NHI Catalog

Improving the Performance of the Transportation Industry Through Training

This copy was generated on January 27, 2021

U.S. Department of Transportation
Federal Highway Administration

Office of Technical Services

NHI
NATIONAL HIGHWAY INSTITUTE

CATEGORY ICONS

These NHI category icons can assist users in identifying the course category or multiple course categories. The category icons are listed below for your reference.

Structures

Geotechnical

Construction and Maintenance

Intelligent Transportation Systems (ITS)

Real Estate

Transportation Planning

Highway Safety

Site and Personal Safety

Financial Management

Pavement and Materials

Design and Traffic Operations

Hydraulics

Freight and Transportation Logistics

Environment

Business, Public Administration & Quality

Communications

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Generated on January 27, 2021
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BUSINESS, PUBLIC ADMIN, AND QUALITY

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ABOUT NHI

Who we are

The National Highway Institute (NHI) provides technical training to the highway transportation workforce to build skills and enhance job performance to improve the conditions and safety of our nations' roads, highways, and bridges.

As part of Federal Highway Administration's (FHWA) Office of Technical Services (OTS), NHI courses complement the targeted training and technical assistance of FHWA program offices, Resource Center, and Local and Tribal Technical Assistance Programs (LTAP/TTAP).

Our Training

NHI courses are instrumental in developing core competencies and new skills, as well as learning about leading technologies and current policies. Our instructors strive to ensure that participants leave training not only with additional knowledge, but also the ability to apply that knowledge directly to their work. NHI is an accredited training provider by the International Association of Continuing Education and Training (IACET), allowing participants to earn Continuing Education Units (CEUs) for completed coursework. NHI also is an approved provider of the American Institute of Certified Planners (AICP) certification maintenance (CM) credits.

NHI offers three types of training.

*Instructor-led Training (ILT)***:** These courses are held in-person and led by an instructor when an organization is available to host the session. Any organization may host a session by submitting a Host Request form on the NHI Web site.

*Web-conference Training (WCT)***:** These are live, online training sessions that take place at a set time. Web-conference Training sessions also require a host.

*Web-based Training (WBT)***:** These online courses are available 24/7 for six months after purchase by the registrant. Participants can control the pace at which they complete the course and may return to it as many times as they wish within the six-month access period.

LEARN MORE

For more information or to subscribe to our mailing list, please visit the NHI Web site at www.nhi.fhwa.dot.gov.

Customers with additional questions may also contact NHI Customer Service at NHICustomerService@dot.gov, or by phone during regular business hours, 7:30AM – 4:30PM Eastern Time, at (877) 558-6873.

NHI MAKES HOSTING EASY

HOSTING A COURSE

NHI partners with host organizations across the country to deliver training where it is needed most. NHI provides top-notch instructors and course materials, while hosting organizations provide the facilities and equipment.

WHO CAN HOST

Any United States-based organization can host Instructor-led Trainings (ILT), which are taught in classrooms, and/or Web-conference Trainings (WCT), which are taught online.

Our instructors may tailor individual sessions to meet the unique needs and array of experiences of the hosting organization, including covering local issues and topics of special interest. Instructors also may modify case studies and exercises based on their subject matter expertise to make them pertinent to the participant's experiences.

REQUESTING TO HOST

To host a course, domestic customers can go to the NHI Web site and complete the appropriate Host Request form (ILT or WCT). The process takes just a few minutes. First-time users will need to create a user profile and check the **INSTRUCTOR/HOST BOX**.

If you run into any difficulty when you are logging in, filling out a Host Request form, or navigating the NHI Web site, please contact NHI Customer Service for help at (877) 558-6873 during normal business hours, 7:30am – 4:30pm Eastern time. Customers may also email NHI Customer Service at nhicustomerservice@dot.gov.

To assist the host in preparation for and coordination of the session, a hosting checklist is provided on the NHI Web site. This checklist includes important information about hosting your NHI training session, as well as valuable "best-practice" information based on NHI's 40 years of experience with our hosting partners.

CONFIRMING SESSION DATES/LOCATIONS/TIMES

After the Host Request form is received, an Instructor or a member of the NHI team will contact the host to discuss scheduling options. While preferred dates may be specified on the Host Request form, sessions are not official until the hosting organization receives formal confirmation from NHI. Once official, NHI will list the session publicly on its Web site.

Enrollment Options

The host's contact information is listed with the scheduled session. Interested participants from outside the host's organization may contact the host to enroll. Alternatively, the host may ask NHI to open public seats, which allow outside participants to enroll through NHI.

The NHI Scheduler will email all participant information to the host and instructor prior to the session start date.

HOSTING EXPENSES

To host a session, hosts are charged the per-participant price multiplied by the class-size minimum, or the host is charged per participant if the session class size exceeds the minimum. Pricing cannot be reduced if the minimum class size is not met. Therefore, if registration for a course is lower than anticipated, it is important for the host to contact NHI prior to the cancellation period (15 business days) to discuss a remedy. Please note that with sufficient notice, NHI may be able to offer marketing support for the session.

Three seats in every session are reserved for Federal Highway Administration (FHWA) employees until 15 days before the course begins. FHWA participants do not count toward the participant minimum, but should be considered in the course maximum. Hosts are not charged for FHWA personnel or participants who have paid via the NHI Web site. Hosts are not charged for any instructor expenses.

Course hosts may charge participants an additional fee to recover all or part of costs associated with hosting the course. However, we ask hosts to contact the NHI Scheduler at (703) 235-0534 with this information prior to the confirmation of the session.

Course fees, which include the cost of materials for each participant, are listed with every course description.

RECEIVING COURSE MATERIALS

NHI will ship course material to the host approximately three weeks prior to the session start date.

PROVIDING PAYMENT

Payment may be made to NHI by check, money order, or credit card. Checks and money orders must be made payable to the National Highway Institute. To make credit card payments, contact NHI Customer Service at NHICustomerService@dot.gov or 1-877-558-6873. You are not charged for any FHWA participants or for participants who paid via the NHI Web site.

CANCELLATION POLICY/REFUNDS

To avoid incurring the $1,500 cancellation fee, cancellation must be requested no later than 15 business days prior to the course start date. If a course must be cancelled, the host is required to contact NHI Customer Service at 1-877-558-6873 during normal business hours, 7:30AM – 4:30PM Eastern Time, or email NHICustomerService@dot.gov. If the course materials have been sent, the host must contact NHI Customer Service.

In the event of cancellation, it is the host's responsibility to contact all participants (including those registered for public seats). There must be verification that the registrants received the cancellation notice. Notice to out-of-state participants is especially important so that they may alter or cancel any travel arrangements.

In the case of an emergency or weather-related closing, the cancellation fee will not apply. NHI follows the host office's policy regarding weather and emergency closings.

RECEIVING COURSE CREDIT

Many of the courses offered at NHI can be used toward obtaining Continuing Education Units (CEUs), Certification Maintenance (CM) credits, and Professional Development Hours (PDHs). Please select the headers below for more information about receiving credits.

Continuing Education Units

NHI has been recognized as an Accredited Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, NHI has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of this Accredited Provider status, NHI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard. 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 CEU Accredited Provider, it must demonstrate that it designs, develops, and delivers training in accordance with proven adult learning theory and recognizes instructional systems design practices. Each course description in the NHI catalog includes the number of CEUs offered upon successful completion of the course.

One CEU is offered for every ten contact hours of training led by a qualified instructor and qualified instruction. In order to be offered CEUs, a course participant must attend 100% of the course and must pass the course examination with a score of 70% or greater.

CEUs are offered to each course participant who fulfills the above stated requirement. NHI will maintain individual training records for seven years for the CEUs offered. Individuals and their employers are also encouraged to maintain their own training records including course name, class date(s), instructor name, class roster, and CEUs offered.

For proof of your CEU record, please contact NHI at NHICustomerService@dot.gov or 1-877-558-6873 and request your official transcript. Your official transcript displays a record of your NHI course history as well as the CEUs offered for each CEU-accredited course. Please allow at least one month after the completion of your course before requesting your official transcript.

Certification Maintenance Credits

NHI providers Certification Maintenance (CM) credits to assist professional planners become and maintain their membership as certified planners through the American Planning Association (APA).

American Institute of Certified Planners (AICP) is APA's professional institute. Certified Planners have demonstrated a commitment to high standards of professional practice and a mastery of theories and tools of planning.

NHI recognizes that the certification carries a high mark of distinction and requires planners to meet rigorous standards and maintain their expertise through continuing education. Planners must earn 32 CM continuing education credits every two years in order to stay up to date on the latest trends, technologies, and best practices. NHI courses will now help them achieve that requirement.

CM credits are measured in contact hours, so that 30 minutes of instructional time equals 30 minutes of CM credit (30 minutes contact = 0.5 CM credits; 1.0 contact hours = 1.0 CM credits). An event must be at least 30 minutes in duration to be eligible for CM credit.

Contact NHI Customer Service at NHICustomerService@dot.gov or 877-558-6873 to ask for an official transcript to be used by AICP to calculate CM credits. Please allow at least one month after the completion of your course before requesting your official transcript.

Professional Development Hours (PDHs)

NHI does not officially offer PDHs; however, it is possible to receive PDHs for your completed NHI training courses. To receive PDHs, please submit your course certificate (which indicates the contact hours assigned to the course) and/or your official transcript (which indicates the CEUs granted for a course) to the respective licensing agency. Upon consent, the licensing agency may convert your hours and/or CEUs into PDHs and proceed with the PDH awarding process.

PDHs are offered on a ratio of one contact hour to one PDH. When converting from CEU to PDH, please note that one CEU is equal to ten PDHs (or one PDH is equal to one-tenth of a CEU).

To request your official transcript with proof of CEU record and/or contact hours, please contact NHI at NHICustomerService@dot.gov or 1-877-558-6873. Your official transcript displays a record of your NHI course history as well as

the CEUs offered for each CEU-accredited course. Please allow at least one month after the completion of your course before requesting your official transcript.

NHI CERTIFICATES OF ACCOMPLISHMENT

NHI's Certificates of Accomplishment program was designed to recognize individuals who have successfully enhanced their depth and breadth of knowledge and expertise in specific disciplines or topic areas. Students would be eligible for the Certificate of Accomplishment when they have completed and passed a suite of related NHI course offerings. Currently, this program has been put on hold, although it is expected to be re-initiated in the near future.

More Information will be released as soon as it is available.

FREE WEB-CONFERENCE TRAINING

NHI is excited to offer FREE Web-conference training. These trainings save both time and money, while covering the latest topics and techniques within the transportation industry. All transportation professionals in the public and private sectors are invited to participate in these trainings.

Real Solutions Seminar Series

This series of free monthly Webinars features a guest speaker who presents problems or issues faced in the field and what steps were taken to solve them. In some sessions, additional panelists join the guest speaker to further discuss that seminar's topic.

Some past topics include:

- Best Practices for Integrating Climate Change Considerations in the Transportation Planning Process
- eLearning and Distance Learning within the Transportation Industry
- Smart Corridors and Complete Streets: A Look at Some Situations and Strategies
- Solving Old Traffic Noise Ills: Tennessee Type II Noise Abatement Program

Visit the *Real Solutions Seminar Series* section of the Web site to register for the next *Real Solutions* Web conference or to listen to past Web conferences.

Learn More

For more information, please visit the NHI Web site at **www.nhi.fhwa.dot.gov**.

Want to be notified when a free Web conference is scheduled? Email nhimarketing@dot.gov.

Course Number

FHWA-NHI-130053

Course Title

Bridge Inspection Refresher Training

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 condition and appraisal rating practices; and review the professional obligations of bridge inspectors.

This course is based on the "Bridge Inspector's Reference Manual," 2002 (updated in 2006) with reference to the AASHTO Manual as defined by the National Bridge Inspection Standards regulation.

Core course topics include inspector qualifications and duties, bridge mechanics, record keeping and documentation, fatigue and fracture in steel bridges, traffic safety features, safety, National Bridge Inventory (NBI) component ratings, superstructure type identification, inspection techniques and case studies for decks, superstructures, bearings, substructures, channels and culverts, and a mock bridge inspection classroom exercise.

Optional topics include fiber reinforced polymer, inspection of truss gusset plates, inspection of adjacent box beams, bridge site signing, structure inventory and appraisal overview, common NBI miscodings, element level ratings and timber superstructures.

For this version of the course (3-day), the host agency will need to select three (3) desired optional topics. Course instructors will contact the host prior to the course to complete a pre-course questionnaire, determine optional topics to be taught, and discuss the course schedule.

Outcomes

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

- Describe the current overall condition and condition trends for the nation's bridges
- Identify the recent National Bridge Inspection Standards (NBIS) revisions
- Accurately code National Bridge Inventory (NBI) items
- Identify and document inspection observations using standard methods
- Evaluate defects based on the 2008 AASHTO Manual for Bridge Evaluation
- Code NBI components using the Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges
- Determine if overall structure/structural member is fracture critical prone
- Accurately inspect and evaluate a bridge's four traffic safety features
- List the keys to ensuring a safe work environment
- Explain bridge responses and bridge mechanic principles

Target Audience

The target audience for this course includes Federal, State, and local agencies and private sector personnel employed in inspecting bridges or managing bridge inspection programs. The course is built to accommodate those that have completed comprehensive bridge inspection training (130055 or similar) or met the criteria for a bridge inspector under the State's procedures or requirements.

TRAINING LEVEL: Intermediate

FEE: 2021: $370 Per Person; 2022: N/A

LENGTH: 3 DAYS (CEU: 1.8 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130053A

Course Title

Bridge Inspection Refresher Training

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 condition and appraisal rating practices; and review the professional obligations of bridge inspectors.

This course is based on the "Bridge Inspector's Reference Manual," 2002 (updated in 2006) with reference to the AASHTO Manual as defined by the National Bridge Inspection Standards regulation.

Core course topics include inspector qualifications and duties, bridge mechanics, record keeping and documentation, fatigue and fracture in steel bridges, traffic safety features, safety, National Bridge Inventory (NBI) component ratings, superstructure type identification, inspection techniques and case studies for decks, superstructures, bearings, substructures, channels and culverts, and two (2) mock bridge inspection classroom exercises.

Optional topics include fiber reinforced polymer, inspection of truss gusset plates, inspection of adjacent box beams, bridge site signing, structure inventory and appraisal overview, common NBI miscodings, element level ratings and timber superstructures.

For this version of the course (3.5-day), the host agency will need to select six to seven (6-7) desired optional topics. Course instructors will contact the host prior to the course to complete a pre-course questionnaire, determine optional topics to be taught, and discuss the course schedule.

Outcomes

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

- Describe the current overall condition and condition trends for the nation's bridges
- Identify the recent National Bridge Inspection Standards (NBIS) revisions
- Accurately code National Bridge Inventory (NBI) items
- Identify and document inspection observations using standard methods
- Evaluate defects based on the 2008 AASHTO Manual for Bridge Evaluation
- Code NBI components using the Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges
- Determine if overall structure/structural member is fracture critical prone
- Accurately inspect and evaluate a bridge's four traffic safety features
- List the keys to ensuring a safe work environment
- Explain bridge responses and bridge mechanic principles

Target Audience

The target audience for this course includes Federal, State, and local agencies and private sector personnel employed in inspecting bridges or managing bridge inspection programs. The course is built to accommodate those that have completed comprehensive bridge inspection training (130055 or similar) or met the criteria for a bridge inspector under the State's procedures or requirements.

TRAINING LEVEL: Intermediate

FEE: 2021: $335 Per Person; 2022: N/A

LENGTH: 22 HOURS (CEU: 2.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130053V

Course Title

Bridge Inspection Refresher Training (VIRTUAL DELIVERY)

NHI-130053V Bridge Inspection Refresher is a 3-day, online virtual course andbuilds upon participants' prior knowledge of bridge inspection. The major goals of this course are to refresh the skills of practicingbridge inspectors in fundamental visual inspection techniques; review thebackground knowledge necessary to understand how bridges function; communicateissues of national significance relative to the nations' bridgeinfrastructures; re-establish proper condition and appraisal rating practices;and review the professional obligations of bridge inspectors. This course is based on the "Bridge Inspector's Reference Manual,"2002 (updated in 2006) with reference to the AASHTO Manual as defined by theNational Bridge Inspection Standards regulation. Core course topics include inspector qualifications and duties, bridgemechanics, record keeping and documentation, fatigue and fracture in steelbridges, traffic safety features, safety, National Bridge Inventory (NBI)component ratings, superstructure type identification, inspection techniquesand case studies for decks, superstructures, bearings, substructures, channelsand culverts, and a mock bridge inspection classroom exercise. Optional topics include fiber reinforced polymer, inspection of truss gussetplates, inspection of adjacent box beams, bridge site signing, structureinventory and appraisal overview, common NBI miscodings, element level ratingsand timber superstructures. For this virtual online version of the course (3-day), the host agency willneed to select three (3) desired optional topics. Course instructors willcontact the host prior to the course to complete a pre-course questionnaire,determine optional topics to be taught, and discuss the course schedule.

Outcomes

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

- Describe the current overall condition and condition trends for the nation's bridges
- Identify the recent National Bridge Inspection Standards (NBIS) revisions
- Accurately code National Bridge Inventory (NBI) items
- Identify and document inspection observations using standard methods
- Evaluate defects based on the 2008 AASHTO Manual for Bridge Evaluation
- Code NBI components using the Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges
- Determine if overall structure/structural member is fracture critical prone
- Accurately inspect and evaluate a bridge's four traffic safety features
- List the keys to ensuring a safe work environment
- Explain bridge responses and bridge mechanic principles

Target Audience

The target audience for this course includes Federal, State, and local agencies and private sector personnel employed in inspecting bridges or managing bridge inspection programs. The course is built to accommodate those that have completed comprehensive bridge inspection training (130055 or similar) or met the criteria for a bridge inspector under the State's procedures or requirements.

Training Level: Intermediate

Fee: 2021: $370 Per Person; 2022: N/A

Length: 18 HOURS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130054

Course Title

Engineering Concepts for Bridge Inspectors

This course was updated in 2010 and provides knowledge of the elementary concepts in bridge engineering for individuals involved with the inspection of in-service highway bridges. The course covers the purpose of highway bridge inspections and the roles of inspectors through the discussion of common bridge types and materials, material properties, and bridge components as well as details, loadings, stresses, strains, and deterioration of bridge materials and members. Participants will be asked to complete an exam at the end of the course, which they must earn a 70% or better on to successfully complete the course and receive a certificate of completion.

This course prepares participants for the 2-week, intensive Instructor-led course in bridge inspection, 130055 Safety Inspection of In-Service Bridges. Upon successful completion of 130054, participants will have met the prerequisite requirement for participation in the 130055 course.* If participants would like to enroll in the 130055 course, they will be required to demonstrate their certificate of completion for 130054 as proof that the prerequisite requirement has been fulfilled.

Participation in 130054 is not the only option to fulfill the prerequisite requirement for 130055.* Individuals have the option to 1) successfully complete the Web-based training and assessment (130101 Introduction to Safety of In-Service Bridges) or 2) for those with engineering backgrounds or prior knowledge and experience in the field of bridge inspection may "test-out" through a Web-based assessment (130101A Introduction to Safety Inspection of In-Service Bridges).

*Please note: Upon successful completion of this prerequisite course, you will be eligible to take the 130055 training course for up to 2 years.

Outcomes

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

- Describe the basis for bridge inspection
- Describe the various roles of the bridge inspection team
- Identify common bridge types and major components, primary members, secondary members and features of highway bridges
- Name the common materials used in bridges
- Describe the basic properties, strengths, and weaknesses of each material
- Describe basic engineering concepts
- Describe standard highway bridge loadings
- Describe the types, signs, and causes of structural distress
- Identify other features associated with bridges
- Name protective measures required to mitigate hazards

Target Audience

This course is designed for Federal, State, and local technicians and inspectors who have limited experience with the inspection of in-service highway bridges. Engineers without bridge experience or those who need a refresher in basic bridge design concepts will also benefit from the course. Individuals completing this course could serve on a bridge inspection team, but would require additional experience and training to qualify as team leaders.

Training Level: Basic

Fee: 2021: $575 Per Person; 2022: N/A

Length: 5 DAYS (CEU: 3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130055

Course Title

Safety Inspection of In-Service Bridges

NOTE: This course was updated in 2012 and 2015 and now contains mandatory prerequisite requirements for participants and host requirements in preparation for the field exercises. See details below.

This course is based on the 2015 FHWA "Bridge Inspector's Reference Manual (BIRM)" and provides training on the safety inspection of in-service highway bridges. The course includes two virtual bridge inspection exercises* facilitated using NHI's virtual bridge inspection (VBI) computer-based training (CBT) technology; instruction on critical findings, their identification and response; curriculum on the American Association of State Highway and Transportation Officials (AASHTO) element level inspection approach using the 2013 AASHTO Manual for Bridge Element Inspection 2015 Interim Revisions; and activities that maximize participant engagement throughout the course. This course does not go into depth on fracture critical, underwater, or complex bridge inspections. Other specialty courses, 130078 Fracture Critical Inspection Techniques for Steel Bridges and 130091 Underwater Bridge Inspection, cover these topics.

Participants will be asked to complete mid-term and end-of-course assessments each with a cumulative score of 70% or better to successfully complete the course and receive a certificate of completion. The sponsoring agency/State may monitor the examinations and retain the scores to qualify or certify bridge inspectors. Satisfactory completion of this course will fulfill the comprehensive bridge inspection training requirements of the National Bridge Inspection Standards. Note: Many States have additional requirements to become a bridge inspection team leader.

Participant Prerequisite Requirement: ALL participants must have met one of the three prerequisite requirements for participation in this course** and bring a course completion certificate bearing their name to the first day of the class. The passing score for all prerequisites is 70% or better. Individuals have the option to complete one of the following three prerequisite requirements: 1) 130054 Engineering Concepts for Bridge Inspectors, a 5-day Instructor-led course; 2) 130101 Introduction to Safety Inspection of In-Service Bridges, a 14-hour Web-based training and assessment; or 3) 130101a Prerequisite Assessment for Safety Inspection of In-Service Bridges, a Web-based assessment.

Host Requirements: Hosts must provide a training room large enough to accommodate at least 30 participants as well as the 15 NHI virtual bridge laptops (provided by NHI Instructors) that will be used for the virtual bridge exercises. Additionally, the host must ensure that ALL students have successfully met the prerequisite requirement** and have a valid course completion certificate for one of the three prerequisite options.

*Alternatively, the State can exercise the option to request to have a physical field trip in lieu of one or both virtual bridge exercises. If this option is exercised, the host/sponsoring agency is required to provide transportation for course participants to attend the field trip portion of this course at the host/sponsoring agency's own expense. The host must coordinate with the instructor to identify bridges for inspection during the field trip exercises, in advance of the course delivery.

**Please note: prerequisite must be completed within two years of the course start date. Additionally, it is recommended that prior to attending this course participants spend some time in the field, at bridge inspection sites, but not required.

Outcomes

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

- Discuss the duties and responsibilities of a bridge inspector and define inspection concepts including personal and public safety issues associated with bridge inspections
- List the inspection equipment needs for various types of bridges and site conditions
- Describe, identify, evaluate, and document the various components and deficiencies that can exist on bridge components and elements
- List design characteristics and describe inspection methods and locations for common concrete, steel, and timber structures
- Identify and evaluate the various culvert and waterway deficiencies
- Discuss the need to inspect underwater portions of bridges
- Describe nondestructive evaluation methods for basic bridge materials
- Demonstrate how to field inspect and evaluate common concrete, steel, and timber bridges

Target Audience

Federal, State, and local highway agency employees; and consultants involved in inspecting bridges or in bridge inspection management and leadership positions. A background in bridge engineering is strongly recommended. All participants must successfully complete (score 70% or better) one of the following three prerequisite requirements within two years prior to attending this training: 1)130054 Engineering Concepts for Bridge Inspectors ; 2) 130101 Introduction to Safety Inspection of In-Service Bridges ; or 3) 130101a Prerequisite Assessment for Safety Inspection of In-Service Bridges .

Training Level: Intermediate

Fee: 2021: $970 Per Person; 2022: N/A

Length: 10 DAYS (CEU: 6.7 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130056

Course Title

Safety Inspection of In-Service Bridges for Professional Engineers

In accordance with the National Bridge Inspection Standards (NBIS), a Bridge Inspector must successfully complete an FHWA-approved comprehensive training to become a certified Bridge Inspection Team Leader, or Program Manager. This FHWA-approved course, intended for Professional Engineers (PEs), is based on the "Bridge Inspector's Reference Manual" (BIRM) and provides training on the safety inspection of in-service highway bridges. It has been streamlined to better suit experienced Professional Engineers, while retaining strong emphasis on bridge inspection, documentation, and coding requirements. The course is a 5-day adaptation of FHWA-NHI 130055 training course and includes one virtual bridge inspection trip (VBI) or bridge inspection field trip; new instruction on critical findings, their identification and response; curriculum on the new AASHTO Element level evaluation; and updated activities that maximize participant engagement throughout the course. This course does not go into depth on stream stability and scour or fracture critical, underwater, or complex bridge inspections. NHI does have other specialty courses in stream stability and scour (FHWA-NHI-135047) fracture critical inspection (FHWA-NHI-130078) and underwater safety inspection (FHWA-NHI-130091).

Participant Prerequisite Requirement: ALL participants must be certified professional engineers (PE) showing evidence of such certification upon arrival at the course, have met one of the three prerequisite requirements for participation in the FHWA-NHI-130056 course* and bring a course completion certificate bearing their name to the first day of the NHI-FHWA-130056 session. The passing score for all prerequisites is 70% or better. Individuals have the option to complete one of the three prerequisite requirements: 1) Engineering Concepts for Bridge Inspectors (FHWA-NHI-130054), five-day instructor-led course; 2) Introduction to Safety Inspection of In-Service Bridges (FHWA-NHI-130101), 14-hour, Web-based training and assessment; and/or 3) Prerequisite Assessment for Safety Inspection of In-Service Bridges (FHWA-NHI 130101a), Web-based assessment.

Host Requirement: The host/sponsoring agency is required to provide transportation for course participants to attend the field trip portion of this course at the host/sponsoring agency's own expense if the VBI option is not chosen. Please coordinate with the instructor on the timing of the field trip. Additionally, the host must ensure that ALL students have successfully met the prerequisite requirements*, are certified Professional Engineers, and have a valid course completion certificate for one of the three prerequisite options.

*Please note: prerequisite must be completed within within the last 2 years prior to the FHWA-NHI-130056 session start date.

Outcomes

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

- Describe the importance of bridge inspection
- Define the fundamental bridge inspection concepts
- Describe the basic bridge materials
- Identify and discuss mitigation strategies for personal and public safety issues associated with bridge inspections
- List the inspection equipment needs for various types of bridges and site conditions
- Describe the various components of bridge inspection reporting
- Identify, evaluate, and document the various deficiencies that can exist on bridge decks
- List design characteristics of common concrete superstructures
- Describe inspection methods and locations for common concrete superstructures
- Identify and evaluate the various bridge bearing, substructure, and waterway deficiencies
- Discuss the need to inspect underwater portions of bridges
- Describe nondestructive evaluation methods for the three basic bridge materials
- Demonstrate how to field inspect and evaluate a common concrete bridge
- List design characteristics of common steel superstructures
- Describe inspection methods and locations for common steel superstructures

- Identify and evaluate the various culvert deficiencies
- Demonstrate how to field inspect and evaluate a common steel bridge
- List design characteristics of common timber superstructures

Target Audience

The target audience for this course are Federal, State, and local highway agency employees; and consultants with a Professional Engineer (PE) designation that are involved in inspecting bridges or in bridge inspection management and leadership positions. A background in bridge engineering is strongly recommended. All participants must successfully complete (score 70% or better) one of the following three prerequisite requirements within two years prior to attending this training: 1) 130054 Engineering Concepts for Bridge Inspectors; 2) 130101 Introduction to Safety Inspection of In-Service Bridges; or 3) 130101a Prerequisite Assessment for Safety Inspection of In-Service Bridges.

