATE DATES** _____

4. HOSTING AGENCY _____

5. LOCAL COORDINATOR

Name _____

Street _____

City _____ State _____ Zip _____

Phone _____ Fax _____

E-mail _____

6. SHIPPING ADDRESS FOR MATERIALS

☐ Same as local coordinator (Street address only)

Name _____

Street _____

City _____ State _____ Zip _____

Phone _____

7. BILLING ADDRESS ☐ Same as above

Name _____

Street _____

City _____ State _____ Zip _____

Phone _____ Fax _____

E-mail _____

8. REQUESTING OFFICIAL

(If different from Local Coordinator)

Name _____

Title _____

Phone _____ Fax _____

Signature Date

_____

9. FED TAX ID # _____

Section B - CONFIRMATION (This section to be completed by NHI Training)

1. CONFIRMED COURSE DATE _____ **2. CONTRACTOR** _____

Course Number _____ Course Title _____

3. INSTRUCTOR

Name _____ Phone _____ Fax _____

E-mail _____

4. NHI TRAINING PROGRAM MANAGER

Name _____

E-mail _____

Phone _____ Fax (703) 235-0593

5. AUTHORIZING OFFICIAL

Authorizer _____

E-mail nhitraining@fhwa.dot.gov

Phone (703) 235-0534 Fax (703) 235-0577

Signature Date

_____

SPECIAL NOTE: The course material will be shipped directly to the local coordinator unless we are requested to do otherwise. The local coordinator should use the packing list enclosed with each shipment to inventory the materials immediately upon receipt. If the course material has not arrived 2 weeks prior to the scheduled presentation or if there are any questions on the arrangements, the local coordinator should contact the NHI Training Program Manager listed in Section B.

HOW CAN WE HELP?

We want to provide you with training courses that help you enhance your job performance and advance your transportation career. Please take a few minutes to complete this survey card and let us know how we can improve our current training courses or provide new training courses to help you and your team. Once you have completed this postage-paid survey card, simply tear it off and put it in the mail.

1. Do the currently offered courses cover your current training needs?
Yes ____ No____
If no, what courses could be added? _____

2. What other information can we provide you that would be helpful?
_____

3. How can NHI improve its service to better meet your needs?
_____

4. What would be your preferred training delivery medium?
Instructor-Led Training ____ Web-Based Training ____ Web Conference Training____

Additional Comments:
_____
_____
_____

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Additional Comments:
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WHAT DO YOU THINK OF OUR CATALOG?

We want your input! Please take a few minutes to complete this survey card and let us know how we can make our catalog a better training resource for you and your team. Once you have completed the survey, simply tear off the postage-paid survey card and put it in the mail.

1. Is the 2006 catalog easy to use? Yes ____ No____
If no, why not?_____
2. Does the catalog have enough information for you to make training decisions? Yes ____ No____
If no, what other information would be helpful to include? _____
3. Is the registration/host information easy to understand? Yes ____ No____
If no, why not?_____
4. Is it helpful to have the additional contact information in the back of the catalog? Yes ____ No____
5. What media do you prefer when reading about our courses? Catalog ____ CD-ROM ____ Internet ____
6. When would you like to receive the catalog? October ____ January ____ Other____
7. Are you able to access the Internet? Yes ____ No____
8. How do you prefer to register? Web____ Phone____ Mail____ Fax____
9. Are you a training decision maker ____ or an individual student____?
10. What other information can we provide you that would be helpful?

_____

Additional Comments:

_____

_____

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Additional Comments:

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INTERNATIONAL ASSOCIATION FOR CONTINUING EDUCATION AND TRAINING

The International Association of Continuing Education and Training (IACET) recently approved the National Highway Institute (NHI) to award IACET continuing education units (CEUs). Courses successfully completed after January 1, 2004, are eligible for IACET CEUs.

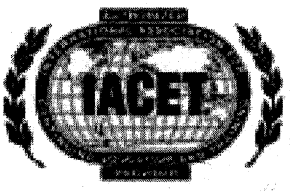
IACET is an independent, non-profit association whose goal is to ensure quality continuing education for professionals. For an organization to become an IACET approved continuing education unit provider, it must demonstrate that it designs and develops training in accordance with proven adult learning theory and recognized instructional systems design practices. Each course description in the NHI Catalog includes the number of CEUs awarded upon successful completion of the course.

There is a trend by states to require annual professional education for professional employees coupled with the need to make every dollar committed to training count. Recognition by IACET assures both the employee and the employer that taking a NHI course is a valuable use of time and scarce training dollars.

One CEU is awarded for every ten contact hours of training led by a qualified instructor. Lunch periods and breaks are not calculated when determining the number of contact hours. Thus, in an eight hour day, there are six contact hours of instruction for an award of 0.6 CEU per day. In addition, NHI is approved to award CEUs for its distance learning training. That training may take the form of Web-based training, Web-based conferencing, video conferencing, self-paced or any combination of the various methods.

On occasion, there may be adjustments to the course length to accommodate course hosting location conditions. In that event, the number of CEUs awarded will be adjusted to reflect the actual contact hours.

NHI will maintain individual training records for seven years for the CEUs awarded for successful completion of courses, effective January 1, 2004. Individuals and their employers are also encouraged to maintain their own training records including course name, class dates, instructor name, class roster and CEUs awarded.



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4600 N. Fairfax Drive Suite 800 Arlington, VA 22203
(703) 235-0500 1-877-558-6873 Fax (703) 235-0593

www.nhi.fhwa.dot.gov