Training Level: Intermediate

Fee: 2021: $500 Per Person; 2022: N/A

Length: 5 DAYS (CEU: 3.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130078

Course Title

Fracture Critical Inspection Techniques for Steel Bridges

The course curriculum for this training reflects current practices, while addressing new and emerging technologies available to bridge inspectors. In addition, the course features exemplary training; hands-on workshops for popular types of nondestructive evaluation (NDE) equipment; and a case study of an inspection plan for a fracture critical bridge.

The first day of the training focuses on the concept of fracture critical members (FCMs), FCM identification, failure mechanics, fatigue in metal, and an overview of NDE methods. Day two includes demonstration sessions and hands-on applications of NDE techniques for dye penetrant, magnetic particle testing, Eddy current testing, 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. The course will conclude with a case study detailing the preparation of an inspection plan of a fracture critical bridge. Additionally, the course instructors will tailor discussions of topics based on State needs and requirements.

"This training will help inspectors evaluate bridges more thoroughly and will provide them with additional knowledge in how structures work and what can take place when they don't work," states Bill Drosehn, district bridge inspection engineer for the Massachusetts DOT.

Note: Hosts are required to provide safety goggles for all course participants as well as a well-ventilated space for conducting the dye penetrant demonstration.

Outcomes

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

- Identify fracture critical members (FCMs)
- Identify problematic details
- Identify areas most susceptible to fatigue and fracture
- Record defects
- Evaluate defects
- Evaluate nondestructive evaluation (NDE) methods
- Evaluate retrofit details

Target Audience

Those who will benefit most from this training are public and private sector bridge inspectors, supervisors, project engineers, and others responsible for field inspection of fracture critical steel bridge members. Prior to taking this course, participants should have completed NHI course 130055, Safety Inspection of In-Service Bridges, or possess equivalent field experience relative to bridges. Participants also should have a thorough understanding of bridge mechanics and bridge safety inspection procedures as required by the National Bridge Inspection Standards.

Training Level: Intermediate

Fee: 2021: $365 Per Person; 2022: N/A

Length: 3.5 DAYS (CEU: 2.5 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130081

Course Title

LRFD for Highway Bridge Superstructures - (4-Day ILT)

This updated course describes Load and Resistance Factor Design (LRFD) for steel and concrete highway bridge superstructures. It provides a combination of instructor-led discussions and workshop exercises. The course also includes LRFD theory applied to design examples and illustrates step-by-step LRFD design procedures. The curriculum follows the AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014 (AASHTO LRFD), including the approved 2015 Interims. 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. It affords hands-on experience in LRFD design and detailing of highway bridge superstructures. The curriculum materials are comprised of a comprehensive reference manual (FHWA Publication No. FHWA-NHI-15-047), lecture and workshop exercises intended to promote or enhance a working knowledge of AASHTO LRFD, and a participant workbook for lecture notes and exercises.

The curriculum includes the following major topics:

*Generals superstructure design considerations

*Preliminary design concepts for steel I-girder superstructures

*Steel I-girder design

*Preliminary design concepts for prestressed concrete superstructures

*Prestressed concrete I-girder design

*Spliced prestressed concrete girder bridges

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.
- Apply the appropriate current AASHTO LRFD specification articles dealing with selection of bridge type, size, and location.
- Apply the appropriate current AASHTO LRFD specification articles dealing with bridge economics.
- Apply the appropriate current AASHTO LRFD specification articles dealing with bridge materials.
- Describe the appropriate current AASHTO LRFD specification articles dealing with evolution of bridge design codes.
- Apply the appropriate current AASHTO LRFD specification articles dealing with bridge loads and load combinations.
- Apply the appropriate current AASHTO LRFD specification articles dealing with structural analysis.
- Apply the appropriate current AASHTO LRFD specification articles dealing with concrete bridge superstructure design.
- Apply the appropriate current AASHTO LRFD specification articles dealing with steel bridge superstructure design.
- Demonstrate the use of the current AASHTO LRFD specification requirements for superstructure design through the completion of step-by-step procedures, participant exercises, and design examples.

Target Audience

This course has been developed for the needs of practicing public and private sector structural engineers with one to ten 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 should complete the Web-based Training Course NHI-130081P prior to the first day of class. They should also have a working knowledge of the current AASHTO LRFD and should have relevant design experience using this specification on at least one bridge superstructure.

TRAINING LEVEL: Intermediate

FEE: 2021: $420 Per Person; 2022: N/A

LENGTH: 4 DAYS (CEU: 2.5 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130081A

Course Title

LRFD for Highway Bridge Superstructures (2-day Steel ILT)

This updated course describes Load and Resistance Factor Design (LRFD) for steel highway bridge superstructures. It provides a combination of instructor-led discussions and workshop exercises. The course also includes LRFD theory applied to design examples and illustrates step-by-step LRFD design procedures. The curriculum follows the AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014 (AASHTO LRFD), including the approved 2015 Interims.

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. It affords hands-on experience in LRFD design and detailing of steel highway bridge superstructures.

The curriculum materials are comprised of a comprehensive reference manual (FHWA Publication No. FHWA-NHI-15-047), lecture and workshop exercises intended to promote or enhance a working knowledge of AASHTO LRFD, and a participant workbook for lecture notes and exercises.

The curriculum material includes the following major topics:

*General superstructure design considerations

*Preliminary design concepts for steel I-girder superstructures

*Steel I-girder 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.
- Apply the appropriate current AASHTO LRFD specification articles dealing with selection of bridge type, size, and location.
- Apply the appropriate current AASHTO LRFD specification articles dealing with bridge economics.
- Apply the appropriate current AASHTO LRFD specification articles dealing with bridge materials.
- Describe the appropriate current AASHTO LRFD specification articles dealing with evolution of bridge design codes.
- Apply the appropriate current AASHTO LRFD specification articles dealing with bridge loads and load combinations.
- Apply the appropriate current AASHTO LRFD specification articles dealing with structural analysis.
- Apply the appropriate current AASHTO LRFD specification articles dealing with steel bridge superstructure design.
- Demonstrate the use of the current AASHTO LRFD specification requirements for superstructure design through the completion of step-by-step procedures, participant exercises, and design examples.

Target Audience

This course has been developed for the needs of practicing public and private sector structural engineers with one to ten 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 should complete the Web Based Training Course NHI-130081P prior to the first day of class. They should also have a working knowledge of the current AASHTO LRFD and should have relevant design experience using this specification on at least one bridge superstructure.

TRAINING LEVEL: Intermediate

FEE: 2021: $365 Per Person; 2022: N/A

LENGTH: 2 DAYS (CEU: 1.3 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 40

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130081B

Course Title

LRFD for Highway Bridge Superstructures (2-day Concrete ILT)

This updated course describes Load and Resistance Factor Design (LRFD) for concrete highway bridge superstructures. It provides a combination of instructor-led discussions and workshop exercises. The course also includes LRFD theory applied to design examples and illustrates step-by-step LRFD design procedures. The curriculum follows the AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014 (AASHTO LRFD), including the approved 2015 Interims.

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. It affords hands-on experience in LRFD design and detailing of concrete highway bridge superstructures.

The curriculum materials are comprised of a comprehensive reference manual (FHWA Publication No. FHWA-NHI-15-047), lecture and workshop exercises intended to promote or enhance a working knowledge of AASHTO LRFD, and a participant workbook for lecture notes and exercises.

The curriculum material includes the following major topics:

*General superstructure design considerations

*Preliminary design concepts for prestressed concrete superstructures

*Prestressed concrete I-girder design

*Spliced prestressed concrete girder bridges

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.
- Apply the appropriate current AASHTO LRFD specification articles dealing with selection of bridge type, size, and location.
- Apply the appropriate current AASHTO LRFD specification articles dealing with bridge economics.
- Apply the appropriate current AASHTO LRFD specification articles dealing with bridge materials.
- Describe the appropriate current AASHTO LRFD specification articles dealing with evolution of bridge design codes.
- Apply the appropriate current AASHTO LRFD specification articles dealing with bridge loads and load combinations.
- Apply the appropriate current AASHTO LRFD specification articles dealing with structural analysis.
- Apply the appropriate current AASHTO LRFD specification articles dealing with concrete bridge superstructure design.
- Demonstrate the use of the current AASHTO LRFD specification requirements for superstructure design through the completion of step-by-step procedures, participant exercises, and design examples.

Target Audience

This course has been developed for the needs of practicing public and private sector structural engineers with one to ten 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 should complete the Web Based Training Course NHI-130081P prior to the first day of class. They should also have a working knowledge of the current AASHTO LRFD and should have relevant design experience using this specification on at least one bridge superstructure.

Training Level: Intermediate

Fee: 2021: $280 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 40

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130081C

Updated Training WBT

Course Title

LRFD Design of Common Bridge Elements: Decks and Bearings

This course was recently updated to reflect the current AASHTO LRFD Bridge Design Specifications, 9th Edition. This course provides training to explain the design considerations for decks and bearings. It provides a summary of general deck design procedures, including an introduction to different types of bridge bearings, and provides specific design steps for the design of elastomeric bearings and High-Load Multi-Rotational Bearings (HLMRBs).

Outcomes

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

- Summarize deck design procedures, including the strip width and empirical design methods, and deck overhang design
- Identify different types of bridge bearings and their primary applications
- Identify elastomeric bearing components and list the steps required for their design
- Identify High-Load Multi-Rotational Bearing (or HLMRB) components and list the steps required for their design

Target Audience

The target audience for this course includes practicing public and private sector structural and bridge engineers with 0 to more than 20 years of experience. This includes agency and consultant structural designers, as well as project managers. Individuals taking these courses should have a minimum Bachelor of Science in Civil Engineering (BSCE) or equivalent degree. This course is intended for engineers that require experience with AASHTO bridge design provisions and updates.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 3 HOURS (CEU: .3 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130081D

Updated Training WBT

Course Title

LRFD Steel I-Girder Details Design

This course was recently updated to reflect the current AASHTO LRFD Bridge Design Specifications, 9th Edition. This course provides training to apply the key LRFD limit state verifications for specific details associated with steel girders. It includes a description of the LRFD design requirements for stiffeners, shear connectors, cross-frames, diaphragms, welded connections, and bolted field splices.

Outcomes

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

- Describe the function, behavior, and LRFD design requirements for transverse and bearing stiffeners and shear connectors
- Describe the function, behavior, and LRFD design requirements for cross-frames, diaphragms, and both bolted and welded connections
- Describe the function, behavior, and LRFD design requirements for bolted field splices

Target Audience

The target audience for this course includes practicing public and private sector structural and bridge engineers with 0 to more than 20 years of experience. This includes agency and consultant structural designers, as well as project managers. Individuals taking these courses should have a minimum Bachelor of Science in Civil Engineering (BSCE) or equivalent degree. This course is intended for engineers that require experience with AASHTO bridge design provisions and updates.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 4 HOURS (CEU: .4 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130081E

Updated Training WBT

Course Title

Prestressed Concrete Girder Topics

This course was recently updated to reflect the current AASHTO LRFD Bridge Design Specifications, 9th Edition. This course provides training to apply the key LRFD limit state verifications for prestressed concrete girders made continuous. It describes prestressed concrete bridge materials and prestressing losses and design considerations for prestressed girders made continuous.

Outcomes

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

- Describe prestressed concrete bridge materials and the causes of prestressing force losses
- Describe design considerations and required computations for prestressed girders made continuous

Target Audience

The target audience for this course includes practicing public and private sector structural and bridge engineers with 0 to more than 20 years of experience. This includes agency and consultant structural designers, as well as project managers. Individuals taking these courses should have a minimum Bachelor of Science in Civil Engineering (BSCE) or equivalent degree. This course is intended for engineers that require experience with AASHTO bridge design provisions and updates.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 2 HOURS (CEU: .2 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

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.

Training Level: Basic

Fee: 2021: $305 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130091

Course Title

Underwater Bridge Inspection

The latest changes to the National Bridge Inspection Standards (NBIS), which became effective January 13, 2005, require FHWA-approved bridge inspection training for all divers conducting underwater inspections. One method of meeting this requirement is the completion of an FHWA-approved underwater diver bridge inspection training course. Satisfactory completion of this 4-day course will fulfill the NBIS requirement.

This course provides an overview of diving operations that will be useful to agency personnel responsible for managing underwater bridge inspections.

Course topics include: methods of underwater inspection, underwater material deterioration mechanisms and inspection techniques, scour inspection techniques, underwater element-level rating, and underwater bridge inspection training. A final examination based on course content will be administered to participants.

Outcomes

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

- Explain the need and benefits of inspecting the underwater portions of bridge structures
- Describe typical underwater defects and deterioration, and identify conditions contributing to rates of deterioration
- Identify the types of inspection equipment available, and the advantages and limitations of each
- Identify procedures for planning and performing thorough and safe underwater bridge inspections
- Assign component and element level condition ratings for underwater components in accordance with NBIS and agency requirements

Target Audience

The course is intended for trained divers who require a knowledge base of underwater bridge inspection and evaluation techniques in order to meet the educational requirements of the NBIS for underwater bridge inspection training. The course would also be of interest to non-diver bridge inspectors, and FHWA, state, and local agency structural engineers.

Training Level: Basic

Fee: 2021: $420 Per Person; 2022: N/A

Length: 4 DAYS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130091B

Course Title

Underwater Bridge Repair, Rehabilitation, and Countermeasures

Underwater Bridge Repair, Rehabilitation, and Countermeasures is a two-day course that will provide training to design engineers, construction inspectors, resident engineers and inspection divers in techniques for selecting and executing repairs to below water bridge elements. The primary goal of this course is to enable design engineers to select, design, and specify appropriate and durable repairs to below water bridge elements. A secondary goal of this course is to train staff in effective construction inspection of below water repairs. This course may be presented as a follow-up to NHI Course No. 130091A, Underwater Bridge Inspections.

Outcomes

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

- Determine whether below water repairs can be completed "in the wet", or require a cofferdam (or similar).
- Describe typical environmental constraints to performing repairs below water.
- Describe three methods of achieving a dry construction site within a body of water.
- List three attributes of good concrete repair mix designs.
- Describe the differences between flexible and rigid concrete forming systems.
- Describe underwater concrete placement techniques.
- Write installation procedures for pile jackets.
- Describe three methods for repair of pier scour.
- Describe the benefits of cathodic protection for bridge substructures.
- Describe four stages of underwater repair activities for underwater construction inspection.

Target Audience

The course is intended for design engineers, construction inspectors, resident engineers and inspection divers who may be engaged in the design, specifications or inspection of repairs to bridge elements located in and below water. The course may be of interest to contract administrators responsible for bridge repair or rehabilitation projects. It is expected that participants will have a working knowledge of bridge terminology, construction materials, and traditional repair techniques. Participants may also have backgrounds in bridge maintenance, repair, or construction. The audience will include persons with a range of education and technical backgrounds.

Training Level: Basic

Fee: 2021: $365 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130092

Course Title

Load and Resistance Factor Rating of Highway Bridges

This course provides novice and experienced bridge engineers with the fundamental knowledge necessary to apply the most recent AASHTO LRFR Specifications to bridge ratings. This course introduces participants to applications of LRFR specifications that can be used to enhance bridge safety and to identify and discuss the steps to ensure successful transition to this new state-of-the art methodology.

Load Rating of Concrete and Steel Superstructure Bridges will provide participants with in-depth training in evaluating reinforced and prestressed concrete bridges and steel bridges using LRFR methodology. This course will illustrate the use of the current AASHTO evaluation specifications and state-of-the art evaluation methods with step-by-step examples.

Outcomes

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

- Describe the purpose of performing a load rating
- Identify the benefits of LRFR methodology
- Demonstrate the LRFR process and the general load rating equations
- Explain legal loads and their use in load rating
- Determine distribution factors for load rating
- Describe various state load rating programs
- State the LRFR limit states
- Select evaluation factors for load rating
- Describe the process for load posting and importance of load posting
- Describe the procedure for checking overload permits
- Demonstrate the application of LRFR requirements by completing load rating exercises
- Identify material deteriorations that affect load resistance of bridge components
- Calculate the flexural and shear resistance of a prestressed concrete girder for load rating
- Apply the load rating procedures for concrete slab bridges
- Describe the load rating of concrete culverts and substructures
- Calculate the flexural and shear resistance of a steel I-girder bridge for load rating
- Evaluate fatigue for load rating a steel girder bridge
- Describe the load rating of gusset plates and connections
- Describe the load rating of timber structures

Target Audience

The target audience for this course includes State DOT bridge and structures engineers and practitioners responsible for load rating of highway bridges. This includes engineers at all levels, including designers, consultants, reviewers, maintenance and management engineers, and load raters.Pre-training competencies: Individuals attending this course should have a minimum BSCE degree. They should also have a working knowledge of the current MBE and AASHTO LRFD and should have relevant experience using these specifications on at least one load rating project.

Training Level: Basic

Fee: 2021: $580 Per Person; 2022: N/A

Length: 4 DAYS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 40

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130093

Course Title

LRFD Seismic Analysis and Design of Bridges

This course is a comprehensive and practical training course that addresses the requirements and recommendations of the seismic provisions in both the AASHTO LRFD Bridge Design Specifications and the AASHTO Guide Specifications for LRFD Seismic Bridge Design. The course reviews the fundamental principles of seismic design including engineering seismology, seismic and geotechnical hazards, and methods for modeling and analyzing bridges subject to earthquake ground motions. The course also discusses seismic capacity design methods of piers, foundations, superstructures and connections. Additionally, the course presents the principles and pros and cons of common seismic isolation techniques, typical isolation hardware, and construction and testing requirements consistent with the recently updated AASHTO Guide Specifications for Seismic Isolation Design. Lastly, the final lesson of the course addresses screening, evaluation, and selection of retrofit strategies and measures following closely to the philosophy and process described in the FHWA Seismic Retrofitting Manual for Highway Structures.

Outcomes

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

- Identify geotechnical hazards and their impact on structural design
- Discuss what Earthquake Resisting Elements (ERE) are and explain why some are preferred and why some are not
- List three Describe the essential parts of the capacity design process
- Describe strategies for protecting bridge superstructures and methods for accommodating lateral displacements
- List the steps of foundation seismic design
- Describe the seismic analysis and design process in accordance with the AASHTO LRFD Bridge Design Specifications (LS) and AASHTO Seismic Guide Specifications (GS).
- Develop design response spectrum
- Describe common processes embedded in both the LS and GS and explain the key differences between the Force-Based (LS) and
- Displacement-Based (GS) Methods.
- Describe the key difference between the LS and GS seismic design methods
- List basic purposes, component and testing requirements for a seismic isolation system
- Describe common retrofitting measures for bridge superstructures, columns and foundations

Target Audience

This course is intended to engage a target audience of bridge engineers with zero and up to 20 years of experience, through instructor-led presentations, discussions, Q&A, group activities, walkthrough examples, hands-on student exercises, and demonstrations.

Training Level: Intermediate

Fee: 2021: $660 Per Person; 2022: N/A

Length: 5 DAYS (CEU: 3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130093A

Course Title

Displacement-Based Seismic Design of Bridges

This 3-day NHI training course 130093A entitled "Displacement-Based Seismic Analysis and Design of Bridges" is a shortened version of the 5-day NHI 130093 Course "LRFD Seismic Analysis and Design of Bridges" focusing specifically on the displacement-based design philosophies. It is a comprehensive and practical training course that addresses the requirements and recommendations of the seismic provisions in the AASHTO Guide Specifications for LRFD Seismic Bridge Design.

The 130093A course reviews the fundamental principles of seismic design including engineering seismology, structural dynamics (SDOF and MDOF), seismic and geotechnical hazards, and methods for modeling and analyzing bridges subject to earthquake ground motions. The 130093A course then discusses the principles and applications of capacity design to piers, foundations, superstructures and connections, and a brief introduction to the principles and some application of seismic isolation.

The course is accompanied by a prerequisite Web-based Training (WBT) 130093W Course "Introduction to Earthquake Engineering". The participants are highly recommended to complete the WBT course prior to the Instructor Led course. The WBT prerequisite course consists of 5 lessons including Introduction to Earthquake Seismology (L1); Damages to Bridges due to Strong Motion (L2); Single Degree of Freedom (SDOF) Systems and Response Spectra (L3); AASHTO Design Ground Motion Characterization (L4); and Introduction to Geotechnical Hazards (L5).

Outcomes

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

- Identify types of bridge damage to avoid
- Use acceleration and displacement response spectra to estimate peak forces and displacements
- List three elements of Capacity Design
- Describe the most common method for determining dynamic seismic response (i.e. multi-mode response spectrum)
- Calculate, by hand, inelastic displacements of simple pier systems
- Compare and contrast various bridge modeling techniques from stick models to finite element models
- Describe the relationship between detailing of transverse steel and ductility demand on a column
- Develop the design overstrength forces for a column
- Explain how liquefaction affects the seismic design process
- Describe strategies for protecting superstructures from damage
- Compute required support lengths in accordance with AASHTO design specifications
- Describe common processes embedded in both the LS and GS
- List the four seismic design categories in the GS and the key requirements for each category
- Describe the basic purpose of seismic isolation

Target Audience

This course is intended to engage a target audience of bridge engineers with zero and up to 20 years of experience, through instructor-led presentations, discussions, Q&A, group activities, walkthrough examples, and hands-on student exercises and design example practices.

Training Level: Intermediate

Fee: 2021: $355 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130095

Course Title

LRFD and Analysis of Curved Steel Highway Bridges

This five-day course expands the suite of FHWA services to assist State and local governments in a successful implementation of Load and Resistance Factor Design (LRFD). This course applies the principles of LRFD to the analysis and design of skewed and horizontally curved steel bridges. For structural applications, the curriculum follows the AASHTO LRFD Bridge Design Specifications, 5th Edition, 2010 (AASHTO LRFD Specifications). The training course focuses primarily on the analysis and design of skewed and horizontally curved steel I-girder bridges. However, the accompanying Reference Manual also includes design examples for horizontally curved steel box-girder bridges.

This course provides a combination of instructor-led discussions and workshop exercises. It includes LRFD theory applied to design examples, and it illustrates step-by-step LRFD design procedures for skewed and curved steel bridges. The course includes participant exercises in which students apply the LRFD principles to specific applications, guided walk-throughs in which the instructor guides the participants through design examples, case studies in which real-life examples are used to illustrate the principles being learned, as well as models to help participants observe firsthand the behavior of skewed and curved bridges.

The curriculum materials are comprised of a comprehensive Reference Manual, lecture and workshop exercises intended to promote and enhance a working knowledge of the AASHTO LRFD Specifications as they apply to skewed and curved steel bridges, and a Participant Workbook containing slides, design examples, exercises, narrative descriptions and room for participant notes.

The curriculum material contains the following major topics:

1. General introduction (course introduction and overview)
2. Fundamentals (system behavior, torsion and live load force effects)
3. Structural analysis (general analysis considerations, bearing constraints, approximate methods, 2D refined methods, 3D refined methods and recommended level of analysis)
4. Design (preliminary design decisions, girder design verifications and design detail items)
5. Fabrication and construction

Outcomes

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

- Describe the bridge superstructure analysis, design, fabrication and construction process for skewed or horizontally curved steel I-girder superstructures and for horizontally curved steel box-girder superstructures in accordance with the AASHTO LRFD Specifications
- Illustrate the application of the AASHTO LRFD Specifications to the analysis and design process for skewed and curved steel-bridge superstructures, taking into account erection and construction considerations
- Demonstrate understanding of analysis and design specification requirements for skewed and curved steel girder bridges through the completion of participant exercises and guided walk-throughs and the review of design examples

Target Audience

This course has been developed for the needs of practicing public and private sector structural and bridge engineers with 0 to approximately 20 years of experience. The primary audience is Host Agency and consultant structural designers. Pre-training Competencies: Individuals attending this course should have a minimum BSCE degree and have a working knowledge of the current AASHTO LRFD Specifications or the AASHTO Standard Specifications for Highway Bridges. They should also have relevant design experience using either of these specifications on at least one bridge superstructure.

Training Level: Basic

Fee: 2021: $635 Per Person; 2022: N/A

Length: 5 DAYS (CEU: 4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130096

Course Title

Cable-Stayed Bridge Seminar

The National Highway Institute's (NHI) one-day Cable-Stayed Signature Bridge Seminar is intended to provide participants with an introduction to planning, design, and construction of long-span, cable-stayed bridges. The seminar provides an overview of the features of cable-stayed bridges; their construction and maintenance considerations; and analyses needed to design these highly redundant structures including special aerodynamic studies.

This seminar will engage participants through Instructor-led presentations, discussions, Q&A, group activities, and walkthrough examples. Participants will review a case study to help them understand how the curriculum can be applied to making basic design decisions. Major topics covered include: bridge configurations, construction methodology, component details, analysis, aerodynamics, design methodology, construction engineering, and maintenance and inspection. As part of the seminar, participants will receive a copy of FHWA Design Guidelines for the Arch and Cable-Supported Signature Bridges.

As a result of the seminar, participants will become familiar with the features of, construction and maintenance considerations; and analyses needed to design cable-stayed bridges.

Outcomes

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

- Describe the benefits of the cable-stayed bridge as a structure type over other alternatives
- Identify possible span and cable arrangements
- Compare steel, concrete or composite superstructure types
- Select possible pylon shape
- Define the general approaches for erecting steel and concrete cable-stayed bridges
- Define the roles and responsibilities of the owner, contractor and construction engineer
- Identify the needs for aerodynamics studies, testing and evaluation, and discuss practical solutions to mitigate wind effects

Target Audience

The primary target audience includes bridge engineers with 10 to 30 years of expericence.

Training Level: Basic

Fee: 2021: $240 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130099A

Course Title

Bridge Inspection Nondestructive Evaluation Seminar (BINS)

The FHWA Office of Infrastructure R&D, in cooperation with the FHWA Office of Bridge Technology and the FHWA Resource Center, has identified a need for training in select nondestructive evaluation (NDE) methods that can be used to assess existing conditions on highway bridge structures during routine inspections. These NDE methods can also be used to supplement visual inspections of highway bridge structures.

The Bridge Inspector Nondestructive Evaluation Seminar (BINS) is a two-day course which provides bridge inspectors and managers the ability to learn about the latest in commercially available nondestructive tools and systems for use on bridges. The seminar is presented through a series of slides, instructional videos, and video demonstrations showing basic operation of the equipment. The training has been fully developed in conjunction with the FHWA's NDE Validation Center and is delivered by qualified instructors experienced in using NDE equipment on bridges.

This seminar is designed to provide bridge inspection staff the opportunity to view efficient and effective inspection tools and techniques with the ultimate goal of achieving safer bridges through more reliable bridge inspections. The following NDE methods are discussed: Eddy Current, Ultrasonic Testing, Infrared Thermography, Impact Echo, Ultrasonic Surface Waves, Ground Penetrating Radar, Acoustic Emission, Magnetic Particle, Radiographic, Pulse Velocity, Pulse Echo, Pachometers, Physical Sounding Methods, and Electrical Methods. Additionally, other commonly used equipment will be briefly introduced with basic information provided about attributes in an easy to use reference table and select extra information in the appendix.

Outcomes

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

- Summarize the National Bridge Inspection Program (NBIP) expectations as they relate to NDE
- Compare the various stress wave NDE methods as used in steel bridge inspection
- Demonstrate understanding of stress wave and electromagnetic methods by choosing applicable NDE methods for specific defects
- Summarize how NDE was used to assist decision makers in the repair of the Sherman Minton Bridge
- Restate the theories, applications, advantages and limitations of various NDE testing methods
- Compare the theories and applications of various acoustic stress wave testing methods for concrete and timber inspections
- Demonstrate an understanding of electromagnetic and electric NDE methods in bridge inspection programs
- Summarize feasible methods used to evaluate the deck on the Arlington Memorial Bridge (AMB)

Target Audience

The primary target audience for the Bridge Inspection Non-Destructive Evaluation Seminar (BINS) course is federal, state, and local highway bridge inspectors, bridge management staff, and consultants. Individuals involved in material testing, as well as transportation structure design and construction, will find the information useful to ensure quality. Prior to taking this course, participants should have a broad basic knowledge of physics and engineering principles, a knowledge of the basic bridge inspection fundamentals, a background in bridge engineering or completion of NHI course FHWA-NHI-130054 Engineering Concepts for Bridge Inspectors (strongly recommended), and experience with bridge inspection.

Training Level: Basic

Fee: 2021: $295 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.9 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130102

Course Title

Engineering for Structural Stability in Bridge Construction (2.5 Day)

The objective of this course is to train participants on the behavior of steel and concrete girder bridges during construction and teach them to identify vulnerabilities and engineering methods to investigate the structure's strength and stability at each critical stage. This is done within the practical context of engineering, development, verification, and/or review of erection plans.

Starting with basic structural stability principles, course participants are introduced to stability analysis methods and how they should be applied to properly engineer a bridge erection plan. The role of both permanent and temporary bracing in achieving structural stability is covered, and methods for bracing design presented. Behavior and design considerations for construction phases are provided through presentation of case studies, demonstrations, design examples, and guided walk-throughs. The impacts of construction practices, means, and methods are explored and demonstrated.

During bridge erection, the member support conditions, loads, stresses, strength, and stability are affected by the erection practices such as lifting, installation of bracing, bearing conditions, temporary supports, and placing sequence. Deck placing equipment, overhang brackets and staging can also have significant effects on girder stability. Thus, this course presents information on construction practices as it relates to these considerations.

Engineering criteria for use in evaluating bridges during erection are presented. Loading criteria and load factors for analysis are provided along with discussion of their applicability. Equations for checking member conditions during erection are included. Participants learn how loads during construction differ from final design conditions and appropriate methods to compute and apply those loads. The required contents of erection engineering plans, procedures, and submittals are presented in the course. Check lists are included to assist both the erection engineer and submittal reviewer.

The extended Course 130102A (3.5 days) provides an additional 8 hours of hands-on practicum where participants are given opportunity to apply advanced stability analysis on real-world examples, using software executed on laptop computers. This provides a valuable "capstone" experience to solidify their understanding, relate curriculum to practice, apply the concepts presented, and engage in self-discovery.

Outcomes

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

- Explain the fundamentals of stability theory and how they affect bridge strength and performance during construction
- Describe the differences between local, girder, and system (global) stability limit states
- Recognize the potential for stability-related failures that have occurred in past bridges and how to effectively avoid similar results
- Select loads, load combinations, and factors that are appropriate for the construction plan verification
- Explain common techniques for evaluating the stability of bridge member and components
- Choose an appropriate advanced stability analysis for a critical construction stage where stability is in question
- Describe the role of bracing and shoring and how to use for providing stability
- Assess procedures and details for a construction plan that will be safe and economical

Target Audience

This course has been developed for the needs of practicing public and private sector structural engineers with zero to approximately twenty years of experience. The primary audience is Host Agency and consultant bridge structural engineers and project managers, particularly those who prepare and/or review erection plans and procedures. The course will also be of benefit to bridge contractors and erectors as well as those Agency staff overseeing bridge erection.

Training Level: Basic

Fee: 2021: $425 Per Person; 2022: N/A

Length: 2.5 DAYS (CEU: 1.7 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130102A

Course Title

Engineering for Structural Stability in Bridge Construction (3.5 day)

The objective of this course is to train participants on the behavior of steel and concrete girder bridges during construction and teach them to identify vulnerabilities and engineering methods to investigate the structure's strength and stability at each critical stage. This is done within the practical context of engineering, development, verification, and/or review of erection plans.

Starting with basic structural stability principles, course participants are introduced to stability analysis methods and how they should be applied to properly engineer a bridge erection plan. The role of both permanent and temporary bracing in achieving structural stability is covered, and methods for bracing design presented. Behavior and design considerations for construction phases are provided through presentation of case studies, demonstrations, design examples, and guided walk-throughs. The impacts of construction practices, means, and methods are explored and demonstrated.

During bridge erection, the member support conditions, loads, stresses, strength, and stability are affected by the erection practices such as lifting, installation of bracing, bearing conditions, temporary supports, and placing sequence. Deck placing equipment, overhang brackets and staging can also have significant effects on girder stability. Thus, this course presents information on construction practices as it relates to these considerations.

Engineering criteria for use in evaluating bridges during erection are presented. Loading criteria and load factors for analysis are provided along with discussion of their applicability. Equations for checking member conditions during erection are included. Participants learn how loads during construction differ from final design conditions and appropriate methods to compute and apply those loads. The required contents of erection engineering plans, procedures, and submittals are presented in the course. Check lists are included to assist both the erection engineer and submittal reviewer.

This extended Course 130102A (3.5 days) provides an additional 8 hours of hands-on practicum where participants are given opportunity to apply advanced stability analysis on real-world examples, using software executed on laptop computers. This provides a valuable "capstone" experience to solidify their understanding, relate curriculum to practice, apply the concepts presented, and engage in self-discovery.

Outcomes

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

- Explain the fundamentals of stability theory and how they affect bridge strength and performance during construction
- Describe the differences between local, girder, and system (global) stability limit states
- Employ lessons learned from past stability-related failures to avoid similar results
- Explain common techniques for evaluating the stability of bridge members and components
- Choose an appropriate advanced stability analysis for a critical construction stage where stability is in question
- Describe the role of bracing and shoring and how to use them to provide stability
- Select loads, load combinations, and factors that are appropriate for the construction plan verification
- Assess procedures and details for a construction plan that will be safe and economical
- Employ stability evaluation techniques to conduct an erection analysis for steel girder and concrete splice girder bridges (3 ½ day course)

Target Audience

This course has been developed for the needs of practicing public and private sector structural engineers with zero to approximately twenty years of experience. The primary audience is Host Agency and consultant bridge structural engineers and project managers, particularly those who prepare and/or review erection plans and procedures. The course will also be of benefit to bridge contractors and erectors as well as those Agency staff overseeing bridge erection.

Training Level: Basic

Fee: 2021: $570 Per Person; 2022: N/A

Length: 3.5 DAYS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130108

Course Title

Bridge Maintenance (ILT)

Replacing the original Bridge Maintenance course (FHWA-NHI-134029), this entirely new Instructor-led Training (ILT) course will provide participants with knowledge regarding common deficiencies that occur in bridges, common defects in bridge elements, preventive maintenance techniques, and protective systems intended to prevent deterioration and deficiencies in bridges. With this knowledge, this course will enable participants to investigate proper bridge maintenance procedures using bridge maintenance resources and apply these practices on-the-job.

WEB-BASED TRAINING (WBT) PREREQUISITE: It is strongly recommended that participants take and complete FHWA-NHI-130107A Fundamentals of Bridge Maintenance WBT prerequisite prior to taking this 4-day ILT. This prerequisite WBT is being offered free of charge to participants.

Outcomes

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

- Identify key steps involved in the development and implementation efforts of a cost-effective preservation strategy for a group of bridges.
- Identify maintenance and/or repair needs and select the best remedial strategy.
- Discuss 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.
- Apply effective management techniques (such as planning, scheduling, monitoring and reporting) during daily bridge maintenance operations.

Target Audience

This course is primarily for members of State and Local Departments of Transportation, as well as those contractors that perform work on behalf of these agencies. This training is primarily geared for individuals involved in on-site bridge maintenance and preservation activities and those that supervise and manage these activities. This training is appropriate for those with intermediate to advanced experience in bridge maintenance and repair activities. This training is also suitable for those with intermediate/advanced knowledge of general maintenance and repair activities that have successfully completed the prerequisite, FHWA-NHI-130107A Fundamentals of Bridge Maintenance WBT course. Those that are not involved in on-site bridge maintenance activities, such as designers and construction personnel, may also benefit from this training.

Training Level: Intermediate

Fee: 2021: $430 Per Person; 2022: N/A

Length: 4 DAYS (CEU: 2.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130110

Course Title

Tunnel Safety Inspection

This 5-day, Instructor-led Training (ILT) is highly interactive and builds upon participants' prior knowledge of tunnel and/or bridge inspection. This course covers the entire breadth of knowledge necessary to manage or execute a successful tunnel inspection based on the National Tunnel Inspection Standards (NTIS), Tunnel Operations, Maintenance, Inspection and Evaluation (TOMIE) Manual and Specifications for the National Tunnel Inventory (SNTI). However, it does not replace the need for specialized experts to assist in inspections. There are nine instructional modules. Once participants display achievement of the learning outcomes of one module, the class will progress to the next module. During the course, the instructor will lead participants through a series of case studies giving them an opportunity to practice and apply their knowledge in real-life tunnel inspection situations. The capstone case study will be a virtual tunnel inspection that takes place in a computer-simulated, 3D environment. Using this tool, participants will be able to perform a tunnel inspection and demonstrate their achievement of all learning outcomes.

*Participant Prerequisite Requirement: ALL participants should successfully complete one of the following three prerequisite requirements:

-130054 Engineering Concepts for Bridge Inspectors; or

-130101 Introduction to Safety Inspection of In-Service Bridges; or

-130101A Prerequisite Assessment for Safety Inspection of In-Service Bridges.

Prior to taking this course, it is strongly recommended that participants complete 130055 Safety Inspection of In-Service Bridges, 130056 Safety Inspection of In-Service Bridges for Professional Engineers, or possess equivalent field experience.

It is not required, but strongly recommended that participants possess some design or safety inspection experience of in-service tunnels or bridges.

Host Requirements: Hosts must provide a training room large enough to accommodate at least 30 participants as well as the 15 NHI virtual tunnel laptops (provided by NHI Instructors) that will be used for the virtual tunnel exercises. Additionally, the host must ensure that ALL students have successfully met the prerequisite requirement* and have a valid course completion certificate for one of the three prerequisite options.

Outcomes

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

- Articulate the importance and purpose of tunnel inspection
- Apply the fundamentals of tunnel inspection
- Demonstrate the inspection and evaluation of tunnel structural, civil, mechanical, electrical, signage and lighting, and fire/life safety/security elements
- Use tunnel inspection references

Target Audience

The target audience for the Tunnel Safety Inspection ILT course is primarily members of Federal, State, local (Authority or Commission) and Tribal highway agency employees, who are involved with tunnel design, inspection and maintenance, as well as consultants involved in inspecting tunnels or in tunnel inspection management and leadership positions.

Training Level: Basic

Fee: 2021: $480 Per Person; 2022: N/A

Length: 5 DAYS (CEU: 3.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130122

Course Title

Design and Evaluation of Bridges for Fatigue and Fracture

FHWA is offering a special incentive to promote this newly released, high-priority training. For a limited time and subject to availability, DOT's who host the course can receive 20 seats at no cost. However, any additional seats must be purchased at regular price, either by DOT or by outside participants. We request that course be advertised to the local consultant community to maximize participation. DOTs can only take advantage of this incentive once.

This two-day training course presents relevant issues related to fatigue and fracture in steel bridges, including analysis, design, evaluation, repair, and retrofit. It is based on the AASHTO LRFD Bridge Design Specifications, Eighth Edition, as well as the AASHTO Manual for Bridge Evaluation, Second Edition, with Interim Revisions through 2016. Participant Exercises, Guided Walk Throughs, and videos are included throughout the training to aid bridge engineers with the implementation of the presented information.

This course consists of three modules. The first module serves as a general introduction to the class. The second module covers fundamentals, and it includes four lessons - Introduction to Fatigue and Fracture, Crack Growth in Steel Structures, Theory, and Characterizing Fatigue and Fracture in Bridge Members. The third module covers application, and it includes five lessons - Analysis for Fatigue, AASHTO Design Approach for Fatigue, AASHTO Design Approach for Fracture, AASHTO Evaluation Approach, and Retrofit and Repair.

The curriculum materials include a comprehensive Reference Manual in CD format (FHWA Publication No. FHWA-NHI-16-016), lecture and workshop exercises intended to promote or enhance a working knowledge of AASHTO LRFD, and a participant workbook for lecture notes and exercises.

Individuals attending this course should have a minimum BSCE degree. They should also have a working knowledge of the current AASHTO LRFD Bridge Design Specifications and should have relevant design experience using this specification on at least one steel bridge superstructure.

There are no NHI prerequisites for this course. However, select topics of this course are also addressed in NHI Courses 130078 (Fracture Critical Inspection Techniques for Steel Bridges), 130081 (LRFD for Highway Bridge Superstructures), and 130095 (LRFD and Analysis of Curved Steel Highway Bridges).

Outcomes

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

- Explain the fundamentals of fatigue and fracture on steel highway structures
- Identify the various analysis methods for determining fatigue and fracture considerations on steel highway structures
- Explain the various AASHTO methodologies as it pertains to fatigue and fracture design
- Identify the AASHTO methodology for fatigue and fracture evaluation
- Describe the various strategies for repair and retrofit of steel highway structures

Target Audience

The primary audience for this course includes State DOT Bridge and Structures Engineers and Practitioners responsible for steel bridge design and evaluation. The target audience includes engineers at all levels, including designers, consultants, reviewers, maintenance and management engineers, and load raters.

Training Level: Intermediate

Fee: 2021: $315 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130125

Course Title

Tunnel Safety Inspection Refresher ILT

This 2.5-day, Instructor-led Training (ILT) is highly interactive and builds upon participants' prior knowledge of bridge and/or tunnel inspection. This course covers the entire breadth of knowledge necessary to manage or execute a successful tunnel inspection. However, it does not replace the need for specialized experts to assist in inspections. There are seven course modules. During the course, the instructor will lead participants through a series of case studies giving them an opportunity to practice and apply their knowledge in real-life tunnel inspection situations. The capstone case study comprises of a tunnel inspection exercise that takes place at the end of the course.

All participants must successfully complete the following prerequisite requirements prior to taking the FHWA-NHI-130125 course:

*130110 Tunnel Safety Inspection Training Course

*130124 Tunnel Safety Inspection Refresher Web-based Training

It is not required, but strongly recommended that participants possess some design or safety inspection experience of in-service bridges or tunnels.

Outcomes

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

- Explain the importance and purpose of tunnel inspection
- Apply the fundamentals of tunnel inspection
- Demonstrate the inspection and evaluation of tunnel structural, civil, mechanical, electrical, signage, lighting, and fire/life safety/security elements
- Use tunnel inspection references

Target Audience

The target audience for the Tunnel Safety Inspection ILT course is primarily members of Federal, State, local (Authority or Commission) and Tribal highway agency employees, who are involved with tunnel design, inspection, and maintenance, as well as consultants involved in inspecting tunnels or in tunnel inspection management and leadership positions.

Training Level: Basic

Fee: 2021: $495 Per Person; 2022: N/A

Length: 2.5 DAYS (CEU: 1.7 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130125V

Course Title

Tunnel Safety Inspection Refresher (VIRTUAL DELIVERY)

This 2.5-day, Instructor-led Training (ILT) is highly interactive and builds upon participants' prior knowledge of bridge and/or tunnel inspection. This course covers the entire breadth of knowledge necessary to manage or execute a successful tunnel inspection. However, it does not replace the need for specialized experts to assist in inspections. There are seven course modules. During the course, the instructor will lead participants through a series of case studies giving them an opportunity to practice and apply their knowledge in real-life tunnel inspection situations. The capstone case study comprises of a tunnel inspection exercise that takes place at the end of the course.

All participants must successfully complete the following prerequisite requirements prior to taking the FHWA-NHI-130125 course:

*130110 Tunnel Safety Inspection Training Course

*130124 Tunnel Safety Inspection Refresher Web-based Training

It is not required, but strongly recommended that participants possess some design or safety inspection experience of in-service bridges or tunnels.

Outcomes

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

- Explain the importance and purpose of tunnel inspection
- Apply the fundamentals of tunnel inspection
- Demonstrate the inspection and evaluation of tunnel structural, civil, mechanical, electrical, signage, lighting, and fire/life safety/security elements
- Use tunnel inspection references

Target Audience

The target audience for the Tunnel Safety Inspection ILT course is primarily members of Federal, State, local (Authority or Commission) and Tribal highway agency employees, who are involved with tunnel design, inspection, and maintenance, as well as consultants involved in inspecting tunnels or in tunnel inspection management and leadership positions.

Training Level: Basic

Fee: 2021: $495 Per Person; 2022: N/A

Length: 17 HOURS (CEU: 1.7 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130126

Course Title

Strut-and-Tie Modeling (STM) for Concrete Structures

FHWA is offering a special incentive to promote this newly released, high-priority training. For a limited time and subject to availability, DOT's who host the course can receive 20 seats at no cost. However, any additional seats must be purchased at regular price, either by DOT or by outside participants. We request that course be advertised to the local consultant community to maximize participation. DOTs can only take advantage of this incentive once

The American Association of State Highway and Transportation Officials (AASHTO) recently adopted a new strut-and-tie modeling (STM) specification and is now strongly encouraging special analysis using such methods as STM. In response to the numerous requests for STM training from the bridge engineering community, as well as in response to this new STM specification, there is a strong need for developing training to address the uncertainties and produce a primary source of reference material for STM applications for bridge engineers.

STM provides engineers with a simplistic analysis and design tool for deep concrete bridge elements and disturbed regions that would otherwise require a rigorous refined analysis. STM has long been established as a reasonable analysis tool for disturbed regions and deep beams. However, this modeling tool has had difficulty being integrated into our bridge design state-of-practice, which has resulted in inappropriate use of the simplistic elastic beam theory design for deep beams and disturbed regions. In some cases, it has resulted in poor in-service performance. This training course serves as a significant step in providing the knowledge transfer necessary for STM to be used more frequently and more effectively.

Outcomes

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

- Describe the fundamentals of STM, including its definition, theory, and historical background
- Explain the application of STM in bridge design, including identification of B-regions and D-regions and specific applications to bridge superstructures and substructures
- Describe the required procedures for STM model development and design
- Explain element-level considerations in STM, including struts, ties, and nodal zones
- Summarize serviceability considerations in STM, including crack control, shear stress check, and sizing of members to minimize diagonal cracking
- Explain the STM provisions presented in AASHTO LRFD
- Apply STM fundamentals and procedures through a comprehensive design example

Target Audience

The primary audience includes state DOT bridge and structures engineers and practicing bridge engineers who are responsible for concrete bridge design and evaluation. The target audience includes engineers of all levels, including designers, consultants, reviewers, maintenance engineers, management engineers, and load rating engineers.Pre-training CompetenciesIndividuals attending this course should have a Bachelor of Science degree in civil engineering. They should have a working knowledge of AASHTO LRFD, and they should have relevant design experience using the current AASHTO LRFD on at least one concrete bridge project.

Training Level: Basic

Fee: 2021: $370 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: 1.1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132012

Course Title

Soils and Foundations Workshop

This course is geared toward practicing design and construction engineers who routinely deal with soil and foundation problems but have little theoretical background in soil mechanics or foundation engineering. The course takes a project-oriented approach whereby the soils input to a bridge project is followed from conception to completion. In each phase of the project, the soil concepts will be developed into specific foundation designs and recommendations. The classroom presentation includes a variety of exercises to verify achievement of learning objectives. Each participant will take away a comprehensive reference manual on soils and foundations and a participant workbook containing a copy of all slides presented and completed exercises.

NOTE TO PARTICIPANT: All participants should bring calculators that perform trigonometric calculations, a note pad, and a pencil.

NOTE TO HOST: In addition to the typical host requirements of NHI courses, for this course the host is asked to arrange for the state's geotechnical engineering group to conduct a short presentation (usually on the second day of the course) summarizing the administrative and technical procedures followed by the host state.

Outcomes

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

- Identifying the minimum level of geotechnical input in various project phases of a highway project
- Recalling the equipment and procedures used to implement a subsurface investigation of soil and rock conditions
- Demonstrating basic skills in visual description of soils native to the host state
- Recalling geotechnical facilities and personnel in the host state
- Recalling the basic soil test procedures and how the results of the various soil tests are applied results to highway projects
- Listing procedures used for both settlement and stability analysis, and recalling design solutions to stability and settlement problems for approach roadway embankments
- Listing procedures used for determining bearing capacity and settlement of shallow foundations such as spread footings
- Identifying the basic skills needed in the design and construction management of driven pile and drilled shaft foundations
- Recalling the driven pile and drilled shaft foundation construction equipment and construction inspection procedures
- Description static load testing and recalling the basic skills needed to interpret static load test results
- Recalling the basic skills needed in the design and construction of earth retaining structures
- Discussing the format and minimum content of an adequate foundation report

Target Audience

Personnel from the following units at the transportation agency could benefit from this workshop: geotechnical, bridge design, roadway design, materials, construction, and maintenance. The personnel who will benefit the most are the first-line supervisors involved in the design of highway structures and embankments. 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. All attendees should be encouraged to attend the entire course, not just sections that are in their specialty. One of the major benefits of this course is to give engineers an appreciation of activities outside their specialties that influence, or are influenced by, the work of the geotechnical engineer.

Training Level: Basic

Fee: 2021: $550 Per Person; 2022: N/A

Length: 4 DAYS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132014

Course Title

Drilled Shafts

Drilled shafts are an alternate type of deep foundation that may be more cost effective and perform better than other types of deep foundations in bridge piers at river crossings and in 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 the construction 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 designing 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 contractors 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 the tests
- Formulate the basic elements of construction specifications for drilled shafts
- Demonstrate an understanding of integrity testing, repair, and retrofit of defective shafts
- Estimate costs for drilled shafts

Target Audience

The target audience for this course includes 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 their immediate areas 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 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.

Training Level: Intermediate

Fee: 2021: $425 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132036

Course Title

Earth Retaining Structures

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. Instructors cover factors that affect wall selection, 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. Detailed information on subsurface investigation, soil and rock property design parameter selection, lateral earth pressures for wall system design, and load and resistance factor design (LRFD) for retaining walls are provided.

Outcomes

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

- Describe potential applications for Earth Retaining Structures (ERS)
- Select a technically appropriate and cost-effective ERS
- Select appropriate material properties, soil design parameters, and earth pressure diagrams
- Perform design analysis and prepare conceptual designs
- Review contractor submitted documents
- Discuss contracting methods
- Describe construction and inspection activities for ERS

Target Audience

The primary audience for this course is agency and consultant bridge/structures, geotechnical, and roadway design engineers; engineering geologists; and consultant review specialists. In addition, 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, including some understanding of LRFD concepts.

Training Level: Intermediate

Fee: 2021: $355 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@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 pavement projects. The course content includes geotechnical exploration and characterization of in-place and constructed subgrades; design and construction of subgrades and unbound layers for paved and unpaved roads, with emphasis on the American Association of State Highway Transportation Officials (AASHTO) 1993 empirical design procedure and on the new Mechanistic-Empirical Pavement Design Guide (MEPDG); drainage of bases, subbases, and subgrades and its impact on providing safe, cost-effective, and durable pavements; problematic soils, soil improvement, stabilization, and other detailed geotechnical issues in pavement design and construction; and construction methods, specifications, and QC/QA (quality control/quality assurance) inspection for pavement projects.

The goal of the course is for each participant to recognize the importance of the geotechnical aspects relevant to the design, construction, and performance of a pavement system. Participants will develop an appreciation for the importance of adequate subsurface exploration and laboratory characterization of subgrade soils as well as the requisite pavement design parameters for subgrades, unbound base and subbase layers, including drainage features. The course is designed to elicit maximum input from participants, particularly regarding an understanding of the impact of geotechnical features on the long-term performance of pavement systems.

NOTE TO PARTICIPANT: Please bring a calculator that can perform trigonometric, log, and other engineering calculations, a note pad, and a pencil.

NOTE TO HOST: For this course, the host is asked to identify a state speaker to conduct a host state presentation. The presentation is usually on the first day of the class and lasts approximately 25 minutes with an additional 15 minutes of discussion. The objective of the presentation is to communicate the state's current practices and experience to the course participants. The state representative should have experience in geotechnical pavement activities. A detailed list of issues to be addressed in the host presentation will be provided. Also for this course, the host is asked to secure at least 6 laptop computers to be used during team exercises. The host can request that at least 6 participants bring their laptops to the course. The machines must have Microsoft Excel (Office 97 or later) and the optional Solver add-in tool installed. Lastly, the host state is asked to complete a "Questionnaire on Geotechnical Practices in Pavement Design" and provide policies and special provisions for (1.) obtaining subsurface information and laboratory testing in relation to pavement design, (2.) pavement design along with any agency design guides, (3.) field construction monitoring for subgrade approval and pavement component approval as well as contractors QC requirements for pavement component construction.

Outcomes

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

- Explain the geotechnical parameters of interest in pavement design and their effects 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, both for the AASHTO 93 empirical design procedure and the new MEPDG
- 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, materials 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 forum for these various personnel to work together to enhance current procedures for building and maintaining more cost-efficient pavement

structures.

Training Level: Basic

Fee: 2021: $385 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132042

Course Title

Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes

Mechanically stabilized earth walls (MSEWs) are commonly used on roadway projects and are typically cost effective and aesthetically pleasing. The basic concept behind MSEWs is to combine soil, reinforcing materials made of steel or polymers, and appropriate facing to produce a composite system with engineering properties that are ideal for most roadway applications. Reinforced soil slopes (RSS) utilize the same types of reinforcement for the construction of steep embankments. Both MSEWs and RSS structures can provide substantial savings in construction time and costs when compared with other types of earth retaining systems.

The goal of the course is to educate agencies about state-of-the-practice design tools. This includes comprehensive instruction on the design of MSEWs using load resistance factor design (LRFD). The course also presents construction practices to promote implementation of mechanically stabilized earth technology in cost effective earth retention structures. This course would most benefit persons who are involved in the design and construction of earth retention structures for surface transportation projects.

NOTE TO PARTICIPANT: Please bring a calculator that performs trigonometric calculations, a note pad, and a pencil.

NOTE TO HOST: In addition to the typical host requirements of NHI courses, for this course the host state technical contact is asked to bring 30 copies of the standard MSE wall and the RSS specifications (or special provisions), a complete set of applicable state DOT state construction specifications, standard plates, standard details, inspection guidelines, etc. pertaining to earth retaining structures. Copies should be forwarded to the instructors a month before the course. The host agency is also asked to provide approximately 20-25 pounds of dry sand. About 1/2 bag of "play" sand from a hardware store will suffice.

Outcomes

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

- Recognize potential applications for MSEWs and RSS structures 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 the cost of conceptual MSEWs and RSS structures and determine if construction is a cost-effective option
- Select appropriate specification/contracting method(s) and prepare detailed specifications for materials and methods of construction
- Define and communicate major components of construction inspection of MSEWs and RSS structures to confirm compliance with design

Target Audience

The primary audience for this course is agency and consultant bridge/structures, geotechnical, and roadway design engineers; engineering geologists; and consultant review specialists. In addition, management, specification and contracting specialists, and construction engineers interested in design and contracting aspects of MSEWs 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.)

Training Level: Intermediate

Fee: 2021: $470 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132078

Course Title

Micropile Design and Construction

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 educate engineers about the state of the practice in the design and construction of micropiles. The course covers stepwise procedures for the design of micropiles for structural support and for slope stability applications. Construction, inspection and integrity-testing aspects and issues are discussed as well. Classroom presentations include exercises that will lead participants through the technical and cost feasibility aspects of structural support and slope stability design with micropiles. Each participant will receive a workbook and reference manual containing detailed micropile design examples for various applications.

FHWA-NHI-132012 Soils and Foundations course 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, which builds upon the basic concepts presented in NHI courses FHWA-NHI-132012, FHWA-NHI-132014, and FHWA-NHI-132021.

Training Level: Intermediate

Fee: 2021: $275 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134067

Course Title

Construction Inspection of Bridge Rehabilitation Projects

This 4-day course has been designed to improve quality, ensure uniformity, and establish a minimum standard for bridge rehabilitation.

The keys to successfully ensuring quality on rehab jobs are: knowing what should happen on a given job; identifying problems when they do happen; and correctly using available resources to solve the problem. This course presents innovative and best practice inspection techniques for each structural element of a bridge.

This course will introduce participants to distress and deterioration they may encounter when working with concrete or steel that requires repair. It is essential to identify the issues that harm these materials because it is often poor construction techniques that lead to reduced structural condition or shortened service life. The focus then turns to construction and inspection practices pertaining to concrete decks, steel superstructures, concrete superstructures and substructures, joints, and bearings.

The course is activity-rich, using discussions of best practices, small and large group activities for identifying critical inspection moments, and a wide array of case studies from real projects to emphasize the importance of applying these techniques in the field.

Outcomes

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

- Relate observable deterioration of bridge structural elements to distress mechanisms
- Associate potential construction and materials problems
- Explain the role of the construction inspector as part of the overall project team
- Interpret drawings and specifications
- Describe rehabilitation sequences for various bridge systems, bridge types, and materials
- Explain basic inspection and testing of materials
- Make and maintain sufficient records

Target Audience

This course will be appropriate for inspectors with 1-5 years of experience who are seeking a better foundation in bridge rehabilitation techniques. They will likely have a basic grasp of construction and inspection methods, bridge terminology, and causes of distress and deterioration, although this information will be reviewed at the beginning of the course.The course will be appropriate for experienced bridge inspectors who are seeking to learn about innovative methods in bridge rehabilitation and obtain a refresher on familiar inspection methods. Construction supervisors, transportation department field inspectors, construction inspectors, field engineers, resident engineers, structural engineers, materials engineers, and other technical personnel involved in the inspection of bridge rehabilitation projects will benefit from this course. The course is designed for participants without an in-depth engineering background. However, those with engineering backgrounds are welcome to attend and can provide valuable perspective in the context of group activities and discussions.

Training Level: Basic

Fee: 2021: $475 Per Person; 2022: N/A

Length: 4 DAYS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131050

Course Title

Asphalt Pavement In-Place Recycling Techniques

Transportation agencies focusing on the use of sustainable, cost effective, and environmentally conscious construction practices often consider in-place recycling techniques as a viable alternative to the more traditional rehabilitation techniques used on asphalt-surfaced pavements. NHI training 131050 Asphalt Pavement In-place Recycling Techniques is designed to help participants acquire necessary skills for selecting the appropriate in-place recycling technique for a given set of conditions, choosing the appropriate materials for the project, developing suitable specifications, and constructing those projects effectively.

The Asphalt Pavement In-place Recycling Techniques course includes two brief Web-based training (WBT) modules, and two days of instructor-led, classroom-based training (ILT). Through independent study, classroom interaction, and workshop activities, participants explore the current technologies available in the area of asphalt pavement in-place recycling. Two WBT lessons introduce pavement evaluation techniques and the three potential recycling techniques, along with the types of equipment commonly used for each. The classroom session focuses on project and technique selection and justification, materials considerations and mix design, construction specifications, and project control considerations during construction.

Outcomes

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

- Describe the economic, environmental, and engineered performance benefits associated with using in-place asphalt recycling
- Identify the key factors that contribute to the selection of appropriate in-place asphalt recycling techniques under different traffic levels, pavement conditions, and environments
- Identify the key requirements in developing effective in-place asphalt recycling construction specifications, including method specification and end-result or performance specifications
- Demonstrate the ability to select the appropriate new materials and additives needed for each of three HMA pavement in-place recycling techniques
- List steps that can be taken to address a variety of issues that may impact the constructability of a project

Target Audience

This course is intended for State and local transportation agency engineers, such as pavement managers and maintenance engineers, and other agency personnel who are responsible for selecting, designing, or constructing the agency's asphalt pavement maintenance, resurfacing, rehabilitation, and reconstruction alternatives. The course particularly benefits those individuals responsible for selecting and designing asphalt in-place recycling projects, for writing effective specifications, or for inspecting asphalt in-place recycling projects during their construction. Contractors, consulting engineers, and industry representatives involved in asphalt pavement in-place recycling also will benefit from this course.

Training Level: Intermediate

Fee: 2021: $100 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131050A

WBT

Course Title

(Introduction to) Asphalt Pavement In-Place Recycling Techniques

This training is a prerequisite of another NHI training and is offered at no cost.

Transportation agencies focusing on the use of sustainable, cost-effective, and environmentally conscious construction practices often consider in-place recycling techniques as a viable alternative to the more traditional rehabilitation techniques used on asphalt-surfaced pavements. NHI training 131050 Asphalt Pavement In-place Recycling Techniques is designed to help participants acquire necessary skills for selecting the appropriate in-place recycling technique for a given set of conditions, choosing the appropriate materials for the project, developing suitable specifications, and constructing those projects effectively.

The Asphalt Pavement In-place Recycling Techniques course includes two brief Web-based training (WBT) modules, and two days of instructor-led, classroom-based training (ILT). Through independent study, classroom interaction, and workshop activities, participants explore the current technologies available in the area of asphalt pavement in-place recycling. Two WBT lessons introduce pavement evaluation techniques and the three potential recycling techniques, along with the types of equipment commonly used for each. The classroom session focuses on project and technique selection and justification, materials considerations and mix design, construction specifications, and project control considerations during construction.

Outcomes

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

- Describe the economic, environmental, and engineered performance benefits associated with using in-place asphalt recycling
- Identify the key factors that contribute to the selection of appropriate in-place asphalt recycling techniques under different traffic levels, pavement conditions, and environments
- Identify the key requirements in developing effective in-place asphalt recycling construction specifications, including method specification and end-result or performance specifications
- Demonstrate the ability to select the appropriate new materials and additives needed for each of three HMA pavement in-place recycling techniques
- List steps that can be taken to address a variety of issues that may impact the constructability of a project

Target Audience

This course is intended for State and local transportation agency engineers, such as pavement managers and maintenance engineers, and other agency personnel who are responsible for selecting, designing, or constructing the agency's asphalt pavement maintenance, resurfacing, rehabilitation, and reconstruction alternatives. The course particularly benefits those individuals responsible for selecting and designing asphalt in-place recycling projects, for writing effective specifications, or for inspecting asphalt in-place recycling projects during their construction. Contractors, consulting engineers, and industry representatives involved in asphalt pavement in-place recycling also will benefit from this course.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 2 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131100

Course Title

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

Studies have shown that roughness is one of the biggest priorities of highway users. Additional studies have shown that pavements that are built smooth stay smoother longer and provide a longer pavement life. Most State highway agencies (SHAs) have some type of smoothness specification that is used to evaluate the smoothness of newly constructed or rehabilitated pavements during acceptance testing. Many agencies also have incentives or disincentives for new construction and rehabilitation, which are based on pavement smoothness.

Increasingly these agencies are turning to inertial profilers as the most reliable instrument for construction acceptance testing and verifying pavement smoothness. The intent of this course is to train inertial profiler operators in the basics of performing construction acceptance testing and to train those reviewing the data to comprehend how those data were obtained and what they represent in order to build smoother riding roadways.

The course has been developed to be delivered in a single day of instructor-led training. In order to keep the instructor-led portion of the training to a single day, the training includes two hours of independent study that should be completed prior to attending the instructor-led session.

Outcomes

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

- Perform checks of the inertial profiler components to identify that the equipment is in proper working order.
- Determine the impact of current surface and environmental conditions on data collection.
- Collect profile data using appropriate operating techniques.
- Calculate a smoothness index using appropriate data processing techniques and computational procedures for use in construction quality control and specification compliance.
- Identify what features in a collected profile are manifested in a smoothness or roughness index.

Target Audience

The course was designed for an audience directly involved in the use of inertial profilers and the application of the data obtained from inertial profilers. This includes State and contractor road profiler operators who perform data collection, initial processing, and reporting of smoothness data. Paving superintendents, project engineers, pavement engineers, and inspectors who are performing data analysis, quality control, and acceptance will also benefit from this course. Ideally, each session of the course will include a mixture of State and contractor personnel, including those who collect data, those performing data processing, and those making decisions based upon data.

Training Level: Intermediate

Fee: 2021: $75 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131139

Course Title

Constructing and Inspecting Asphalt Paving Projects

The goal of this course is to prepare participants to ensure asphalt pavement construction projects conform to quality and technical specifications. The course materials introduce asphalt pavement construction best practices, from the importance of understanding project administration roles and responsibilities to the most vital elements of laydown operations and compaction.

Participants learn construction management responsibilities; recognize proper construction practices; identify construction issues and their source; determine the impact of construction issues on performance; and select communication strategies for contractors, consultants, and superiors. They can then apply the knowledge and skills to maximize quality on construction projects.

The course emphasizes the importance of a proactive approach to managing and inspecting construction projects at every stage. This includes quickly addressing problems, implementing corrective actions, and documenting communications between the agency and contractor.

Prior to attending class, participants complete a 5-minute online pre-assessment that identifies their familiarity with their agency's asphalt pavement construction and inspection topics and issues they hope to address through training. The pre-assessment is distributed by the Local Coordinator on behalf of the instructor.

Outcomes

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

- Explain the agency's and contractor's roles and responsibilities in supporting project quality
- Identify asphalt pavement construction best practices
- Relate common asphalt pavement construction issues to possible causes and impact on pavement performance
- Explain how to communicate construction issues to the contractor and up the project chain of command effectively
- Describe appropriate, timely inspection documentation procedures

Target Audience

This course is designed for participants who ensure a project is built to the owner's specifications. Participants can be relatively new to asphalt or general project inspection; however, those with broader experience will learn about innovative asphalt pavement construction technologies, participate in class discussions, and share successful practices. The primary audience comprises Federal, State, consultant, and local agency inspectors and contractor personnel who are involved in the planning, construction, and review of asphalt paving projects.

Training Level: Intermediate

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131139T

New Training WCT

Course Title

Constructing and Inspecting Asphalt Paving Projects (EXAM ONLY FOR 131139V)

DO NOT REGISTER FOR THIS COURSE UNLESS YOU ARE CURRENTLY ENROLLED IN 131139V

The goal of this course is to prepare participants to ensure asphalt pavement construction projects conform to quality and technical specifications. The course materials introduce asphalt pavement construction best practices, from the importance of understanding project administration roles and responsibilities to the most vital elements of laydown operations and compaction.

Participants learn construction management responsibilities; recognize proper construction practices; identify construction issues and their source; determine the impact of construction issues on performance; and select communication strategies for contractors, consultants, and superiors. They can then apply the knowledge and skills to maximize quality on construction projects.

The course emphasizes the importance of a proactive approach to managing and inspecting construction projects at every stage. This includes quickly addressing problems, implementing corrective actions, and documenting communications between the agency and contractor.

Prior to attending class, participants complete a 5-minute online pre-assessment that identifies their familiarity with their agency's asphalt pavement construction and inspection topics and issues they hope to address through training. The pre-assessment is distributed by the Local Coordinator on behalf of the instructor.

Outcomes

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

- Explain the agency's and contractor's roles and responsibilities in supporting project quality
- Identify asphalt pavement construction best practices
- Relate common asphalt pavement construction issues to possible causes and impact on pavement performance
- Explain how to communicate construction issues to the contractor and up the project chain of command effectively
- Describe appropriate, timely inspection documentation procedures

Target Audience

This course is designed for participants who ensure a project is built to the owner's specifications. Participants can be relatively new to asphalt or general project inspection; however, those with broader experience will learn about innovative asphalt pavement construction technologies, participate in class discussions, and share successful practices. The primary audience comprises Federal, State, consultant, and local agency inspectors and contractor personnel who are involved in the planning, construction, and review of asphalt paving projects.

Training Level: Intermediate

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 50

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131139V

Course Title

Constructing and Inspecting Asphalt Paving Projects (Virtual Delivery of NHI 131139)

The goal of this course is to prepare participants to ensureasphalt pavement construction projects conform to quality and technicalspecifications. The course materials introduce asphalt pavement constructionbest practices, from the importance of understanding project administrationroles and responsibilities to the most vital elements of laydown operations andcompaction.

Participants learn construction management responsibilities;recognize proper construction practices; identify construction issues and theirsource; determine the impact of construction issues on performance; and selectcommunication strategies for contractors, consultants, and superiors. They canthen apply the knowledge and skills to maximize quality on constructionprojects.

The course emphasizes the importance of a proactive approachto managing and inspecting construction projects at every stage. This includesquickly addressing problems, implementing corrective actions, and documentingcommunications between the agency and contractor.

Prior to attending class, participants complete a 5-minuteonline pre-assessment that identifies their familiarity with their agency'sasphalt pavement construction and inspection topics and issues they hope toaddress through training. The pre-assessment is distributed by the LocalCoordinator on behalf of the instructor.

The 131139V - Constructing and Inspecting Asphalt PavingProjects is now offered on-line as a virtual course. A virtualinstructor-led training provides 100% remote learning while ensuringparticipants have access to expert instructors, workshop activities, andengaging peer-to-peer discussions.

Register today and learn theimportance of a proactive approach to managing and inspecting constructionprojects at every stage in the convenience of your home and/or office anywhere in the country, remotely.

Outcomes

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

- Explain the agency's and contractor's roles and responsibilities in supporting project quality
- Identify asphalt pavement construction best practices
- Relate common asphalt pavement construction issues to possible causes and impact on pavement performance
- Explain how to communicate construction issues to the contractor and up the project chain of command effectively
- Describe appropriate, timely inspection documentation procedures

Target Audience

This course is designed for participants who ensure a project is built to the owner's specifications. Participants can be relatively new to asphalt or general project inspection; however, those with broader experience will learn about innovative asphalt pavement construction technologies, participate in class discussions, and share successful practices. The primary audience comprises Federal, State, consultant, and local agency inspectors and contractor personnel who are involved in the planning, construction, and review of asphalt paving projects.

Training Level: Intermediate

Fee: 2021: $250 Per Person; 2022: N/A

Length: 16 HOURS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131141

New Training

Course Title

Quality Assurance for Highway Construction Projects

This course replaces NHI course #134064 Transportation Construction Quality Assurance.

Construction materials account for about 50% of Federal-aid spending (FHWA internal review citation here). Therefore, it is critical for States to have a quality assurance (QA) program to ensure that projects perform as expected and are long lasting. In fact, all States are required to have a QA program for Federal-aid projects on the NHS (23 CFR 637), but risks and inconsistencies in those programs present significant challenges to maintaining levels of quality in materials and project-produced materials such as asphalt, concrete, aggregate and soil.

NHI 131141 Quality Assurance for Highway Construction Projects helps you (1) understand the impact and importance of operating a sound quality assurance program, (2) realize the associated risks to payment, and (3) recognize risks to infrastructure performance. During the course you will consistently apply quality assurance concepts and identify strengths and weaknesses in your own agency's QA program.

This new 2-day instructor-led course prepares you to identify and use the six core elements of a quality assurance program for all types of highway projects, from the simplest to most complex. All the course content, including risk-based content, is related to practical experiences and provides numerous opportunities to share and learn from other participants. Topics include:

-Basics of quality assurance

-Quality assurance program requirements including industry and agency support, the six core elements of a program, and the use of QA specifications

-Quality control and acceptance including contractor and agency roles and responsibilities; QC plans; sampling, testing, and inspection; and control charts

-Using data to measure quality including collecting data, analyzing data, interpreting data, and quantifying data variability

-Payment including percent within limits and pay factors

-Verification and materials testing dispute resolution

Outcomes

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

- Consistently apply fundamental quality assurance concepts, terminology, and definitions
- Relate each of the six core elements of quality assurance to successful implementation of a quality assurance program
- Describe an organizational culture of quality
- Describe the quality assurance roles and responsibilities of agency and contractor personnel
- Apply the sampling protocols and mathematical concepts used to measure variability, review the effects of statistical distribution, and validate data to assess quality
- Describe the proper use of materials testing and inspection data for acceptance
- Relate successful quality assurance practices to alternative contracting methods
- Learn effective quality assurance practices to minimize the variability and life cycle cost associated with the construction and maintenance of a highway project

Target Audience

This is an intermediate-level course for personnel with at least one year's experience working with transportation materials and construction who apply QA specifications on transportation construction projects. Typical attendees include: Federal, state, and local agency materials and construction staff including inspectors, lab personnel, field technicians, and project managers, as well as Headquarters' engineers and Region- or District-level engineers and technicians. Secondary audiences that will benefit from the course and add value to discussions include contractor personnel, particularly their quality control managers. Additionally, consultants working for contractors or the agency as part of the quality assurance program could benefit.

TRAINING LEVEL: Intermediate

FEE: 2021: $100 Per Person; 2022: N/A

LENGTH: 2 DAYS (CEU: 1.3 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132036

Course Title

Earth Retaining Structures

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. Instructors cover factors that affect wall selection, 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. Detailed information on subsurface investigation, soil and rock property design parameter selection, lateral earth pressures for wall system design, and load and resistance factor design (LRFD) for retaining walls are provided.

Outcomes

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

- Describe potential applications for Earth Retaining Structures (ERS)
- Select a technically appropriate and cost-effective ERS
- Select appropriate material properties, soil design parameters, and earth pressure diagrams
- Perform design analysis and prepare conceptual designs
- Review contractor submitted documents
- Discuss contracting methods
- Describe construction and inspection activities for ERS

Target Audience

The primary audience for this course is agency and consultant bridge/structures, geotechnical, and roadway design engineers; engineering geologists; and consultant review specialists. In addition, 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, including some understanding of LRFD concepts.

Training Level: Intermediate

Fee: 2021: $355 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@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 pavement projects. The course content includes geotechnical exploration and characterization of in-place and constructed subgrades; design and construction of subgrades and unbound layers for paved and unpaved roads, with emphasis on the American Association of State Highway Transportation Officials (AASHTO) 1993 empirical design procedure and on the new Mechanistic-Empirical Pavement Design Guide (MEPDG); drainage of bases, subbases, and subgrades and its impact on providing safe, cost-effective, and durable pavements; problematic soils, soil improvement, stabilization, and other detailed geotechnical issues in pavement design and construction; and construction methods, specifications, and QC/QA (quality control/quality assurance) inspection for pavement projects.

The goal of the course is for each participant to recognize the importance of the geotechnical aspects relevant to the design, construction, and performance of a pavement system. Participants will develop an appreciation for the importance of adequate subsurface exploration and laboratory characterization of subgrade soils as well as the requisite pavement design parameters for subgrades, unbound base and subbase layers, including drainage features. The course is designed to elicit maximum input from participants, particularly regarding an understanding of the impact of geotechnical features on the long-term performance of pavement systems.

NOTE TO PARTICIPANT: Please bring a calculator that can perform trigonometric, log, and other engineering calculations, a note pad, and a pencil.

NOTE TO HOST: For this course, the host is asked to identify a state speaker to conduct a host state presentation. The presentation is usually on the first day of the class and lasts approximately 25 minutes with an additional 15 minutes of discussion. The objective of the presentation is to communicate the state's current practices and experience to the course participants. The state representative should have experience in geotechnical pavement activities. A detailed list of issues to be addressed in the host presentation will be provided. Also for this course, the host is asked to secure at least 6 laptop computers to be used during team exercises. The host can request that at least 6 participants bring their laptops to the course. The machines must have Microsoft Excel (Office 97 or later) and the optional Solver add-in tool installed. Lastly, the host state is asked to complete a "Questionnaire on Geotechnical Practices in Pavement Design" and provide policies and special provisions for (1.) obtaining subsurface information and laboratory testing in relation to pavement design, (2.) pavement design along with any agency design guides, (3.) field construction monitoring for subgrade approval and pavement component approval as well as contractors QC requirements for pavement component construction.

Outcomes

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

- Explain the geotechnical parameters of interest in pavement design and their effects 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, both for the AASHTO 93 empirical design procedure and the new MEPDG
- 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, materials 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 forum for these various personnel to work together to enhance current procedures for building and maintaining more cost-efficient pavement

structures.

Training Level: Basic

Fee: 2021: $385 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134001

Course Title

Principles and Applications of Highway Construction Specifications

Well-written highway construction specifications are those that can be interpreted accurately to minimize confusion and reduce owner-contractor disputes. Across the country, current practices, standards, and requirements for writing specifications are changing. Agencies also are using effective specifications to manage risk and support alternative contracting methods.

NHI 134001 Principles of Writing Highway Construction Specifications is a highly engaging, two-day, instructor-led training session. It includes content that highlights the role of specifications as contract documents and tools for assigning risk. Course participants engage in lessons and practice sessions to identify types of specifications, select the most appropriate type for a given project, and generate an original, effective highway construction specification.

This is not a grammar course; however, adequate course content emphasizes the use of basic grammar and writing style so that the learners can generate specifications that are correct, consistent, clear, complete, and concise.

Outcomes

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

- Explain the purposes of a specification.
- Explain how specifications are used to assign risk and influence the behavior of different parties, within a given a scenario.
- Compare the functions of Standard and Supplemental Specifications with the functions of Special Provisions.
- Explain how the "order of precedence" affects writing specifications and preparing plans.
- Describe the purpose of the General Provisions.
- Explain how a consistent writing style can affect the interpretation of specifications.
- Complete a checklist of the information needed before writing or revising a specification.
- Explain the potential benefits of writing in the active voice.
- Rewrite passive voice sentences into the active voice.
- Evaluate specifications to determine the need for imperative or indicative mood.
- State the five Cs used in specification writing. (Note: the five Cs include: correct; consistent; clear; complete; concise.)
- Explain each element of the AASHTO five-part format.
- Identify potential ambiguities in the wording, given a sample specification.
- Identify the potential benefits of each of the five Cs, given a sample specification.
- Apply the five Cs and the host agency's preferred format to revise the specification, given a sample specification.
- Write a new specification to a given set of criteria using the five Cs and the host agency's preferred format, given a sample specification.
- Compare method versus end-result specifications.
- Relate the type of specification to the allocation of risk.
- Write an end-result specification to replace a method specification, given an excerpt from a method specification.

Target Audience

This course is designed primarily for individuals who write, review, and implement an agency's contract specifications. Participants might represent Federal, State, and local transportation agencies; other public agencies; contractors; and consultant firms.Individuals who do not write specifications but may contribute to their development, as well as those who use specifications, could also benefit from this course and the interaction with their classmates. Such participants might include personnel from environmental, materials, or construction sections or units; legal departments; work zone and safety professionals; contractor personnel; and any others involved with the design and construction of transportation facilities.

Training Level: Intermediate

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134001T

WCT

Course Title

Principles and Applications of Highway Construction Specifications (EXAM ONLY FOR 134001V)

Well-written highway construction specifications are those that can be interpreted accurately to minimize confusion and reduce owner-contractor disputes. Across the country, current practices, standards, and requirements for writing specifications are changing. Agencies also are using effective specifications to manage risk and support alternative contracting methods.

NHI 134001 Principles of Writing Highway Construction Specifications is a highly engaging, two-day, instructor-led training session. It includes content that highlights the role of specifications as contract documents and tools for assigning risk. Course participants engage in lessons and practice sessions to identify types of specifications, select the most appropriate type for a given project, and generate an original, effective highway construction specification.

This is not a grammar course; however, adequate course content emphasizes the use of basic grammar and writing style so that the learners can generate specifications that are correct, consistent, clear, complete, and concise.

Outcomes

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

- Explain the purposes of a specification.
- Explain how specifications are used to assign risk and influence the behavior of different parties, within a given a scenario.
- Compare the functions of Standard and Supplemental Specifications with the functions of Special Provisions.
- Explain how the "order of precedence" affects writing specifications and preparing plans.
- Describe the purpose of the General Provisions.
- Explain how a consistent writing style can affect the interpretation of specifications.
- Complete a checklist of the information needed before writing or revising a specification.
- Explain the potential benefits of writing in the active voice.
- Rewrite passive voice sentences into the active voice.
- Evaluate specifications to determine the need for imperative or indicative mood.
- State the five Cs used in specification writing. (Note: the five Cs include: correct; consistent; clear; complete; concise.)
- Explain each element of the AASHTO five-part format.
- Identify potential ambiguities in the wording, given a sample specification.
- Identify the potential benefits of each of the five Cs, given a sample specification.
- Apply the five Cs and the host agency's preferred format to revise the specification, given a sample specification.
- Write a new specification to a given set of criteria using the five Cs and the host agency's preferred format, given a sample specification.
- Compare method versus end-result specifications.
- Relate the type of specification to the allocation of risk.
- Write an end-result specification to replace a method specification, given an excerpt from a method specification.

Target Audience

This course is designed primarily for individuals who write, review, and implement an agency's contract specifications. Participants might represent Federal, State, and local transportation agencies; other public agencies; contractors; and consultant firms.Individuals who do not write specifications but may contribute to their development, as well as those who use specifications, could also benefit from this course and the interaction with their classmates. Such participants might include personnel from environmental, materials, or construction sections or units; legal departments; work zone and safety professionals; contractor personnel; and any others involved with the design and construction of transportation facilities.

Training Level: Intermediate

Fee: 2021: $0 Per Person; 2022: N/A

Length: 5 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134001V

Course Title

Principles and Applications of Highway Construction Specifications (Virtual Delivery of 134001)

Well-written highway construction specifications are thosethat can be interpreted accurately to minimize confusion and reduceowner-contractor disputes. Across the country, current practices, standards,and requirements for writing specifications are changing. Agencies also areusing effective specifications to manage risk and support alternativecontracting methods.

NHI 134001V - Principles of Writing Highway ConstructionSpecifications is now offered on-line as a virtual course. A virtualinstructor-led training provides 100% remote learning while ensuringparticipants have access to expert instructors, workshop activities, andengaging peer-to-peer discussions.

It includes content that highlights the roleof specifications as contract documents and tools for assigning risk. Courseparticipants engage in lessons and practice sessions to identify types ofspecifications, select the most appropriate type for a given project, andgenerate an original, effective highway construction specification.

This is not a grammar course; however, adequate coursecontent emphasizes the use of basic grammar and writing style so that thelearners can generate specifications that are correct, consistent, clear,complete, and concise.

Register today to experience a highly engaging, two-day, online instructor-led training session from the convenience of your home and/or office anywhere in the country, remotely.

Outcomes

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

- Explain the purposes of a specification.
- Explain how specifications are used to assign risk and influence the behavior of different parties, within a given a scenario.
- Compare the functions of Standard and Supplemental Specifications with the functions of Special Provisions.
- Explain how the “order of precedence” affects writing specifications and preparing plans.
- Describe the purpose of the General Provisions.
- Explain how a consistent writing style can affect the interpretation of specifications.
- Complete a checklist of the information needed before writing or revising a specification.
- Explain the potential benefits of writing in the active voice.
- Rewrite passive voice sentences into the active voice.
- Evaluate specifications to determine the need for imperative or indicative mood.
- State the five Cs used in specification writing. (Note: the five Cs include: correct; consistent; clear; complete; concise.)
- Explain each element of the AASHTO five-part format.
- Identify potential ambiguities in the wording, given a sample specification.
- Identify the potential benefits of each of the five Cs, given a sample specification.
- Apply the five Cs and the host agency’s preferred format to revise the specification, given a sample specification.
- Write a new specification to a given set of criteria using the five Cs and the host agency’s preferred format, given a sample specification.
- Compare method versus end-result specifications.
- Relate the type of specification to the allocation of risk.
- Write an end-result specification to replace a method specification, given an excerpt from a method specification.

Target Audience

This course is designed primarily for individuals who write, review, and implement an agency’s contract specifications. Participants might represent Federal, State, and local transportation agencies; other public agencies; contractors; and

consultant firms.Individuals who do not write specifications but may contribute to their development, as well as those who use specifications, could also benefit from this course and the interaction with their classmates. Such participants might include personnel from environmental, materials, or construction sections or units; legal departments; work zone and safety professionals; contractor personnel; and any others involved with the design and construction of transportation facilities.

TRAINING LEVEL: Intermediate

FEE: 2021: $250 Per Person; 2022: N/A

LENGTH: 16 HOURS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207A

New Training WBT

Course Title

How to Construct Durable Full-Depth Repairs in Concrete Pavements

Full-depth repairs are used to restore localized areas of slab damage that extend beyond the upper one-third of slab depth or originate from the slab bottom.

This course provides a comprehensive guide for performing full-depth repairs--from planning for, preparing, and evaluating the repair through testing and quality assurance after construction is complete. In the Web-based training you will find detailed, how-to instruction that covers the full scope of tasks involved in successfully completing a full-depth repair project. Instructional methods include short, focused, and task-based lessons, visual aids, and assignments that are directly applicable to work in the field.

Outcomes

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

- Explain the purpose of full-depth repairs
- Identify pavement problems that full-depth concrete pavement repairs can and cannot address
- Describe proper project review and material checks for a preservation job involving full-depth repair
- Explain the proper safety and personal protective equipment you will need when performing full-depth repair projects
- Describe the criteria for selecting repair locations and boundaries
- Explain what to do if you think the boundaries are marked incorrectly
- Explain how patching materials are selected for full-depth repair
- Describe the patch material mixing and handling factors that impact the quality of the repair
- Describe the different types of perimeter joint faces for transverse and longitudinal joints
- List important considerations for sawing perimeter joints
- Explain how deteriorated concrete can be removed from the repair area
- List the steps you can take to minimize damage to surrounding pavement when removing concrete
- Describe how to prepare the repair area for new concrete
- Define load transfer
- Describe important considerations for installing dowel bars for full-depth repairs
- List the three ways to connect longitudinal steel for CRCP full-depth repairs
- Explain how to handle the longitudinal joints in longer and shorter patches
- Explain the steps required to place, finish, and cure the concrete for a full-depth repair
- Describe the texturing methods used to match the patch texture with the surrounding pavement
- Explain the steps for sealing the patch perimeter joints
- Explain the difference between quality control and acceptance, including who is responsible
- Describe the tests that may be used for acceptance and opening to traffic

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207B

New Training WBT

Course Title

How to Construct Durable Partial-Depth Repairs in Concrete Pavements

This course provides a comprehensive guide for performing partial-depth repairs--from planning for, preparing, and evaluating the patch through testing and quality assurance after construction is complete. Partial-depth repairs are defined as the removal and replacement of small areas of deteriorated (or spalled) concrete pavement. Partial-depth repairs are an alternative to full-depth repairs in areas where slab deterioration is located primarily in the upper one-third to upper one-half of the slab and the existing load transfer devices (if any) are still functional.

This important preservation technique can slow or eliminate the spread of spalling distresses that tend to occur under repeated thermal stresses, freezing and thawing, and traffic loading. The information in this course covers all of the considerations for partial-depth repairs including patch materials and construction techniques to produce patches that are cost-effective and can last 10 to 15 years or longer.

You will discover detailed, how-to instruction that covers the full scope of tasks involved in successfully completing a full-depth repair project. The instructional methods in this Web-based training include short, focused, and task-based lessons, visual aids, and assignments that are directly applicable to work in the field.

Outcomes

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

- Explain what a partial-depth repair is, and why it is used
- Identify the types of distresses that partial-depth repair can and cannot address
- Describe the three types of partial-depth repairs used to replace deteriorated concrete
- Describe proper project review and material checks for a preservation job involving partial-depth repair
- Explain worker safety, health, and personal protective device considerations for partial-depth repair projects
- Describe the criteria for selecting repair locations and boundaries
- Explain what to do if you think the boundaries are marked incorrectly
- Describe the methods for removing deteriorated concrete in preparation for a partial-depth repair
- Identify which methods are appropriate for the different types of partial-depth repairs
- Describe how to prepare the existing slab for repair material
- Identify the materials used in a partial-depth repair
- List the factors that influence repair mixture selection
- Identify when compression relief is necessary for a partial-depth repair project
- Describe how to reestablish a joint or crack by installing joint or crack compression relief material or by sawing
- List the four major steps for properly placing the patching material
- Explain the process for completing the patch
- Explain the difference between quality control and acceptance, including who is responsible
- Describe the tests that may be used for acceptance and opening to traffic

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 2.5 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207C

New Training WBT

Course Title

Proper Diamond Grinding Techniques for Pavement Preservation

This course provides how-to instruction covering the scope of tasks and considerations involved in performing diamond grinding, diamond grooving, and next generation concrete surfacing (NGCS) operations.

Diamond grinding and grooving are surface restoration procedures used to correct concrete pavement surface distresses or deficiencies. They are often used in conjunction with other pavement preservation techniques (e.g., dowel bar retrofit, partial-depth repairs, full-depth repairs) as part of a comprehensive pavement preservation program. Each technique addresses a specific pavement shortcoming. In some situations, it may be justified to use diamond grinding or diamond grooving as the sole preservation technique. However, this depends on the conditions and characteristics of the specific project.

You will benefit from short, focused, and task-based lessons and visual aids that reinforce content by showing its relevance to work in the field.

Outcomes

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

- Explain what diamond grinding is, and why it is used
- Explain how diamond grinding equipment works
- Describe the steps to take to prepare for diamond grinding on a project
- List the components of the cutting head
- Describe how blade selection impacts grinding success
- Explain basic procedures for safely operating diamond grinding equipment
- Determine when specialized equipment may be necessary
- Explain how to measure head wear
- Define slurry
- Describe how slurry is picked up and disposed of during diamond grinding operations
- Name the diamond grinding machine's systems and their components
- Identify the system to which each part of the diamond grinding machine belongs
- Describe the function of each part or system on a diamond grinding machine
- Describe how diamond grinding is used to affect road smoothness, noise, and friction
- Explain what Next Generation Concrete Surfacing (NGCS) is, and when it is used
- List considerations for grinding on city streets
- Identify quality issues that can occur during diamond grinding
- Explain how diamond grinding quality issues can be prevented or addressed
- Identify issues that cannot be controlled by the contractor and require owner consideration and input
- Describe the equipment used in diamond grooving operations
- Explain how the diamond grooving texture is achieved

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 2 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207D

WBT

Course Title

Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching

This course provides how-to instruction that covers the scope of tasks and considerations involved in performing dowel bar retrofit and cross-stitching operations.

DBR is the installation of dowel bars at existing transverse joints or cracks in order to effectively transfer wheel loads across slabs and reduce deflections. Dowel bars are retrofitted into the joints of existing concrete pavements, which either do not have load transfer devices, or in which the existing devices are no longer functional.

Cross-stitching is a preservation method designed for longitudinal joints or cracks that are in relatively good condition, but that need to be tied stronger together.

This course contains short, focused lessons that are task-based, and contain detailed visual aids and videos, reinforcing content so that it can be directly applied to work in the field.

Outcomes

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

- Explain what dowel bar retrofitting and cross-stitching are, and why they are used
- Define load transfer
- Describe the steps you should take to prepare for a project involving DBR or cross-stitching
- Explain the basic components of DBR and cross-stitching projects
- Describe how to determine the size of the components for both DBR and cross-stitching
- Determine the proper locations to use DBR and cross-stitching for different pavement distresses
- Identify the materials used in DBR and cross-stitching operations
- List the important factors in selecting materials for DBR and cross-stitching
- Explain how slots are created and prepared for a DBR project
- Describe how dowel bars should be placed in the slot
- Explain how the backfill material is placed and finished
- Explain how to drill and clean holes for cross-stitching
- Describe the process for installing tie bars
- Explain the procedures for finishing the cross-stitching project
- Describe aspects of DBR and cross-stitching projects that are tested or inspected for quality or acceptance
- List important quality considerations for DBR and cross-stitching projects

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 2 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207E

New Training WBT

Course Title

Proper Joint Sealing Techniques for Pavement Preservation

In this course you will find detailed, "how-to" instruction that covers the scope of tasks and considerations involved in performing joint sealing or resealing pavement joints and cracks. Short, focused lessons are task-based in nature and contain detailed visual aids and videos that reinforce content so you can apply new knowledge directly to your work in the field.

Sawed joints are sealed to prevent the intrusion of water, deicing chemicals, and incompressible materials into the pavement structure which can reduce the pavement's acceptable performance life. Joint sealing is shown to prevent several types of distresses, including joint associated distress, weakening of the base and subgrade supporting structure, blow ups, and voids beneath the joints and subsequent pavement faulting or pumping. It has also been shown recently that when wide joints are used, sealing joints can reduce the overall tire-pavement interaction noise.

Take this course to learn how to employ successful practices and techniques. Specifically, you will learn the answers to these questions:

1. Why is the technique an important part of concrete pavement preservation?
2. What options are available and which options provide the best opportunities for success?
3. What materials are involved in the techniques?
4. What are the specific, sequential tasks required to properly perform joint sealing?

Outcomes

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

- Describe what joint sealing is
- Explain why joints are sealed
- List considerations for preparing for and keeping safe on a joint sealing project
- Describe the materials used in a joint or crack sealing project and their differences
- Describe the standard details used for joint or crack sealing installations
- Identify equipment used for sawing and sealing or resealing joints and cracks
- Describe the purpose of each piece of equipment and how it works
- Explain how a joint or crack is prepared for sealing
- Describe the process for installing the backer rod (if it is used)
- Explain how the sealant or seal is installed
- Describe procedures for applying a penetrating concrete sealer
- Describe procedures for repairing hairline, minor random, and wide cracks
- List important quality considerations for joint sealing projects
- Describe quality control methods you can use to make sure a sealant reservoir is readyfor sealant installation and the sealant is installed properly
- Describe how sealant installations are inspected for quality assurance and acceptance
- Identify the distresses or problems that occur with joint sealants and seals
- Explain the steps to take during formed-in-place sealant or compression seal installation

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. Participants may have some awareness and past involvement with paving processes, but the training is appropriate for learners regardless of experience level with the techniques. The primary audience is contractors. This course will appeal to individuals in the following roles: construction supervisors, workers, and

technicians; agency inspectors and construction managers; and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 4 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207F

New Training WBT

Course Title

How to Construct Durable Full-Depth Repairs in Concrete Pavements (Spanish)

This course is in Spanish.

Full-depth repairs are used to restore localized areas of slab damage that extend beyond the upper one-third of slab depth or originate from the slab bottom.

This course, presented in Spanish, provides a comprehensive guide for performing full-depth repairs--from planning for, preparing, and evaluating the repair through testing and quality assurance after construction is complete. In the Web-based training you will find detailed, how-to instruction that covers the full scope of tasks involved in successfully completing a full-depth repair project. Instructional methods include short, focused, and task-based lessons, visual aids, and assignments that are directly applicable to work in the field.

Outcomes

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

- Explain the purpose of full-depth repairs
- Identify pavement problems that full-depth concrete pavement repairs can and cannot address
- Describe proper project review and material checks for a preservation job involving full-depth repair
- Explain the proper safety and personal protective equipment you will need when performing full-depth repair projects
- Describe the criteria for selecting repair locations and boundaries
- Explain what to do if you think the boundaries are marked incorrectly
- Explain how patching materials are selected for full-depth repair
- Describe the patch material mixing and handling factors that impact the quality of the repair
- Describe the different types of perimeter joint faces for transverse and longitudinal joints
- List important considerations for sawing perimeter joints
- Explain how deteriorated concrete can be removed from the repair area
- List the steps you can take to minimize damage to surrounding pavement when removing concrete
- Describe how to prepare the repair area for new concrete
- Define load transfer
- Describe important considerations for installing dowel bars for full-depth repairs
- List the three ways to connect longitudinal steel for CRCP full-depth repairs
- Explain how to handle the longitudinal joints in longer and shorter patches
- Explain the steps required to place, finish, and cure the concrete for a full-depth repair
- Describe the texturing methods used to match the patch texture with the surrounding pavement
- Explain the steps for sealing the patch perimeter joints
- Explain the difference between quality control and acceptance including who is responsible
- Describe the tests that may be used for acceptance and opening to traffic

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207G

New Training WBT

Course Title

How to Construct Durable Partial-Depth Repairs in Concrete Pavements (Spanish)

This course is in Spanish.

In this course, presented in Spanish, you will find a comprehensive guide for performing partial-depth repairs from planning, preparing, and evaluating the patch through testing and quality assurance after construction is complete.

Partial-depth repairs are defined as the removal and replacement of small areas of deteriorated, or spalled, concrete pavement. Partial-depth repairs are an alternative to full-depth repairs in areas where slab deterioration is located primarily in the upper one-third to upper one-half of the slab and the existing load transfer devices (if any) are still functional. The technique is an important preservation technique to slow or eliminate the spread of spalling distresses that tend to occur under repeated thermal stresses, freezing and thawing, and traffic loading. The information in this course will cover all of the considerations, including patch materials and construction techniques to produce patches that are cost-effective and can last 10 to 15 years or longer.

Specifically, you'll learn how to employ successful practices and techniques on concrete pavement preservation projects. The following questions are answered in this course:

Why is the technique an important part of concrete pavement preservation?

What options are available for performing the construction processes and procedures?

Which options provide the best opportunities for success?

What materials are involved in the techniques?

What are the proper techniques for mixing, placing, and curing?

What are the specific, sequential tasks required to properly perform each of the techniques?

Outcomes

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

- Explain what a partial-depth repair is and why it is used
- Identify the types of distresses that partial-depth repair can and cannot address
- Describe the three types of partial-depth repairs used to replace deteriorated concrete
- Describe proper project review and material checks for a preservation job involving partial-depth repair
- Explain worker safety, health, and personal protective device considerations for partial-depth repair projects
- Describe the criteria for selecting repair locations and boundaries
- Explain what to do if you think the boundariesare marked incorrectly
- Describe the methods for removing deteriorated concrete in preparation for a partial-depth repair
- Identify which methods are appropriate for the different types of partial-depth repairs
- Describe how to prepare the existing slab for repairs
- Identify the materials used in a partial-depth repair
- List the factors that influence repair mixture selection
- Identify when compression relief is necessary for a partial-depth repair project
- Describe how to reestablish a joint or crack by installing joint or crack compression relief material or by sawing
- List the four major steps for properly placing the patching material
- Explain the process for completing the patch
- Explain the difference between quality control and acceptance, including who is responsible
- Describe the tests that may be used foracceptance and opening to traffic

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207H

New Training WBT

Course Title

Proper Diamond Grinding Techniques for Pavement Preservation (Spanish)

This course is in Spanish.

In this course, presented in Spanish, you will find "how-to" instruction covering the scope of tasks and considerations involved in performing diamond grinding, diamond grooving, and next generation concrete surfacing (NGCS) operations.

Diamond grinding and grooving are surface restoration procedures used to correct concrete pavement surface distresses or deficiencies. They are often used in conjunction with other pavement preservation techniques (e.g., dowel bar retrofit, partial-depth repairs, full-depth repairs) as part of a comprehensive pavement preservation program. Each technique addresses a specific pavement shortcoming. In some situations, it may be justified to use diamond grinding or diamond grooving as the sole preservation technique; however, this depends on the conditions and characteristics of the specific project.

This course contains short, focused, task-based lessons that include detailed visual aids and videos, which reinforce the content so you can apply new knowledge directly to your work in the field.

Learn how to employ successful practices and techniques on concrete pavement preservation projects. Specifically, you will explore these questions:

Why is the technique an important part of concrete pavement preservation?

What options are available for performing the construction processes and procedures?

Which options provide the best opportunities for success?

What materials are involved in the techniques?

What are the proper techniques for mixing, placing, and curing?

What are the specific, sequential tasks required to properly perform each of the techniques?

Outcomes

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

- Explain what diamond grinding is and why it is used
- Explain how diamond grinding equipment works
- Describe the steps to take to prepare for diamond grinding on a project
- List the components of the cutting head
- Describe how blade selection impacts grinding success
- Explain basic procedures for safely operating diamond grinding equipment
- Determine when specialized equipment may be necessary
- Explain how to measure head wear
- Define slurry
- Describe how slurry is picked up and disposed of during diamond grinding operations
- Name the diamond grinding machine's systems and their components
- Identify the system to which each part of the diamond grinding machine belongs
- Describe the function of each part or system on a diamond grinding machine
- Describe how diamond grinding is used to affect road smoothness, noise, and friction
- Explain what Next Generation Concrete Surfacing (NGCS) is and when it is used;
- List considerations for grinding on city streets
- Identify quality issues that can occur during diamond grinding
- Explain how diamond grinding quality issues can be prevented or addressed
- Identify issues that cannot be controlled by the contractor and require owner consideration and input

- Describe the equipment used in diamond grooving operations
- Explain how the diamond grooving texture is achieved

Target Audience

This course provides support and instruction forindividuals involved in construction projects using concrete pavementpreservation techniques. This training is ideal for construction foreman,workers, and technicians; agency inspectors and construction managers; and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207I

WBT

Course Title

Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching (Spanish)

This course is in Spanish.

This course provides "how-to" instruction in Spanish that covers the scope of tasks and considerations involved in performing dowel bar retrofit andcross-stitching operations.

DBR is the installation of dowel bars at existing transverse joints or cracks to effectively transfer wheel loads across slabs and reduce deflections. Dowel bars are retrofitted into the joints of existing concrete pavements, which either do not have load transfer devices or in which the existing devices are no longer functional.

Cross-stitching is a preservation method designed for longitudinal joints or cracks that are in relatively good condition, but that need to be tied stronger together.

This course contains short, focused lessons that include detailed instructions along with visual aids and videos that reinforce the content so you can apply it directly to your work in the field. Take this course to find answers to these questions:

Why is the technique an important part of concrete pavement preservation?

What options are available for performing the construction processes and procedures?

Which options provide the best opportunities for success?

What materials are involved in the techniques?

What are the proper techniques for mixing, placing, and curing?

What are the specific, sequential tasks required to properly perform each of the techniques?

Outcomes

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

- Explain what dowel bar retrofitting and cross-stitching are, and why they are used
- Define load transfer
- Describe the steps you should take to prepare for a project involving DBR or cross-stitching
- Explain the basic components of DBR and cross-stitching projects
- Describe how to determine the size of the components for both DBR and cross-stitching
- Determine the proper locations to use DBR and cross-stitching for different pavement distresses
- Identify the materials used in DBR and cross-stitching operations
- List the important factors in selecting materials for DBR and cross-stitching
- Explain how slots are created and prepared for a DBR project
- Describe how dowel bars should be placed in the slot
- Explain how the backfill material is placed and finished
- Explain how to drill and clean holes for cross-stitching
- Describe the process for installing tie bars
- Explain the procedures for finishing the cross-stitching project
- Describe aspects of DBR and cross-stitching projects that are tested or inspected for quality or acceptance
- List important quality considerations for DBR and cross-stitching projects

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and

construction managers; and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207J

New Training WBT

Course Title

Proper Joint Sealing Techniques for Pavement Preservation (Spanish)

This course is in Spanish.

In this course you will find detailed, "how-to" instruction in Spanish that covers the scope of tasks and considerations involved in performing joint sealing or resealing pavement joints and cracks. Short, focused lessons contain detailed visual aids and videos that reinforce content so you can apply new knowledge directly to your work in the field.

Sawed joints are sealed to prevent the intrusion of water, deicing chemicals, and incompressible materials into the pavement structure which can reduce the pavement's acceptable performance life. Joint sealing is shown to prevent several types of distresses, including joint associated distress, weakening of the base and subgrade supporting structure, blow ups, and voids beneath the joints and subsequent pavement faulting or pumping. It has also been shown recently that when wide joints are used, sealing joints can reduce the overall tire-pavement interaction noise.

Take this course to learn how to employ successful practices and techniques. Specifically, you will learn the answers to these questions:

Why is the technique an important part of concrete pavement preservation?

What options are available and which options provide the best opportunities for success?

What materials are involved in the techniques?

What are the specific, sequential tasks required to properly perform joint sealing?

Outcomes

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

- Explain what joint or crack sealing is, and when it should be performed;
- List important safety considerations when working on joint sealing projects;
- Explain how to prepare for joint sealing;
- Describe recommended materials and equipment used in joint sealing;
- Describe recommended construction procedures and process steps for joint sealing;
- Describe recommend procedures for repairing cracks;
- List the criteria for determining whether joint sealing results are of sufficient quality; and
- Identify typical problems encountered and how to avoid or resolve these issues.

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138008

Course Title

Transportation Performance Management (TPM) for Bridges

Starting in 2019, this course will be delivered for free to Metropolitan Planning Organizations and State DOTs. The reduced price is being provided by the FHWA Office of Infrastructure. YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138008executivesummary/

'Transportation Performance Management for Bridges' is a one-day Instructor-led Training course offered by NHI, the authoritative source in transportation training.

Moving Ahead for Progress in the 21st Century Act (MAP-21) established, and Fixing America's Surface Transportation (FAST) continued, new requirements for reporting on national performance measures and making progress toward targets in several national goal areas, including the condition of the bridges on the National Highway System (NHS). This course helps agencies apply Transportation Performance Management (TPM) concepts to implement the bridge-related TPM requirements.

The course begins with an overview of key performance management concepts. It then reviews performance measures defined for assessing and reporting bridge performance. Finally, the course details how to set and report bridge performance targets and assess performance against agency targets.

The main goals of the course are to provide agency staff with the skills and abilities to use the national bridge performance management measures to assess bridge condition, establish bridge performance targets, report bridge performance, and assess progress toward achieving bridge performance targets in compliance with the TPM requirements in 23 CFR 490.

The course is organized in the following lessons:

+ TPM Overview

+ Bridge Performance Management and Related Rules

+ Bridge Performance Data

+ Setting Bridge Performance Targets

+ Reporting, Accountability, and Transparency

The course includes a written assessment. The course was launched in May 2018.

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138008executivesummary/

To enroll in this Instructor-led Training course, select the 'View Sessions' button and select 'Add To Cart' next to your session choice. If there are no upcoming sessions, select 'Sign Up for Session Alerts.'

Any organization can host this course. To host this course and bring training to your organization, click the 'Host this Course' button.

Outcomes

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

- Describe the transportation performance management (TPM) requirements related to bridge performance
- Describe the performance-based planning and programming process and asset management process as they apply to bridges
- Identify required bridge performance measures, as well as other common bridge performance measures
- Use and interpret bridge performance data
- Identify key supporting business practices for establishing and assessing progress toward achieving targets
- Establish bridge performance targets using data on existing performance and predicted future funds, deterioration, and investment strategies
- Explain common challenges in establishing bridge performance targets and approaches that can be used to address them
- Describe required process for bridge performance measurement, reporting, and assessment

Target Audience

The target audience for this Instructor-led Training course consists primarily of professionals responsible for collecting, analyzing, and reporting bridge performance data; managing bridge inventories; recommending bridge investment strategies; and setting bridge performance targets. This audience includes bridge managers, asset managers, planners, performance management, and programming staff of State and local agencies, consultants, and FHWA.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138009

Course Title

Transportation Performance Management for Pavements

This course will be delivered for free to Metropolitan Planning Organizations and State DOTs. The reduced price is being provided by the FHWA Office of Infrastructure. YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138009executivesummary/

'Transportation Performance Management for Pavements' is a one-day Instructor-led Training course offered by NHI, the authoritative source in transportation training.

Recent legislation has resulted in new requirements for national performance measures and targets in several measure areas, including pavement conditions. Moving Ahead for Progress in the 21st Century Act (MAP-21) established the requirements, and Fixing America's Surface Transportation (FAST) continued them. Most States and other transportation agencies have established their own measures for pavement conditions; however, few transportation officials have experience in managing a performance-based program with specific outcome-oriented pavement targets.

This course is intended to review concepts in Transportation Performance Management (TPM), identify specific measures used for characterizing pavement conditions, and provide methods for analyzing and recommending pavement condition targets and approaches for monitoring pavement networks. One important aspect of TPM is monitoring performance once targets have been established and using information on current performance to guide decision making. The final portion of the course focuses on performance monitoring and approaches for updating performance targets over time.

The main goal of the course is to provide agency staff with the skills and abilities to use the national measures to assess pavement condition, establish pavement condition targets, and report and evaluate pavement performance over time.

The course is organized into the following lessons:

+ Overview of TPM Legislative and Regulatory Requirements

+ Relating Pavement Performance to Planning, Asset Management and Existing Pavement Programs

+ The National Pavement Performance Measures

+ Setting Pavement Performance Targets

+ Reporting, Accountability, and Transparency

The course includes a written assessment. The course was launched in December 2017.

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138009executivesummary/

To enroll in this Instructor-led Training course, select the 'View Sessions' button and select 'Add To Cart' next to your session choice. If there are no upcoming sessions, select 'Sign Up for Session Alerts.'

Any organization can host this course. To host this course and bring training to your organization, click the 'Host this Course' button.

Outcomes

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

- Describe the national performance management regulations related to pavement conditions
- List the data requirements for computing condition using national pavement performance metrics and measures
- Describe the process for using the national metrics and measures to assess pavement condition
- Describe the relationship of pavement performance measures and targets with the performance-based planning and programming process and asset management programs as they apply to pavement networks
- Calculate pavement performance targets using existing and historical condition data, funding, other programming constraints, and predicted future condition information
- Explain common challenges in establishing pavement performance targets and approaches that can be used to address them
- Describe the process for pavement performance reporting and evaluation

Target Audience

The target audience for this Instructor-led Training course primarily consists of professionals responsible for pavement analysis, pavement project selection, evaluation of pavement investment strategies and associated risks, recommending pavement targets, and monitoring pavement condition. This audience may include pavement engineers, asset managers, planners, performance management, and programming staff of State and local agencies, consultants, and FHWA staff.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132012

Course Title

Soils and Foundations Workshop

This course is geared toward practicing design and construction engineers who routinely deal with soil and foundation problems but have little theoretical background in soil mechanics or foundation engineering. The course takes a project-oriented approach whereby the soils input to a bridge project is followed from conception to completion. In each phase of the project, the soil concepts will be developed into specific foundation designs and recommendations. The classroom presentation includes a variety of exercises to verify achievement of learning objectives. Each participant will take away a comprehensive reference manual on soils and foundations and a participant workbook containing a copy of all slides presented and completed exercises.

NOTE TO PARTICIPANT: All participants should bring calculators that perform trigonometric calculations, a note pad, and a pencil.

NOTE TO HOST: In addition to the typical host requirements of NHI courses, for this course the host is asked to arrange for the state's geotechnical engineering group to conduct a short presentation (usually on the second day of the course) summarizing the administrative and technical procedures followed by the host state.

Outcomes

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

- Identifying the minimum level of geotechnical input in various project phases of a highway project
- Recalling the equipment and procedures used to implement a subsurface investigation of soil and rock conditions
- Demonstrating basic skills in visual description of soils native to the host state
- Recalling geotechnical facilities and personnel in the host state
- Recalling the basic soil test procedures and how the results of the various soil tests are applied results to highway projects
- Listing procedures used for both settlement and stability analysis, and recalling design solutions to stability and settlement problems for approach roadway embankments
- Listing procedures used for determining bearing capacity and settlement of shallow foundations such as spread footings
- Identifying the basic skills needed in the design and construction management of driven pile and drilled shaft foundations
- Recalling the driven pile and drilled shaft foundation construction equipment and construction inspection procedures
- Description static load testing and recalling the basic skills needed to interpret static load test results
- Recalling the basic skills needed in the design and construction of earth retaining structures
- Discussing the format and minimum content of an adequate foundation report

Target Audience

Personnel from the following units at the transportation agency could benefit from this workshop: geotechnical, bridge design, roadway design, materials, construction, and maintenance. The personnel who will benefit the most are the first-line supervisors involved in the design of highway structures and embankments. 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. All attendees should be encouraged to attend the entire course, not just sections that are in their specialty. One of the major benefits of this course is to give engineers an appreciation of activities outside their specialties that influence, or are influenced by, the work of the geotechnical engineer.

Training Level: Basic

Fee: 2021: $550 Per Person; 2022: N/A

Length: 4 DAYS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132014

Course Title

Drilled Shafts

Drilled shafts are an alternate type of deep foundation that may be more cost effective and perform better than other types of deep foundations in bridge piers at river crossings and in 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 the construction 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 designing 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 contractors 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 the tests
- Formulate the basic elements of construction specifications for drilled shafts
- Demonstrate an understanding of integrity testing, repair, and retrofit of defective shafts
- Estimate costs for drilled shafts

Target Audience

The target audience for this course includes 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 their immediate areas 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 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.

Training Level: Intermediate

Fee: 2021: $425 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132033

Course Title

Soil Slope and Embankment Design and Construction

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 problems with soil slope/embankment stability and deformation in transportation projects. Participants will develop the skills necessary to design and evaluate soil slopes and embankments and learn about the implications for construction and inspections. The course embraces both design and construction.

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

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 steps necessary for designing an embankment over compressible foundation soil
- List the common causes/triggering mechanisms for landslides/slope instabilities
- List appropriate stabilization methods

Target Audience

The target audience is bridge, geotechnical, or transportation engineers with 0 to 20 years of experience and responsible for the design, analysis, and construction maintenance or remediation of soil slopes and embankments on surface transportation facilities.

Training Level: Intermediate

Fee: 2021: $330 Per Person; 2022: N/A

Length: 2.5 DAYS (CEU: 1.5 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132034

Course Title

Ground Modification Methods

Ground Modification Methods is a practical training course that provides participants the knowledge and ability to effectively implement the latest ground modification methods and procedures used in connection with transportation related construction.

The course content includes information on the description, history, functions, and categories of ground modification methods; a description of the web-based GeoTechTools technology selection and guidance system, and geotechnology catalog; and a series of stand-alone technical chapters on ground modification method categories. Each category chapter contains lessons that outline the current practice in design, construction methods and materials, design concepts, costs, and contracting methods and specifications.

The overall goal of Ground Modification Methods is to introduce agencies to state of the practice design tools and construction methods on available ground modification methods to design specialists, generalists, and construction engineers involved in projects with problematic site conditions.

Outcomes

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

- List the categories and functions of ground modification methods and techniques.
- Locate criteria to determine the applicability of each ground modification method discussed for a specific project under consideration.
- Describe advantages, disadvantages, and limitations for each ground modification method discussed.
- Describe how GeoTechTools can be used to identify potential applications for ground modification methods for use in transportation facilities.
- Locate and identify required soil and rock properties necessary to perform preliminary design.
- Prepare conceptual and basic designs, and evaluate contractor submitted designs.
- Identify appropriate quality assurance methods for various ground modification methods.
- Summarize key elements of a preferred contracting method.

Target Audience

The primary target 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 the design and contracting of ground modification methods are encouraged to attend. All attendees should have a basic knowledge of geotechnical engineering. Attainment of an undergraduate degree in civil engineering, geology, or equivalent engineering experience in the highway/transportation field is preferred.

Training Level: Intermediate

Fee: 2021: $525 Per Person; 2022: N/A

Length: 3.5 DAYS (CEU: 2.1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132035

Course Title

Rock Slopes

This course presents geological investigation techniques, shear strength theories for determining rock strength, and design methods for rock slopes with different failure mechanisms. Other topics include rock blasting, rock slope stabilization methods, and contracting issues. Classroom instruction includes the discussion of sample problems and case histories involving rock slope analyses and designs.

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

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 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 rockfall protection and slope stabilization measures
- Design a monitoring program for cut slopes

Target Audience

The target audience for this course includes 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.

Training Level: Intermediate

Fee: 2021: $260 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132036

Course Title

Earth Retaining Structures

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. Instructors cover factors that affect wall selection, 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. Detailed information on subsurface investigation, soil and rock property design parameter selection, lateral earth pressures for wall system design, and load and resistance factor design (LRFD) for retaining walls are provided.

Outcomes

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

- Describe potential applications for Earth Retaining Structures (ERS)
- Select a technically appropriate and cost-effective ERS
- Select appropriate material properties, soil design parameters, and earth pressure diagrams
- Perform design analysis and prepare conceptual designs
- Review contractor submitted documents
- Discuss contracting methods
- Describe construction and inspection activities for ERS

Target Audience

The primary audience for this course is agency and consultant bridge/structures, geotechnical, and roadway design engineers; engineering geologists; and consultant review specialists. In addition, 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, including some understanding of LRFD concepts.

Training Level: Intermediate

Fee: 2021: $355 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@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 pavement projects. The course content includes geotechnical exploration and characterization of in-place and constructed subgrades; design and construction of subgrades and unbound layers for paved and unpaved roads, with emphasis on the American Association of State Highway Transportation Officials (AASHTO) 1993 empirical design procedure and on the new Mechanistic-Empirical Pavement Design Guide (MEPDG); drainage of bases, subbases, and subgrades and its impact on providing safe, cost-effective, and durable pavements; problematic soils, soil improvement, stabilization, and other detailed geotechnical issues in pavement design and construction; and construction methods, specifications, and QC/QA (quality control/quality assurance) inspection for pavement projects.

The goal of the course is for each participant to recognize the importance of the geotechnical aspects relevant to the design, construction, and performance of a pavement system. Participants will develop an appreciation for the importance of adequate subsurface exploration and laboratory characterization of subgrade soils as well as the requisite pavement design parameters for subgrades, unbound base and subbase layers, including drainage features. The course is designed to elicit maximum input from participants, particularly regarding an understanding of the impact of geotechnical features on the long-term performance of pavement systems.

NOTE TO PARTICIPANT: Please bring a calculator that can perform trigonometric, log, and other engineering calculations, a note pad, and a pencil.

NOTE TO HOST: For this course, the host is asked to identify a state speaker to conduct a host state presentation. The presentation is usually on the first day of the class and lasts approximately 25 minutes with an additional 15 minutes of discussion. The objective of the presentation is to communicate the state's current practices and experience to the course participants. The state representative should have experience in geotechnical pavement activities. A detailed list of issues to be addressed in the host presentation will be provided. Also for this course, the host is asked to secure at least 6 laptop computers to be used during team exercises. The host can request that at least 6 participants bring their laptops to the course. The machines must have Microsoft Excel (Office 97 or later) and the optional Solver add-in tool installed. Lastly, the host state is asked to complete a "Questionnaire on Geotechnical Practices in Pavement Design" and provide policies and special provisions for (1.) obtaining subsurface information and laboratory testing in relation to pavement design, (2.) pavement design along with any agency design guides, (3.) field construction monitoring for subgrade approval and pavement component approval as well as contractors QC requirements for pavement component construction.

Outcomes

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

- Explain the geotechnical parameters of interest in pavement design and their effects 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, both for the AASHTO 93 empirical design procedure and the new MEPDG
- 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, materials 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 forum for these various personnel to work together to enhance current procedures for building and maintaining more cost-efficient pavement

structures.

Training Level: Basic

Fee: 2021: $385 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132042

Course Title

Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes

Mechanically stabilized earth walls (MSEWs) are commonly used on roadway projects and are typically cost effective and aesthetically pleasing. The basic concept behind MSEWs is to combine soil, reinforcing materials made of steel or polymers, and appropriate facing to produce a composite system with engineering properties that are ideal for most roadway applications. Reinforced soil slopes (RSS) utilize the same types of reinforcement for the construction of steep embankments. Both MSEWs and RSS structures can provide substantial savings in construction time and costs when compared with other types of earth retaining systems.

The goal of the course is to educate agencies about state-of-the-practice design tools. This includes comprehensive instruction on the design of MSEWs using load resistance factor design (LRFD). The course also presents construction practices to promote implementation of mechanically stabilized earth technology in cost effective earth retention structures. This course would most benefit persons who are involved in the design and construction of earth retention structures for surface transportation projects.

NOTE TO PARTICIPANT: Please bring a calculator that performs trigonometric calculations, a note pad, and a pencil.

NOTE TO HOST: In addition to the typical host requirements of NHI courses, for this course the host state technical contact is asked to bring 30 copies of the standard MSE wall and the RSS specifications (or special provisions), a complete set of applicable state DOT state construction specifications, standard plates, standard details, inspection guidelines, etc. pertaining to earth retaining structures. Copies should be forwarded to the instructors a month before the course. The host agency is also asked to provide approximately 20-25 pounds of dry sand. About 1/2 bag of "play" sand from a hardware store will suffice.

Outcomes

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

- Recognize potential applications for MSEWs and RSS structures 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 the cost of conceptual MSEWs and RSS structures and determine if construction is a cost-effective option
- Select appropriate specification/contracting method(s) and prepare detailed specifications for materials and methods of construction
- Define and communicate major components of construction inspection of MSEWs and RSS structures to confirm compliance with design

Target Audience

The primary audience for this course is agency and consultant bridge/structures, geotechnical, and roadway design engineers; engineering geologists; and consultant review specialists. In addition, management, specification and contracting specialists, and construction engineers interested in design and contracting aspects of MSEWs 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.)

Training Level: Intermediate

Fee: 2021: $470 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132043

Course Title

Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes

This course presents the concepts of mechanically stabilized earth wall (MSEW) and reinforced soil slope (RSS) systems and their application to roadways. The construction materials for both systems are described and guidance on acceptance for use is given. MSEW and RSS system construction steps are taught and typical construction practices and techniques are presented.

Outcomes

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

- Recognize potential applications for MSEWs and RSS structures 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 MSEWs and RSS structures to confirm compliance with design
- Understand the steps for MSEW and RSS construction and the corresponding points for inspection

Target Audience

The primary audience for this course is agency and consultant construction engineers, inspectors, and technicians. In addition, management; specification and contracting specialists; bridge/structures, geotechnical, and roadway design engineers; and engineering geologists interested in construction aspects of MSEWs 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 MSEWs and RSSs and a 3-day course, FHWA-NHI-132080 Inspection of MSEWs and RSSs.)

Training Level: Intermediate

Fee: 2021: $175 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 35

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132069

Course Title

Driven Pile Foundation Inspection

This course provides Federal, State, and local inspectors with practical knowledge and standard industry practices for inspecting pile-driving operations at transportation construction sites.

To establish a national standard for transportation personnel, NHI developed the course based on a number of Federal and State sources: the course materials from the Florida Department of Transportation's Pile Driving Inspector's Qualification test, AASHTO's 2000 Bridge Construction Specifications, and the NHI courses Driven Pile Foundations - Design and Construction (FHWA-NHI-132021) and Driven Pile Foundations - Construction Monitoring (FHWA-NHI-132022). However, the local specifications, inspection reports, and plan sheets available from the hosting agency also will be discussed. The course includes a 3-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 with 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

The target audience for this course includes those who inspect pile-driving operations during construction of foundations and major structures. In addition, project management and construction engineers in charge of pile-driving construction inspections are encouraged to attend. Attendees should have completed courses in basic courses in reading construction plans as well as construction math and high school algebra.

Training Level: Intermediate

Fee: 2021: $400 Per Person; 2022: N/A

Length: 2.5 DAYS (CEU: 1.5 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 35

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132070

Course Title

Drilled Shaft Foundation Inspection

Drilled Shaft Foundation Inspection is a stand-alone 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 inspectors with practical knowledge and standard industry practices for the inspection of drilled shaft foundation construction. A 2-hour qualification exam is administered on the third day of the course.

The course follows recommended FHWA specifications and practices for drilled shaft construction but may be modified to follow local agency specifications and practices.

NOTE TO PARTICIPANT: All participants should be advised by the local coordinator/session host that they are encouraged to complete NHI 132070B Drilled Shaft Inspector Tutorial (WBT). All participants should also be advised to bring a calculator that performs basic math, in particular works with negative numbers, a built in Pi function, and square root functions.

NOTE TO HOST: This course requires participation of a host agency technical representative. The objective of the host agency technical representative is to communicate the state's or region's current practices and experience to the course participants. The technical representative is asked to provide the instructor with a complete set of applicable state DOT construction specifications, standard plates, standard details, set of typical plans including boring sheets, a technical special provision, inspection guidelines and state standard Drilled Shaft Inspection Reporting and Recording forms. Also, the host agency is asked to provide seven duplicate sets of local soil and rock samples, one rock core, one set of rock cuttings, a full set of slurry testing equipment, a variety of spacers and standoffs used locally, and thirty sets of typical plans.

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 items in the drilled shaft installation plan
- 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 with plans, construction tolerances, and cleanliness
- Verify reinforcing cage construction compliance including side spacers and cross-hole sonic logging (CSL) tubes
- Determine concrete volumes for theoretical shafts and develop concrete curves
- Identify shaft "concreting" irregularities
- Perform calculations for volume, area, circumference, and elevation
- Locate, explain, and apply applicable FHWA, AASHTO, and State DOT specifications relating to compliance

Target Audience

The target audience for this course includes agency and consultant personnel who inspect foundations or major structures. In addition, project management and construction engineers in charge of drilled shaft construction inspection are encouraged to attend. This course is designed to be most beneficial to foundation inspectors who are responsible for inspecting drilled shafts during construction.

Training Level: Intermediate

Fee: 2021: $400 Per Person; 2022: N/A

Length: 2.5 DAYS (CEU: 1.5 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 35

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132078

Course Title

Micropile Design and Construction

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 educate engineers about the state of the practice in the design and construction of micropiles. The course covers stepwise procedures for the design of micropiles for structural support and for slope stability applications. Construction, inspection and integrity-testing aspects and issues are discussed as well. Classroom presentations include exercises that will lead participants through the technical and cost feasibility aspects of structural support and slope stability design with micropiles. Each participant will receive a workbook and reference manual containing detailed micropile design examples for various applications.

FHWA-NHI-132012 Soils and Foundations course 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, which builds upon the basic concepts presented in NHI courses FHWA-NHI-132012, FHWA-NHI-132014, and FHWA-NHI-132021.

Training Level: Intermediate

Fee: 2021: $275 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132079

Course Title

Subsurface Investigation Qualification

This course is part of a series to develop a training and qualification/certification program for geotechnical inspectors and field personnel. The course follows FHWA guidelines and practices for subsurface investigations. Topics addressed in the course include exploration equipment and methods, safety, borehole sealing, drilling and sampling requirements and criteria, proper visual classification and description of soils and rocks, common drilling errors, and dealing with difficult subsurface site conditions. A 2-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 and duties, as well as the importance of coordination and communication with the field personnel and engineers
- Explain the purpose of geotechnical subsurface investigations and why adequate, consistent, and quality investigations are essential
- 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 safety issues involving operation of a drill rig

Target Audience

The target audience for this course includes drillers, drilling inspectors, engineers, geologists, and technicians involved in field data collection and quality assurance of subsurface investigations.

Training Level: Intermediate

Fee: 2021: $360 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 35

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132081

Course Title

Highway Slope Maintenance and Slide Restoration

As focus changes toward the asset management of our existing infrastructure, the value of maintaining and managing our embankment and cut slopes becomes more apparent. This course provides the essentials to slope maintenance and slide restoration for transportation field personnel with an asset management perspective. This course is not meant to be highly technical, and explains, conceptually and in layman's terms, the conditions and factors affecting slope movement, stability and deterioration, and the cost considerations of maintenance, stabilization and of slope failures. The course also provides the fundamental aspects of slope management systems and discusses the rationale of slope management considering the legal implications of slope failures and rock fall.

Outcomes

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

- Discuss common soil and rock slope movement and instability
- Describe common factors and conditions under which slopes deteriorate and become less stable
- Describe the affects of earth material properties on slope stability
- Discuss the influences of water on slope stability
- Identify failure-prone conditions
- Describe the importance of necessary communication and coordination with geotechnical specialists
- Discuss best maintenance practices
- Discuss methods of slope monitoring
- Describe key components of slope management systems
- Recognize common soil and rock slope stabilization techniques
- Compare cost differences between preventative measures for slope maintenance and slide restoration and costs associated with slope failures
- Discuss legal implications of slope failures, rock fall and management systems

Target Audience

The target audience for this course includes a wide range of transportation personnel consisting of Federal, State and local maintenance, geotechnical, operations and asset management engineers, geologists, managers, supervisors and personnel involved in assessing, maintaining, managing and repairing cut-slopes, fill-slopes and associated features. Although the potential audience of this course is wide-ranging, the course is primarily provided for the State maintenance specialists.

Training Level: Basic

Fee: 2021: $360 Per Person; 2022: N/A

Length: 2.5 DAYS (CEU: 1.5 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 35

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132085

Course Title

Soil Nail Walls

Soil Nail Walls is a practical training course that provides civil engineers with the knowledge and ability to utilize design tools and construction methods for the safe and cost effective design of soil nail walls. The lessons present information on the analysis, design, and construction of permanent soil nail walls in highway applications, and introduces a framework that takes into account factors of safety in ASD while integrating LRFD principles. The goal of the course is to provide participants with state of the practice methods and guidelines to expand implementation of safe and cost effective soil nail technology and to help Owners identify and manage the risks associated with soil nail wall projects. The course provides technical guidance on applications and feasibility, construction materials and methods, information required for design, analysis and design of soil nail walls, corrosion protection, and contracting and specifications. Instruction is interactive, with participants actively involved in the learning experience.

Outcomes

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

- Identify potential applications for Soil Nail Walls (SNWs) for use in transportation facilities.
- Describe the load transfer mechanisms for SNWs.
- Select appropriate material properties and nail bond strength parameters used in design.
- Apply LRFD concepts to design of SNWs.
- Prepare conceptual and basic (i.e., simple geometries) designs.
- Compare and contrast state SNW application to the standard of practice.
- Define major components of construction quality assurance (QA), requirements for SNWs, to confirm compliance with design and confirm performance.

Target Audience

The primary target 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 of Soil Nail Walls are encouraged to attend. All attendees should have a basic knowledge of soil mechanics and structural engineering.

Training Level: Intermediate

Fee: 2021: $255 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132094

Course Title

LRFD Seismic Analysis and Design of Transportation Structures, Features, and Foundations

This course is a comprehensive and practical training course for analysis and design of transportation geotechnical features including soil and rock slopes, earth embankments, retaining walls, MSE walls, and buried structures; and bridge structural foundations including shallow and deep foundations, and abutment walls. It is developed in consideration of the requirements and recommendations of the seismic provisions in both the 2009 AASHTO LRFD Bridge Design Specifications and the AASHTO Guide Specifications for LRFD Seismic Bridge Design, the Final Report from NCHRP Project 12-70 "Seismic Analysis and Design of Retaining Walls, Buried Structures, Slopes, and Embankments", and 2006 FHWA Seismic Retrofitting Manual for Highway Structures.

In addition, the course reviews the fundamental principles including engineering seismology, earthquake hazard analysis, site characterization, ground motion characterization, and site response analysis, and highlight updated topics such as the 1000-yr USGS hazard map; updated AASHTO site classes/factors and spectral shapes; the "3-Point" Design Spectrum Construction method; derivation of the relative displacement spectrum; and regional differences in ground motion characteristics (i.e. western US (WUS) characteristics versus central and eastern US (CEUS). It addresses geotechnical hazards which can adversely impact bridges and other transportation structures and features during seismic event including slope instability, soil liquefaction, ground settlement, and fault Rupture. Liquefaction-induced lateral spread failures are also addressed.

Outcomes

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

- Recognize sources of primary and secondary damage due to earthquakes
- Describe the AASHTO seismic design philosophy
- Describe the input for a seismic hazard analysis and interpret the output for a bedrock site condition
- Develop an AASHTO acceleration response spectra and adjust it for local site conditions
- Estimate the residual undrained shearing resistance of liquefied sand
- Develop the input for an equivalent linear seismic site response analysis
- Determine the appropriate seismic coefficient for a pseudo static slope stability analysis and calculate the permanent seismic displacement of an unstable soil slope
- Evaluate the potential for liquefaction triggering and consequences
- Identify potential mitigation measures for slope instability, liquefaction and lateral spreading
- Evaluate external stability of gravity and semi-gravity walls subject to seismic loading
- Discuss types of soil-foundation-structure interaction and how its effects are modeled
- Evaluate the geotechnical and structural capacity of a spread footing
- Identify the primary capacity considerations for deep foundations under seismic loading
- Develop the abutment spring stiffness relationship

Target Audience

This course is intended to engage a target audience of bridge and geotechnical engineers with zero and up to 20 years of experience through instructor-led presentations, discussions, Q&A, group activities, walkthrough examples, hands-on student exercises, and demonstrations.

Training Level: Basic

Fee: 2021: $675 Per Person; 2022: N/A

Length: 5 DAYS (CEU: 3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132094A

Course Title

LRFD Seismic Analysis and Design of Transportation Geotechnical Features

The Instructor-Led 132094A Course has a prerequisite Web-Based Training (WBT), NHI-132010A Earthquake Engineering Fundamentals, that participants must complete before the start of the 132094A course. The WBT prerequisite course consists of 6 lessons including: Earthquake Fundamentals (L1); Intro to LRFD Seismic Design (L2); Earthquake Ground Motions (L3); Seismic Hazard Analysis (L4); AASHTO Design Ground Motion Characterization (L5); and Intro to Geotechnical Hazards (L6).

This 2-day NHI training course 132094A entitled "LRFD Seismic Analysis and Design of Transportation Geotechnical Features" is a shortened version of the NHI training course 132094 "LRFD Seismic Design of Transportation Geotechnical Features and Structural Foundations" focusing specifically on the geotechnical earthquake engineering aspects. It is a comprehensive and practical training course that addresses seismic analysis and design of transportation geotechnical features including ground motion characterization, development of the AASHTO acceleration response spectrum for structural design using the 1000-yr USGS hazard map for reference site conditions, and evaluation of AASHTO site class and application of AASHTO soil factors to account for local soil conditions; site characterization for geotechnical seismic analysis; equivalent linear site response analysis; identification of geotechnical seismic hazards; seismic stability and deformation analysis of embankments and slopes; analysis procedures for liquefaction and liquefaction-induced lateral spread or flow failures; seismic settlement analysis; and geotechnical hazard mitigation measures. The 132094A course also focuses on interactions between the geotechnical specialist and the bridge design engineer in the seismic design process.

Outcomes

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

- Describe the AASHTO seismic design performance criteria and develop an AASHTO acceleration response spectra for reference site (weak rock) conditions.
- Calculate fundamental period of the site and peak ground velocity from a spectral acceleration.
- Identify key soil properties necessary for seismic analysis and methods for evaluating them.
- Identify conditions warranting, establish input parameters, and conduct a one-dimensional equivalent linear site response analysis.
- Assess seismic slope stability and deformation potential in accordance with the AASHTO specifications and national state of art analysis and design guidance.
- Evaluate the potential for earthquake-induced liquefaction and its impacts on geotechnical transportation features in accordance with AASHTO specifications and national state-of-practice analysis and design guidance.
- Identify common mitigation methods for geotechnical seismic hazards.

Target Audience

This course is intended to engage a target audience of bridge and geotechnical engineers with zero and up to 20 years of experience, through instructor-led presentations, discussions, Q&A, group activities, walkthrough examples, and hands-on student exercises. At the end of design lessons, participants will have the opportunity to undertake a group design exercise to reinforce learning and enhance the transfer of new skills and knowledge to the workplace.

Training Level: Intermediate

Fee: 2021: $275 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132094B

Course Title

LRFD Seismic Analysis and Design of Structural Foundations and Earth Retaining Structures

This 2-day NHI training course 132094B entitled "LRFD Seismic Analysis and Design of Structural Foundations and Earth Retaining Structures" is a shortened version of the NHI training course 132094 "LRFD Seismic Design of Transportation Geotechnical Features and Structural Foundations" focusing specifically on the seismic design of retaining wall and structural foundations aspects. It is a comprehensive and practical training course that addresses seismic analysis and design of transportation geotechnical features including ground motion characterization using the AASHTO acceleration response spectrum developed based upon the AASHTO or USGS hazard maps adjusted for local site conditions using AASHTO soil site factors to account for local soil conditions or upon a site specific analysis; identification and evaluation of geotechnical seismic hazards; soil-foundation-structure interaction; shallow foundation design; deep foundation design; and design or earth retaining structures, including free standing retaining walls and abutment walls. It is developed generally in consideration of the requirements and recommendations of the seismic provisions in both the AASHTO LRFD Bridge Design Specifications and the AASHTO Guide Specifications for LRFD Seismic Bridge Design, the Final Report from NCHRP Project 12-70 "Seismic Analysis and Design of Retaining Walls, Buried Structures, Slopes, and Embankments", and 2006 FHWA Seismic Retrofitting Manual for Highway Structures. The 132094B course also focuses on interactions between the geotechnical specialist and the bridge design engineer in the seismic design process.

Outcomes

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

- Describe the AASHTO seismic design performance criteria and develop an AASHTO acceleration response spectra for reference site (weak rock) conditions.
- Calculate peak ground velocity and relative displacement from spectral acceleration.
- Identify the potential impacts of geotechnical hazards on foundations and earth retaining structures.
- Describe the two types of SFSI and recognize the importance of the interaction between structural designers and geotechnical engineers in the bridge design process.
- Evaluate the seismic capacity and stiffness of a shallow foundation.
- Evaluate the seismic capacity and stiffness of a deep foundation.
- Evaluate global and internal stability of earth retaining systems.
- Calculate bi-linear force-deformation relationship for seismic design and analysis of bridge abutment-backfill interaction.

Target Audience

This course is intended to engage a target audience of bridge and geotechnical engineers with zero and up to 20 years of experience, through instructor-led presentations, discussions, Q&A, group activities, walkthrough examples, and hands-on student exercises. At the end of design lessons, participants will have the opportunity to undertake a group design exercise to reinforce learning and enhance the transfer of new skills and knowledge to the workplace.

Training Level: Intermediate

Fee: 2021: $285 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132100

WBT

Course Title

Calibration at the Service Limit State, Incorporation of Foundation Movements in Structure Design

Prior to beginning the training, it is highly recommended that you download a copy of, "Incorporation of Foundation Movements in AASHTO LRFD Bridge Design Process, Second Edition", also referred to as the "White Paper". This White Paper will be referenced throughout the training and can be accessed by copying and pasting the following URL into your web browser address bar: http://shrp2.transportation.org/Documents/Renewal/R19B_Incorporation%20of%20Foundation%20Movements%20in%20AASHTO%20LRFD%20Bridge%20Design%20Process%20V2.pdf

Calibration at the Service Limit State, Incorporation of Foundation Movements in Structure Design is a 4-hour web-based training course offered by NHI, the authoritative source in transportation training.

Foundation movements cause many undesirable consequences, some of which include induced force effects which can lead to cracking or stress and differential movement which can lead to breaks in the grade causing rideability and/or drainage issues. These undesirable consequences often result in decreased structure life and increased maintenance costs.

Taking this course will help designers better understand calibrations for foundation movements, increasing their ability to mitigate undesirable consequences of foundation movements when designing structures. This course equips designers with the tools needed to rationally compare foundation alternatives and select the most appropriate foundation type, rather than arbitrarily using costly deep foundations.

The course consists of the following five modules covering the following topics:

1. Background and identification of key references
2. Identification of foundation movements, limit states, and terminology
3. Discussion of calibration concepts and demonstration of calibration process
4. Application of calibrated foundation movements
5. Summary and wrap-up

Note: There is no assessment for this course.

To enroll in this Web-based Training course, click "Add To Cart."

(Launched Fall 2019)

Outcomes

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

- Recognize the undesirable consequences due to foundation movements.
- Calibrate foundation movements using principles of limit state design.

Target Audience

The target audience for this web-based training is individuals responsible for, or involved with, the design and construction of bridge foundations on surface transportation projects. Typically, the individuals will include an audience that have a working knowledge of load and resistance factor design (LRFD), and a background in bridge foundation design on surface transportation facilities. This audience includes geotechnical engineers, bridge and transportation engineers, geologists, and managers. This course is intended for those with general knowledge and/or skills with the development of load and resistance factors for design of bridges and structures who desire to become familiar with calibrations for incorporation of foundation movements in structure design.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 4 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135046

Course Title

Stream Stability and Scour at Highway Bridges

The National Highway Institute's (NHI) 3-day Stream Stability and Scour at Highway Bridges course provides participants with comprehensive training in the prevention of hydraulic-related bridge failures. Course participants will receive training in conducting a stream stability classification and qualitative analysis of stream response and make estimates of scour at a bridge opening.

Material for the course comes primarily from two Hydraulic Engineering Circulars (HEC), "Evaluating Scour at Bridges" (HEC-18), 5th Edition (2012), and "Stream Stability at Highway Structures" (HEC-20), 4th Edition (2012). The effects of stream instability, scour, erosion, and stream aggradation and degradation are covered. Quantitative techniques are provided for estimating long-term degradation and for calculating the magnitude of contraction scour in a bridge opening. Procedures for estimating local scour at bridge piers and abutments for simple and complex substructures are also provided. A comprehensive workshop integrates qualitative analysis and analytical techniques to determine the need for a Scour Plan of Action for correcting stream instability and scour problems. For this 3-day course, the host agency will need to select 3 optional topics (out of 8 possible topics). Course instructors will contact the host prior to the course to complete a pre-course questionnaire, determine optional topics to be taught, and discuss the course schedule.

This comprehensive training provides preventive techniques for identifying, analyzing, and calculating various hydraulic factors that impact bridge stability. Public and private sector engineers responsible for maintaining the integrity of highway bridges will find it invaluable.

Prior to the beginning of the course, participants are strongly encouraged to enroll in the following Web-based training (WBT) courses: 135091 Basic Hydraulic Principles Review, 135086 Stream Stability Factors and Concepts, and 135087 Scour at Highway Bridges: Concepts and Definitions. Mastery of the concepts covered in these WBTs will enhance participation in the Instructor-led training.

Outcomes

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

- Identify indicators of stream instability that can threaten bridges
- Identify stream types and their potential for instability problems
- Describe open-channel hydraulics concepts in bridge scour and stream instability analyses
- Define types of scour that can occur at bridge crossings
- Describe aggradation, degradation, and contraction scour
- Calculate contraction scour for live bed and clear water conditions
- Describe factors that influence scour at piers
- Calculate pier scour for three typical case studies
- Describe the factors that influence scour at abutments
- Describe how HEC-18, HEC-20, and HEC-23 provide analysis procedures for stream instability and bridge scour
- Perform Level I and II analyses
- Classify a stream using two different classification systems
- Conduct a qualitative analysis of stream responses
- Apply the HEC-18 scour equations to determine total scour at a bridge
- Determine the need for a Scour Plan of Action at a scour-critical bridge

Target Audience

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

Training Level: Intermediate

Fee: 2021: $445 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135048

Course Title

Countermeasure Design for Bridge Scour and Stream Instability (2.5-Day)

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.

NHI Courses #135086 and #135087 are Web-based training module and are prerequisites for NHI Hydraulics courses 135047 and 135048.

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.

Training Level: Intermediate

Fee: 2021: $460 Per Person; 2022: N/A

Length: 2.5 DAYS (CEU: 1.5 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133078

Course Title

Access Management: Fundamental Principles and Application

This two-day course is designed to provide those who plan, operate, design, construct, or administer surface transportation or land use systems with a basic understanding of access management concepts and tools (e.g., permits, governance, practicality) available to them, the benefits of successful access management, and the costs, consequences, and even potential liabilities of unsuccessful access management.

Outcomes

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

- Define key concepts of access management and understand the symbiotic relationship of driveways, local streets, collectors, arterials and highways.
- List the benefits of good access management. Understand the consequences of poor access management.
- State the impacts of either favoring access or through traffic on the safety, operations, and sustainability of surface transportation systems for all users.
- Explain the importance of access management to complete streets and transportation (all modes) systems.
- Describe access-related challenges as they pertain to public rights-of-way and private property.
- Choose access management techniques or combinations of techniques that meet intended precepts to move traffic, or provide access, with attention to enhancing safety and operations for all users.
- Identify and address legal, political, and jurisdictional challenges to implementation of access management.

Target Audience

This course is intended for both technical and non-technical professionals working in, or having a strong interest in, transportation or land use planning, operations, design, maintenance, and development review in the public and private sectors.

Training Level: Basic

Fee: 2021: $325 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133078A

Course Title

Access Management: Fundamental Principles, Application and Computation

This course is designed to provide those who plan, operate, design, construct, or administer surface transportation or land use systems with a basic understanding of the concepts and tools available to them, the benefits of successful access management, and the costs of unsuccessful access management.

This three-day course provides more in-depth content targeted for technical professionals. This course is intended to attract participants beyond traditional state and local agency technical staff, including: planners, engineers, permit specialists, legal counsel, and project managers associated with transportation planning, operations, design, maintenance, and development review. The third day of this three-day class is designed to provide additional and more advanced instruction to participants than the FHWA-NHI133078 (two-day) course and is for those who desire to deepen their understanding of access management through more computationally-driven applications of the course materials.

Outcomes

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

- Determine the impacts of signalized and unsignalized access connections on a given corridor in terms of safety, capacity, and business market area
- Describe optimum connectivity for a given land use
- Calculate needed turn lane lengths, given a set of data
- Describe the interactions of access management treatments with both motorized and non-motorized users
- Select appropriate median access management techniques for a given application
- Select appropriate margin access management techniques for a given application

Target Audience

Technical professionals who are responsible for the engineering and planning applications necessary to support the development and administration of policies, planning, and design of transportation facilities and programs regarding access management.

Training Level: Intermediate

Fee: 2021: $400 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133109

Course Title

Strategies for Developing Work Zone Traffic Analysis

Strategies for Developing Work Zone Traffic Analyses is offered as a one-day instructor-led course utilizing lecture and small-group collaborative exercises to educate participants on how to develop effective transportation modeling strategies to support work zone-related decision-making. There is no hands-on computer based modeling work conducted in this course; rather it deals with developing analysis plans that combine people, data and tools to address work zone issues. The course is designed to cover:

Characterizing a work zone with respect to a prospective analysis

Classes of analytical tools and their capabilities within the context of work zones

Selecting an appropriate transportation modeling approach maximizing insight into potential impacts and mitigating technical risk

The course includes lecture, full-group interaction, and small group activities. The purpose of the course is three-fold. First, it will educate the participants regarding the constraints and opportunities of work zone analysis associated with available transportation modeling tools. Second, it will build familiarity for the participants with the various work zone factors influencing the development of a transportation analysis plan. Third, it will provide the participants with practical experience in developing analysis plans in a collaborative process considering issues ranging from work zone characteristics, performance measurement, technical risk assessment and resource constraints.

Outcomes

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

- Define the need, scope, and role of work zone modeling and analysis
- Describe the work zone analysis decision-making engine and the interactions among scheduling, application, and transportation management plan decisions
- Explain how to characterize a work zone
- Identify the transportation modeling approaches available for work zone analysis
- Discuss how a transportation modeling approach can be used given a set of work zone characteristics
- Justify the selection of transportation modeling approach

Target Audience

A mix of experience with traffic analysis tools and work zone planning among participants is preferred. No prior experience with traffic analysis tools is required. The course is designed to promote interactions between participants. Therefore, the group is likely to benefit from a variety of viewpoints if participants have varied levels of analytical experience and diverse agency affiliations. The group may include:State Department of Transportation Staff (District Engineers, Corridor Planners, Project Eng., Traffic Eng., Work Zone Planners)FHWA staff (Division Staff, Transportation Engineers, Traffic Staff, Planners)Metropolitan Planning Organization Staff (Planners)Consultants

Training Level: Basic

Fee: 2021: $125 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133112

Course Title

Design and Operation of Work Zone Traffic Control (1-Day)

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.

Training Level: Intermediate

Fee: 2021: $125 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133112A

Course Title

Design and Operation of Work Zone Traffic Control (3-Day)

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.

Training Level: Intermediate

Fee: 2021: $350 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133113

Course Title

Work Zone Traffic Control for Maintenance Operations

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

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.

Training Level: Accomplished

Fee: 2021: $125 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133114

Course Title

Construction Zone Safety Inspection (1-Day)

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: Inspection 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.

Training Level: Basic

Fee: 2021: $125 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133114A

Course Title

Construction Zone Safety Inspection (1.5 Day)

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: Inspection 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.

Training Level: Basic

Fee: 2021: $175 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: .9 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133115

Course Title

Advanced Work Zone Management and Design

This course provides participants with advanced levels of knowledge and competencies with technical and non-technical aspects of work zone traffic control practices including work zone planning, design, project management, and contract issues. The course is designed to provide maximum flexibility by including core, recommended, and optional lessons. Each participant receives a copy of the "Advanced Work Zone Management and Design" reference manual and a participant workbook that contains all lesson materials.

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 that may need to be resolved
- Demonstrate knowledge of the latest concepts as related to Parts 1, 5 and 6 of the MUTCD
- 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
- Consider the application of ITS technologies and where applicable apply ITS technologies to work zone planning, design and execution
- Consider alternative innovations, best practices and recent research findings in work zone planning, design and execution
- Develop temporary transportation management plans for safety and mobility
- 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 resolve community issues, including impacts of work zones on affected residential and business areas. Apply public participation, outreach, and work zone strategies to minimize or mitigate community impacts with respect to work zones
- 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
- Summarize work zone safety and mobility impacts and alternatives

Target Audience

State, and local design engineers, traffic and safety engineers, senior work zone traffic engineers, transportation planners, employees of metropolitan planning organizations and board members, regional planners, regional construction engineers (with work zone experience), and senior engineering technicians.

Training Level: Accomplished

Fee: 2021: $350 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133120

Course Title

Work Zone Traffic Analysis Applications and Decision Framework

Work Zone Traffic Analysis - Applications and Decision Framework is a two-day instructor-led course utilizing lecture and group collaborative exercises to provide guidance on work zone traffic analysis applications and decision framework. It will help work practitioners in understanding the analytical methods involved in conducting a work zone traffic analysis. This course is designed to cover establishing a work zone traffic analysis process; step-by-step guidance on determining the most suitable tools to perform a work zone analysis; key considerations when applying various modeling tools for work zone traffic analysis; a decision framework on how to select the best alternatives based on a set of performance measures; essential components of work zone traffic analysis report and a variety of case studies to demonstrate a diverse set of work zone traffic analysis applications.

The course provides an overview of the Federal Highway Administration's guidebook titled "Traffic Analysis Toolbox XII - Work Zone Traffic Analysis - Applications and Decision Framework. " Work Zone Traffic Analysis (WZTA) is the process of evaluating and determining the mobility and safety impacts within a transportation construction, maintenance, or rehabilitation project. The purpose of the course is to provide participants an understanding of the analytical methods involved in conducting and developing a WZTA as well as direction on where to go for more information.

Outcomes

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

- Establish a work zone traffic analysis process
- Select the appropriate tool for work zone traffic analysis
- Identify and assess key considerations for modeling approach
- Apply modeling tools to work zone traffic analysis
- Apply road user costs
- Reconcile inconsistencies and conduct sensitivity analysis
- Establish a MOTAA decision framework
- Develop analysis report structure

Target Audience

Engineers, planners, modelers, and others responsible for framing a work zone traffic analysis, those who decide on and use work zone traffic analysis tools for which zone strategies to implement, and decision-makers considering work zone traffic analysis. These include State DOT staff, FHWA staff, Metropolitan Planning Organization staff, and consultants. This course is designed for those individuals seeking to supplement and expand their basic knowledge and understanding of work zone traffic analysis. This is a mid-level course and it focuses heavily on the analysis tools and methods for work zone traffic analysis and case study examples.

Training Level: Intermediate

Fee: 2021: $300 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133121

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

Traffic engineering personnel from State, Federal, and local agencies involved in planning, design, operation or maintenance of traffic signals or traffic signal systems. 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.

Training Level: Basic

Fee: 2021: $350 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133121V

Course Title

Traffic Signal Design and Operation (Virtual Delivery)

Traffic Signal Design and Operation is now offered on-line as a virtual course. A virtual instructor-led training provides 100% remote learning while ensuring participants have access to expert instructors, workshop activities, and engaging peer-to-peer discussions. Register today and learn in the convenience of your home and/or office anywhere in the country, remotely.

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

Traffic engineering personnel from State, Federal, and local agencies involved in planning, design, operation or maintenance of traffic signals or traffic signal systems. 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.

Training Level: Basic

Fee: 2021: $350 Per Person; 2022: N/A

Length: 17 HOURS (CEU: 1.1 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133122

Course Title

Traffic Signal Timing Concepts

Traffic Signal Timing Concepts is a two-day course to assist in building technical expertise in signal timing by focusing on the relationship between network context and operational objectives to inform the design of signal timing parameters. The course will expand on the traditional signal timing process by incorporating an objectives and performance driven approach that leads to selection of appropriate computational methods for design and operation of traffic signal timing.

For many agencies, the design of signal timing parameters is an exercise in data collection and software driven optimization in response to citizen compliants. An ad-hoc complaint-driven processes with little documentation and infrequent attempts to quantify performance or improvements is not likely to lead to a well-managed, objective driven process for the timing and retiming of traffic signals, nor does it typically provide agencies with a good feel for the overall performance of their system. What is needed is an objective-driven, performance-oriented approach to traffic signal timing.

This course is very interactive and includes many exercises. Participants calculate various timing parameters by hand so they should bring a calculator to the course.

Completion of NHI #133121 is recommended but not required.

Outcomes

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

- Discuss an objectives-based signal timing process
- Describe operations objectives in the context of network configuration and traffic conditions
- Review phasing and timing
- Design cycle lengths
- Design green time and fixed intervals
- Design phase sequence and offsets
- Develop operational mode parameters
- Evaluate signal timing outcomes

Target Audience

Traffic Signal Timing Concepts is a two-day course for practitioners involved in or responsible for design, operations, or management of traffic signals including State/MPOs/Local Government personnel and consultants and contractors.

Training Level: Intermediate

Fee: 2021: $325 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133122V

Course Title

Traffic Signal Timing Concepts (Virtual Delivery)

Traffic Signal Timing Concepts is now offered on-line as a virtual course. A virtual instructor-led training provides 100% remote learning while ensuring participants have access to expert instructors, workshop activities, and engaging peer-to-peer discussions. Register today and learn in the convenience of your home and/or office anywhere in the country, remotely.

Traffic Signal Timing Concepts is a two-day course to assist in building technical expertise in signal timing by focusing on the relationship between network context and operational objectives to inform the design of signal timing parameters. The course will expand on the traditional signal timing process by incorporating an objectives and performance driven approach that leads to selection of appropriate computational methods for design and operation of traffic signal timing.

For many agencies, the design of signal timing parameters is an exercise in data collection and software driven optimization in response to citizen compliants. An ad-hoc complaint-driven processes with little documentation and infrequent attempts to quantify performance or improvements is not likely to lead to a well-managed, objective driven process for the timing and retiming of traffic signals, nor does it typically provide agencies with a good feel for the overall performance of their system. What is needed is an objective-driven, performance-oriented approach to traffic signal timing.

This course is very interactive and includes many exercises. Participants calculate various timing parameters by hand so they should bring a calculator to the course.

Completion of NHI #133121 is recommended but not required.

Outcomes

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

- Discuss an objectives-based signal timing process
- Describe operations objectives in the context of network configuration and traffic conditions
- Review phasing and timing
- Design cycle lengths
- Design green time and fixed intervals
- Design phase sequence and offsets
- Develop operational mode parameters
- Evaluate signal timing outcomes

Target Audience

Traffic Signal Timing Concepts is a two-day course for practitioners involved in or responsible for design, operations, or management of traffic signals including State/MPOs/Local Government personnel and consultants and contractors.

Training Level: Intermediate

Fee: 2021: $325 Per Person; 2022: N/A

Length: 17 HOURS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133123

Course Title

Systems Engineering for Signal Systems Including Adaptive Control

Systems Engineering for Signal Systems Including Adaptive Control is a two-day course aimed to assist transportation professionals to identify the needs for improved traffic operations and utilize systems engineering principles for the implementation of traffic signal operational improvements. This course will provide traffic operations managers and personnel a comprehensive view of what is required before, during, and after the implementation of a new traffic control system. Adaptive signal control is used as the example throughout the course.

The overall goal of this course is to assist traffic operations staff in identifying traffic control system objectives and needs to facilitate planning, designing and implementing a new traffic control system. The FHWA document, Model Systems Engineering Documents for Adaptive Signal Control Technology (ASCT) Systems, (FHWA-HOP-11-027) is used for the exercises of this course.

Outcomes

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

- Engage stakeholders
- Gather information needed for systems engineering process
- Evaluate and resolve constraints
- Assemble a concept of operations
- Extract requirements
- Document verification and validation process
- Develop a procurement strategy
- Assemble a systems engineering analysis
- Describe the systems engineering process

Target Audience

Professionals responsible for the planning, design, management or operation of traffic signal systems. This includes engineers, and technicians (advanced) of state/local agencies, consultants, and FHWA Operations staff.

Training Level: Basic

Fee: 2021: $330 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133125

Course Title

Successful Traffic Signal Management: The Basic Service Approach

Successful Traffic Signal Management: The Basic Service Approach is a two-day course aimed at helping agencies ensure that their limited resources are directed towards meeting the needs of the agencies most important stakeholders. A Traffic Signal Management Plan (TSMP) is a tool that documents and aligns an agencies traffic signal design, operation and maintenance strategies to achieve basic service objectives. The application of systematic business processes is integral to maintaining the resources and workforce capability that is necessary to sustain the operation and maintenance of traffic signal systems over long periods of time. Agencies that clearly articulate their operational objectives and meaningfully measure performance tend to operate and maintain traffic signal systems more effectively than agencies that fail to document this information.

The purpose of this course will be to describe and expand on the Basic Service Concept for use in developing an agency's Traffic Signal Management Plan. Emphasis will be placed on an agency developing a simply stated goal and then developing objectives, strategies and tactics enabling them to accomplish their stated goal. Each element of the traffic signal management plan will be thoroughly covered, resulting in a guideline that agencies can follow to develop their own TSMP.

Outcomes

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

- Formulate clear objectives
- Select appropriate standards of performance
- Identify performance measures
- Relate organizational capabilities and resource allocation to objectives
- Assess infrastructure reliability
- Identify signal timing strategies
- Document communication policies
- Apply effective design strategies
- Develop a traffic signal management plan

Target Audience

Professionals involved in the design, management, operation or maintenance of traffic signal systems. This includes design engineers, operations engineers and technicians (advanced) of state/local agencies, consultants, and FHWA Operations staff.

Training Level: Basic

Fee: 2021: $330 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133126A

WBT

Course Title

National Traffic Incident Management Responder Training - Web-Based

This training was developed under the second Strategic Highway Research Program (SHRP2), and is being provided to you by the FHWA Office of Operations.

Three injury crashes occur every minute in the United States, putting nearly 39,000 incident responders potentially in harm's way every day. Congestion from these incidents often generates secondary crashes, further increasing traveler delay and frustration. The longer incident responders remain at the scene, the greater the risk they, and the traveling public, face. A cadre of well-trained responders helps improve traffic incident response. Better incident response improve the safety of responders and drivers, reduces crashes that occur because of incident-related congestion, decreases traffic delays caused by incidents, and can cut incident response time.

The National Traffic Incident Management Responder Training was created by responders for responders. This course provides first responders a shared understanding of the requirements for safe, quick clearance of traffic incident scenes; prompt, reliable and open communication; and motorist and responder safeguards. First responders learn how to operate more efficiently and collectively.

This training covers many TIM recommended procedures and techniques, including:

- TIM Fundamentals and Terminology
- Notification and Scene Size-Up
- Safe Vehicle Positioning
- Scene Safety
- Command Responsibilities
- Traffic Management
- Special Circumstances
- Clearance and Termination

Prerequisite Note:

It is recommended that you take the following courses offered by FEMA:

IS 700 - National Management System (NIMS), An Introduction

ICS 100 - Introduction to Incident Command System (ICS)

ICS 200 - ICS for Single Resources and Initial Action Incidents

This training was developed through the second Strategic Highway Research Program (SHRP2).

Outcomes

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

- Use a common set of practices and advance standards across all responder disciplines.
- The National Traffic Incident Management Training Program equips responders with a common set of core competencies and assists them in achieving the TIM National Unified Goal of strengthening TIM programs in the areas of: Responder safety; Safe, quick clearance; and Prompt, reliable, and interoperable communications.

Target Audience

The target audience for the training is individuals from all TIM responder disciplines, including: Law Enforcement, Fire/Rescue, Emergency Medical Service, Towing and Recovery, Emergency Management, Communications, Highway/Transportation and Dispatch within States, regions and localities.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 4.1 HOURS (CEU: .4 UNITS)

Class Size: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134005

Course Title

Value Engineering Workshop (3-day)

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as: a) providing the needed functions safely, reliably, and at the lowest overall cost; b) improving the value and quality of the project; and c) reducing the time to complete the project.

This course begins with a Web-based training (WBT) component that is completed prior to the first day of the class (134005A). The 3-day workshop involves training participants to be valued contributors to the Value Engineering team, conducting a Value Engineering study in a team environment. It is preferable that the host agency provides actual project(s) to be used in this course, although The National Highway Institute (NHI) can provide projects upon request. Depending on the projects selected for use in the course, and based on the request of the host agency, the 3-day classroom session can be expanded to 4 or 5 days in length (NHI-134005B and NHI-134005C).

Upon successful course completion, participants will have acquired the training necessary to successfully participate in future Value Engineering studies for their agencies.

Outcomes

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

- Explain how Value Engineering can improve project performance, reduce costs, and enhance value.
- Acquire the necessary behaviors and skills to be an effective Value Engineering team member with the ability to: Investigate the project and analyze project functions and costs; Creatively speculate on alternative ways to perform the various functions; Evaluate the most effective life-cycle alternatives; Develop viable alternatives into fully supported recommendations; Present the recommendations to stakeholders and agency management

Target Audience

The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance can be included in order to provide the multiple perspectives needed to maximize the effectiveness of the team.

Training Level: Basic

Fee: 2021: $450 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134005B

Course Title

Value Engineering Workshop (4-day)

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as: a) providing the needed functions safely, reliably, and at the lowest overall cost; b) improving the value and quality of the project; and c) reducing the time to complete the project.

This course begins with a Web-based training (WBT) component that is completed prior to the first day of the class. The 4-day workshop involves training participants to be valued contributors to the Value Engineering team, conducting a Value Engineering study in a team environment. It is preferable that the host agency provides actual project(s) to be used in this course, although The National Highway Institute (NHI) can provide projects upon request. Depending on the projects selected for use in the course, and based on the request of the host agency, the 3-day classroom session can be expanded to 3 or 5 days in length (NHI-134005 and NHI-134005C).

Upon successful course completion, participants will have acquired the training necessary to successfully participate in future Value Engineering studies for their agencies.

Outcomes

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

- Explain how value engineering can improve project performance, reduce costs, and enhance value.
- Acquire the necessary behaviors and skills to be an effective Value Engineering Team member with the ability to: Investigate the project and analyze project functions and costs; Creatively speculate on alternative ways to perform the various functions; Evaluate the most effective life-cycle alternatives; Develop viable alternatives into fully supported recommendations; Present the recommendations to stakeholders and agency management

Target Audience

The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance can be included in order to provide the multiple perspectives needed to maximize the effectiveness of the team.

Training Level: Basic

Fee: 2021: $580 Per Person; 2022: N/A

Length: 4 DAYS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134005C

Course Title

Value Engineering Workshop (5-day)

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as: a) providing the needed functions safely, reliably, and at the lowest overall cost; b) improving the value and quality of the project; and c) reducing the time to complete the project.

This course begins with a Web-based training (WBT) component that is completed prior to the first day of the class (134005A). The 3-day workshop involves training participants to be valued contributors to the Value Engineering team, conducting a Value Engineering study in a team environment. It is preferable that the host agency provides actual project(s) to be used in this course, although The National Highway Institute (NHI) can provide projects upon request. Depending on the projects selected for use in the course, and based on the request of the host agency, the 5-day classroom session can be shortened to 3 or 4 days in length (NHI-134005 and NHI-134005B).

Upon successful course completion, participants will have acquired the training necessary to successfully participate in future Value Engineering studies for their agencies.

Outcomes

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

- Explain how value engineering can improve project performance, reduce costs, and enhance value.
- Acquire the necessary behaviors and skills to be an effective Value Engineering Team member with the ability to: Investigate the project and analyze project functions and costs; Creatively speculate on alternative ways to perform the various functions; Evaluate the most effective life-cycle alternatives; Develop viable alternatives into fully supported recommendations; Present the recommendations to stakeholders and agency management

Target Audience

The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance can be included in order to provide the multiple perspectives needed to maximize the effectiveness of the team.

Training Level: Basic

Fee: 2021: $690 Per Person; 2022: N/A

Length: 5 DAYS (CEU: 3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134005V

Course Title

Value Engineering Workshop (3-day) VIRTUAL DELIVERY of 134005

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as: a) providing the needed functions safely, reliably, and at the lowest overall cost; b) improving the value and quality of the project; and c) reducing the time to complete the project.

This course begins with a Web-based training (WBT) component that is completed prior to the first day of the class (134005V). The 3-day ONLINE workshop involves training participants to be valued contributors to the Value Engineering team, conducting a Value Engineering study in a team environment. It is preferable that the host agency provides actual project(s) to be used in this course, although The National Highway Institute (NHI) can provide projects upon request. Depending on the projects selected for use in the course, and based on the request of the host agency, the 3-day classroom session can be expanded to 4 or 5 days in length (NHI-134005B/134005W) and NHI-134005C/134005X).

Upon successful course completion, participants will have acquired the training necessary to successfully participate in future Value Engineering studies for their agencies.

Outcomes

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

- Explain how Value Engineering can improve project performance, reduce costs, and enhance value.
- Acquire the necessary behaviors and skills to be an effective Value Engineering team member with the ability to: Investigate the project and analyze project functions and costs; Creatively speculate on alternative ways to perform the various functions; Evaluate the most effective life-cycle alternatives; Develop viable alternatives into fully supported recommendations; Present the recommendations to stakeholders and agency management

Target Audience

The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance can be included in order to provide the multiple perspectives needed to maximize the effectiveness of the team.

Training Level: Basic

Fee: 2021: $450 Per Person; 2022: N/A

Length: 24 HOURS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134005W

Course Title

Value Engineering Workshop (4-day) VIRTUAL DELIVERY of 134005B

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as: a) providing the needed functions safely, reliably, and at the lowest overall cost; b) improving the value and quality of the project; and c) reducing the time to complete the project.

This course begins with a Web-based training (WBT) component that is completed prior to the first day of the class (134005A). The 3-day workshop involves training participants to be valued contributors to the Value Engineering team, conducting a Value Engineering study in a team environment. It is preferable that the host agency provides actual project(s) to be used in this course, although The National Highway Institute (NHI) can provide projects upon request. Depending on the projects selected for use in the course, and based on the request of the host agency, the 3-day classroom session can be expanded to 4 or 5 days in length (NHI-134005B and NHI-134005C).

Upon successful course completion, participants will have acquired the training necessary to successfully participate in future Value Engineering studies for their agencies.

Outcomes

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

- Explain how Value Engineering can improve project performance, reduce costs, and enhance value.
- Acquire the necessary behaviors and skills to be an effective Value Engineering team member with the ability to: Investigate the project and analyze project functions and costs; Creatively speculate on alternative ways to perform the various functions; Evaluate the most effective life-cycle alternatives; Develop viable alternatives into fully supported recommendations; Present the recommendations to stakeholders and agency management

Target Audience

The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance can be included in order to provide the multiple perspectives needed to maximize the effectiveness of the team.

Training Level: Basic

Fee: 2021: $580 Per Person; 2022: N/A

Length: 32 HOURS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134005X

Course Title

Value Engineering Workshop (5-day) VIRTUAL DELIVERY of 134005X

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as: a) providing the needed functions safely, reliably, and at the lowest overall cost; b) improving the value and quality of the project; and c) reducing the time to complete the project.

This course begins with a Web-based training (WBT) component that is completed prior to the first day of the class (134005A). The 3-day workshop involves training participants to be valued contributors to the Value Engineering team, conducting a Value Engineering study in a team environment. It is preferable that the host agency provides actual project(s) to be used in this course, although The National Highway Institute (NHI) can provide projects upon request. Depending on the projects selected for use in the course, and based on the request of the host agency, the 3-day classroom session can be expanded to 4 or 5 days in length (NHI-134005B and NHI-134005C).

Upon successful course completion, participants will have acquired the training necessary to successfully participate in future Value Engineering studies for their agencies.

Outcomes

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

- Explain how Value Engineering can improve project performance, reduce costs, and enhance value.
- Acquire the necessary behaviors and skills to be an effective Value Engineering team member with the ability to: Investigate the project and analyze project functions and costs; Creatively speculate on alternative ways to perform the various functions; Evaluate the most effective life-cycle alternatives; Develop viable alternatives into fully supported recommendations; Present the recommendations to stakeholders and agency management

Target Audience

The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance can be included in order to provide the multiple perspectives needed to maximize the effectiveness of the team.

Training Level: Basic

Fee: 2021: $690 Per Person; 2022: N/A

Length: 40 HOURS (CEU: 3 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134063E

WCT

Course Title

Maintenance Leadership Academy - Module E Weather-Related Operations (VIRTUAL DELIVERY-EXAM ONLY)

The Maintenance Leadership Academy is a training program for individuals who hold positions as State, district, and county maintenance supervisors. It is designed to help participants develop practical decisionmaking skills related to the various processes, methods, and materials that are applied to maintain their organization's bridge and highway systems.

The Weather-related Operations module prepares maintenance supervisors to develop, implement, and evaluate a weather-related operations plan.

The basic principles presented apply to all weather events. Throughout the course, the independent study assignments, class exercises, and discussions provide participants with an opportunity to consider the types of weather events they encounter regularly and apply the principles accordingly.

The Weather-related Operations module is delivered using independent study and classroom training methods. The independent study materials, consisting of an independent study workbook and Web-based training (WBT) module, are completed by participants before attending the classroom session.

The goal for this module is to prepare you to develop, implement, and manage a comprehensive, risk-based plan for weather-related events.

Outcomes

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

- Explain your State's policies, guidelines, and standards regarding treatment of roadways during inclement weather events.
- Given a scenario, identify information, procedures, and activities required for planning a response to a weather-related event.
- Given a scenario, select appropriate procedures and resources for executing a response to a weather-related event.
- Given a scenario, select appropriate procedures for documenting the response following a weather-related event.
- Explain the benefit of using an after-action review to inform future planning efforts.

Target Audience

The target audience for the Maintenance Leadership Academy is individuals who hold positions as State, district, and county maintenance supervisors involved with the operations of running a statewide, regional, or county operation and need the skills and knowledge associated with asset management.Assumed Training CompetenciesParticipants should understand and demonstrate specialized skills in a variety of maintenance tasks of the intermediate level and perform specialized tasks in limited areas or broad-based tasks with little or no daily supervision.

Training Level: Accomplished

Fee: 2021: $0 Per Person; 2022: N/A

Length: 7 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380069

Course Title

Road Safety Audits/Assessments

Performing effective road safety audits/assessments, (RSAs), improves safety and demonstrates to the public an agency's dedication to crash reduction. An RSA is a formal safety performance examination of an existing or future road or intersection by an independent audit team. The RSA training provides practical information on how to conduct an RSA, select a location, and build an independent, multi-disciplinary team. The costs, time, benefits, and common myths and concerns surrounding RSAs will be discussed. Participants learn how to improve transportation safety by applying a new proactive approach. Emphasis is placed on using low cost safety improvements as well as understanding the interaction between the highway and all road users.

The training includes hands-on application of the training materials, which includes information on each stage of a road safety audit and easy-to-use-prompt lists. A copy of "FHWA Road Safety Audit Guidelines" is provided.

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 local or statewide basis

Target Audience

Personnel who are likely to serve on a road safety audit team including Federal, State, local transportation personnel, first responders and consultants who conduct highway safety studies should also attend.

Training Level: Accomplished

Fee: 2021: $205 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380071

Course Title

Interactive Highway Safety Design Model

This course instructs highway design project managers, planners, designers, and traffic and safety reviewers in the application of the Interactive Highway Safety Design Model (IHSDM) software and provides 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

https://highways.dot.gov/safety/interactive-highway-safety-design-model/interactive-highway-safety-design-model-ihsdm

Participants gain hands-on experience with the software. Therefore, the training facility must be equipped with computers. There should be no more than two participants per computer. Minimum system specifications for the computers are as follows: Operating System - Microsoft Vista, Windows XP or Windows 2000 Professional; HTML Browser - Microsoft Internet Explorer, Netscape Navigator, or Foxfire; Spreadsheet Program, Microsoft Excel or equivalent; Hardware - At least 450 MHz Pentium III (or equivalent) CPU, 256 MB RAM or greater desirable, 800x600 high colors (16 bit) display; and 300 MB free disk space

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.

Training Level: Accomplished

Fee: 2021: $215 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380077

Course Title

Intersection Safety Workshop

Beginning with an introduction to intersection and crash characteristics, this course provides information on ready-to-use, direct-application safety measures for rural unsignalized and signalized intersections. Participants are presented with a synthesis of countermeasures and their associated crash reduction factors as identified in the "AASHTO Strategic Highway Safety Plan - NCHRP 500 Guidebooks." The course focuses on the application of these countermeasures and design and safety operations best practices for substantive improvements to intersection safety. During the course, participants have the opportunity to present intersection safety situations that they are currently facing and discuss appropriate countermeasures and best practices to address those situations.

Outcomes

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

- Apply models (equations) to predict the 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.

Training Level: Accomplished

Fee: 2021: $120 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380077V

Course Title

Intersection Safety Workshop (VIRTUAL DELIVERY)

Beginning with an introduction to intersection and crash characteristics, this course provides information on ready-to-use, direct-application safety measures for rural unsignalized and signalized intersections. Participants are presented with a synthesis of countermeasures and their associated crash reduction factors as identified in the "AASHTO Strategic Highway Safety Plan - NCHRP 500 Guidebooks." The course focuses on the application of these countermeasures and design and safety operations best practices for substantive improvements to intersection safety. During the course, participants have the opportunity to present intersection safety situations that they are currently facing and discuss appropriate countermeasures and best practices to address those situations.

Outcomes

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

- Apply models (equations) to predict the 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.

Training Level: Accomplished

Fee: 2021: $120 Per Person; 2022: N/A

Length: 6 HOURS (CEU: .6 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380078

Course Title

Signalized Intersection Guidebook Workshop

This course provides a holistic approach to signalized intersections and considers the safety and operational implications of a particular treatment on all system users, including motorists, pedestrians, bicyclists, and transit users. Using the guide, participants learn to make insightful intersection assessments, understand the tradeoffs of potential improvement measures, and apply guidebook measures and best practices to reduce the incidence of intersection crashes.

Practitioners will find the tools and information necessary to make insightful intersection assessments and to understand the impacts of potential improvement measures. The information in this guide is based on the latest research available and includes examples of novel treatments as well as best practices in use by jurisdictions across the United States and other countries. Additional resources and references are mentioned for the practitioner who wishes to learn more about a particular subject.

This guide upon which this workshop is based is not intended to replicate or replace traditional traffic engineering documents such as the Manual on Uniform Traffic Control Devices (MUTCD), the Highway Capacity Manual (HCM) 2010 or the American Association of State Highway and Transportation Officials' (AASHTO) A Policy on Geometric Design of Highways and Streets, nor is it intended to serve as a standard or policy document. Rather, it provides a synthesis of the best practices and treatments intended to help practitioners make informed, thoughtful decisions.

Outcomes

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

- Describe the process for selecting traffic signal locations
- Explain various traffic signal parameters, left turn phasing options, and detection
- Explain the relationship between safety and operations
- Identify and describe performance and safety impacts of traffic signal treatments

Target Audience

Professionals responsible for design, management, or operation of traffic signals. This includes design engineers, operations engineers and technicians (advanced) of state/local agencies, consultants, and FHWA Operations staff.

Training Level: Intermediate

Fee: 2021: $130 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380078V

Course Title

Signalized Intersection Guidebook Workshop (VIRTUAL DELIVERY)

This course provides a holistic approach to signalized intersections and considers the safety and operational implications of a particular treatment on all system users, including motorists, pedestrians, bicyclists, and transit users. Using the guide, participants learn to make insightful intersection assessments, understand the tradeoffs of potential improvement measures, and apply guidebook measures and best practices to reduce the incidence of intersection crashes.

Practitioners will find the tools and information necessary to make insightful intersection assessments and to understand the impacts of potential improvement measures. The information in this guide is based on the latest research available and includes examples of novel treatments as well as best practices in use by jurisdictions across the United States and other countries. Additional resources and references are mentioned for the practitioner who wishes to learn more about a particular subject.

This guide upon which this workshop is based is not intended to replicate or replace traditional traffic engineering documents such as the Manual on Uniform Traffic Control Devices (MUTCD), the Highway Capacity Manual (HCM) 2010 or the American Association of State Highway and Transportation Officials' (AASHTO) A Policy on Geometric Design of Highways and Streets, nor is it intended to serve as a standard or policy document. Rather, it provides a synthesis of the best practices and treatments intended to help practitioners make informed, thoughtful decisions.

Outcomes

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

- Describe the process for selecting traffic signal locations
- Explain various traffic signal parameters, left turn phasing options, and detection
- Explain the relationship between safety and operations
- Identify and describe performance and safety impacts of traffic signal treatments

Target Audience

Professionals responsible for design, management, or operation of traffic signals. This includes design engineers, operations engineers and technicians (advanced) of state/local agencies, consultants, and FHWA Operations staff.

Training Level: Intermediate

Fee: 2021: $130 Per Person; 2022: N/A

Length: 6 HOURS (CEU: .6 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380095

Course Title

Geometric Design: Applying Flexibility and Risk Management

Highway designers often face complex trade-offs when developing projects. A "quality" design may be thought of as satisfying the needs of a wide variety of users while balancing the often competing interests of cost, safety, mobility, social and environmental impacts. Applying flexibility and risk management in highway design requires more than simply assembling geometric elements from the available tables, charts and equations of design criteria. This transportation training provides participants with knowledge of the functional basis of critical design criteria to enable informed decisions when applying engineering judgment and flexibility. The training exercises and case studies provide practical applications of current knowledge from research and experience of safety and operational effects for various design elements.

Outcomes

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

- Explain the relationships and inherent flexibility among design criteria, guidelines, standards, and policies.
- Explain key concepts and assumptions of design "rules" as a basis for judging risks and making tradeoffs.
- Apply FHWA's Controlling Criteria and justify Design Exceptions.
- Identify available tools and techniques to quantify safety and operational effects and manage risks.
- Recognize opportunities to use performance analysis in decision-making
- Demonstrate confidence to make design choices that are flexible, for which risks are understood, leading to better outcomes in implementing projects.

Target Audience

This training targets transportation engineers responsible for selection of roadway design criteria in the development of street and highway projects. This training will be most advantageous for practicing engineers from state highway agencies, local agencies, engineering design consultants and FHWA field offices.
We encourage participation from diverse agencies in this transportation training. A mixture of professional backgrounds will facilitate conversations regarding opportunities to apply design flexibilities on actual projects involving multiple stakeholders at the state and local levels.

Training Level: Accomplished

Fee: 2021: $215 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380118

Course Title

Signing and Markings for Complex Freeway Interchanges

Most practitioners agree, we need a well-defined process for developing an effective guide-sign design plan. This course provides a systematic approach for developing and evaluating designs that inform highway users how to safely navigate complex freeway interchanges. This course reviews applicable standards and policies, as well as relevant principles from AASHTO--A Policy on Geometric Design (Chapter 10), NCHRP 600 Series (Human Factors), Chapters 18-21, and the MUTCD (Chapters 2D & 2E and Part 3)--to illustrate and help you identify the degree of flexibility you may have in the development and design process.

This course introduces you to the three fundamental building blocks of effective guide sign designs, Sign Design Group (SDG), Sign Type (ST) and Sign Design Layouts. You will learn how lane geometry principles such as exit lane elimination, auxiliary lanes, and lane balance can impact signing and marking layouts. You will gain a better understanding of option lane signing flexibility provided by the Manual on Uniform Traffic Control Devices (MUTCD). You will interact with various complex interchanges to identify and discuss current and potential interchange guide signing and markings with the goal of consistency, maintaining motorists' expectations, and corridor management of guide sign designs.

Before beginning this course, participants are strongly encouraged to review four 15-minute pre-recorded PowerPoint lessons covering definitions and foundations concepts. Participants will build upon these lessons during the workshop.

Outcomes

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

- Identify key human factors that influence the effectiveness of roadway signing and markings
- Describe key geometric concepts of interchange exit, including lane configurations and elimination methods
- Summarize the resultant effects of geometric decisions upon signing and marking
- State the relationship and factors which influence Sign Design Group, Sign Type, and Sign Design Layout
- Apply the process for designing the appropriate signing and markings layouts for optimum driver understanding and action execution

Target Audience

Engineers,engineering practitioners, technologists, involved in freeway and expresswaydesign, construction, and operations. The target audience for this course shouldalso include personnel and consultants in Roadway Design, Traffic Engineering,and other state District/Division offices or anyone who is responsible for developmentand planning, design and review of TCDs (signing and markings).

Training Level: Intermediate

Fee: 2021: $120 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

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.

Training Level: Basic

Fee: 2021: $305 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130091B

Course Title

Underwater Bridge Repair, Rehabilitation, and Countermeasures

Underwater Bridge Repair, Rehabilitation, and Countermeasures is a two-day course that will provide training to design engineers, construction inspectors, resident engineers and inspection divers in techniques for selecting and executing repairs to below water bridge elements. The primary goal of this course is to enable design engineers to select, design, and specify appropriate and durable repairs to below water bridge elements. A secondary goal of this course is to train staff in effective construction inspection of below water repairs. This course may be presented as a follow-up to NHI Course No. 130091A, Underwater Bridge Inspections.

Outcomes

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

- Determine whether below water repairs can be completed "in the wet", or require a cofferdam (or similar).
- Describe typical environmental constraints to performing repairs below water.
- Describe three methods of achieving a dry construction site within a body of water.
- List three attributes of good concrete repair mix designs.
- Describe the differences between flexible and rigid concrete forming systems.
- Describe underwater concrete placement techniques.
- Write installation procedures for pile jackets.
- Describe three methods for repair of pier scour.
- Describe the benefits of cathodic protection for bridge substructures.
- Describe four stages of underwater repair activities for underwater construction inspection.

Target Audience

The course is intended for design engineers, construction inspectors, resident engineers and inspection divers who may be engaged in the design, specifications or inspection of repairs to bridge elements located in and below water. The course may be of interest to contract administrators responsible for bridge repair or rehabilitation projects. It is expected that participants will have a working knowledge of bridge terminology, construction materials, and traditional repair techniques. Participants may also have backgrounds in bridge maintenance, repair, or construction. The audience will include persons with a range of education and technical backgrounds.

Training Level: Basic

Fee: 2021: $365 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130108

Course Title

Bridge Maintenance (ILT)

Replacing the original Bridge Maintenance course (FHWA-NHI-134029), this entirely new Instructor-led Training (ILT) course will provide participants with knowledge regarding common deficiencies that occur in bridges, common defects in bridge elements, preventive maintenance techniques, and protective systems intended to prevent deterioration and deficiencies in bridges. With this knowledge, this course will enable participants to investigate proper bridge maintenance procedures using bridge maintenance resources and apply these practices on-the-job.

WEB-BASED TRAINING (WBT) PREREQUISITE: It is strongly recommended that participants take and complete FHWA-NHI-130107A Fundamentals of Bridge Maintenance WBT prerequisite prior to taking this 4-day ILT. This prerequisite WBT is being offered free of charge to participants.

Outcomes

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

- Identify key steps involved in the development and implementation efforts of a cost-effective preservation strategy for a group of bridges.
- Identify maintenance and/or repair needs and select the best remedial strategy.
- Discuss 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.
- Apply effective management techniques (such as planning, scheduling, monitoring and reporting) during daily bridge maintenance operations.

Target Audience

This course is primarily for members of State and Local Departments of Transportation, as well as those contractors that perform work on behalf of these agencies. This training is primarily geared for individuals involved in on-site bridge maintenance and preservation activities and those that supervise and manage these activities. This training is appropriate for those with intermediate to advanced experience in bridge maintenance and repair activities. This training is also suitable for those with intermediate/advanced knowledge of general maintenance and repair activities that have successfully completed the prerequisite, FHWA-NHI-130107A Fundamentals of Bridge Maintenance WBT course. Those that are not involved in on-site bridge maintenance activities, such as designers and construction personnel, may also benefit from this training.

Training Level: Intermediate

Fee: 2021: $430 Per Person; 2022: N/A

Length: 4 DAYS (CEU: 2.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130110

Course Title

Tunnel Safety Inspection

This 5-day, Instructor-led Training (ILT) is highly interactive and builds upon participants' prior knowledge of tunnel and/or bridge inspection. This course covers the entire breadth of knowledge necessary to manage or execute a successful tunnel inspection based on the National Tunnel Inspection Standards (NTIS), Tunnel Operations, Maintenance, Inspection and Evaluation (TOMIE) Manual and Specifications for the National Tunnel Inventory (SNTI). However, it does not replace the need for specialized experts to assist in inspections. There are nine instructional modules. Once participants display achievement of the learning outcomes of one module, the class will progress to the next module. During the course, the instructor will lead participants through a series of case studies giving them an opportunity to practice and apply their knowledge in real-life tunnel inspection situations. The capstone case study will be a virtual tunnel inspection that takes place in a computer-simulated, 3D environment. Using this tool, participants will be able to perform a tunnel inspection and demonstrate their achievement of all learning outcomes.

*Participant Prerequisite Requirement: ALL participants should successfully complete one of the following three prerequisite requirements:

-130054 Engineering Concepts for Bridge Inspectors; or

-130101 Introduction to Safety Inspection of In-Service Bridges; or

-130101A Prerequisite Assessment for Safety Inspection of In-Service Bridges.

Prior to taking this course, it is strongly recommended that participants complete 130055 Safety Inspection of In-Service Bridges, 130056 Safety Inspection of In-Service Bridges for Professional Engineers, or possess equivalent field experience.

It is not required, but strongly recommended that participants possess some design or safety inspection experience of in-service tunnels or bridges.

Host Requirements: Hosts must provide a training room large enough to accommodate at least 30 participants as well as the 15 NHI virtual tunnel laptops (provided by NHI Instructors) that will be used for the virtual tunnel exercises. Additionally, the host must ensure that ALL students have successfully met the prerequisite requirement* and have a valid course completion certificate for one of the three prerequisite options.

Outcomes

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

- Articulate the importance and purpose of tunnel inspection
- Apply the fundamentals of tunnel inspection
- Demonstrate the inspection and evaluation of tunnel structural, civil, mechanical, electrical, signage and lighting, and fire/life safety/security elements
- Use tunnel inspection references

Target Audience

The target audience for the Tunnel Safety Inspection ILT course is primarily members of Federal, State, local (Authority or Commission) and Tribal highway agency employees, who are involved with tunnel design, inspection and maintenance, as well as consultants involved in inspecting tunnels or in tunnel inspection management and leadership positions.

Training Level: Basic

Fee: 2021: $480 Per Person; 2022: N/A

Length: 5 DAYS (CEU: 3.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130122

Course Title

Design and Evaluation of Bridges for Fatigue and Fracture

FHWA is offering a special incentive to promote this newly released, high-priority training. For a limited time and subject to availability, DOT's who host the course can receive 20 seats at no cost. However, any additional seats must be purchased at regular price, either by DOT or by outside participants. We request that course be advertised to the local consultant community to maximize participation. DOTs can only take advantage of this incentive once.

This two-day training course presents relevant issues related to fatigue and fracture in steel bridges, including analysis, design, evaluation, repair, and retrofit. It is based on the AASHTO LRFD Bridge Design Specifications, Eighth Edition, as well as the AASHTO Manual for Bridge Evaluation, Second Edition, with Interim Revisions through 2016. Participant Exercises, Guided Walk Throughs, and videos are included throughout the training to aid bridge engineers with the implementation of the presented information.

This course consists of three modules. The first module serves as a general introduction to the class. The second module covers fundamentals, and it includes four lessons - Introduction to Fatigue and Fracture, Crack Growth in Steel Structures, Theory, and Characterizing Fatigue and Fracture in Bridge Members. The third module covers application, and it includes five lessons - Analysis for Fatigue, AASHTO Design Approach for Fatigue, AASHTO Design Approach for Fracture, AASHTO Evaluation Approach, and Retrofit and Repair.

The curriculum materials include a comprehensive Reference Manual in CD format (FHWA Publication No. FHWA-NHI-16-016), lecture and workshop exercises intended to promote or enhance a working knowledge of AASHTO LRFD, and a participant workbook for lecture notes and exercises.

Individuals attending this course should have a minimum BSCE degree. They should also have a working knowledge of the current AASHTO LRFD Bridge Design Specifications and should have relevant design experience using this specification on at least one steel bridge superstructure.

There are no NHI prerequisites for this course. However, select topics of this course are also addressed in NHI Courses 130078 (Fracture Critical Inspection Techniques for Steel Bridges), 130081 (LRFD for Highway Bridge Superstructures), and 130095 (LRFD and Analysis of Curved Steel Highway Bridges).

Outcomes

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

- Explain the fundamentals of fatigue and fracture on steel highway structures
- Identify the various analysis methods for determining fatigue and fracture considerations on steel highway structures
- Explain the various AASHTO methodologies as it pertains to fatigue and fracture design
- Identify the AASHTO methodology for fatigue and fracture evaluation
- Describe the various strategies for repair and retrofit of steel highway structures

Target Audience

The primary audience for this course includes State DOT Bridge and Structures Engineers and Practitioners responsible for steel bridge design and evaluation. The target audience includes engineers at all levels, including designers, consultants, reviewers, maintenance and management engineers, and load raters.

Training Level: Intermediate

Fee: 2021: $315 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130125

Course Title

Tunnel Safety Inspection Refresher ILT

This 2.5-day, Instructor-led Training (ILT) is highly interactive and builds upon participants' prior knowledge of bridge and/or tunnel inspection. This course covers the entire breadth of knowledge necessary to manage or execute a successful tunnel inspection. However, it does not replace the need for specialized experts to assist in inspections. There are seven course modules. During the course, the instructor will lead participants through a series of case studies giving them an opportunity to practice and apply their knowledge in real-life tunnel inspection situations. The capstone case study comprises of a tunnel inspection exercise that takes place at the end of the course.

All participants must successfully complete the following prerequisite requirements prior to taking the FHWA-NHI-130125 course:

*130110 Tunnel Safety Inspection Training Course

*130124 Tunnel Safety Inspection Refresher Web-based Training

It is not required, but strongly recommended that participants possess some design or safety inspection experience of in-service bridges or tunnels.

Outcomes

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

- Explain the importance and purpose of tunnel inspection
- Apply the fundamentals of tunnel inspection
- Demonstrate the inspection and evaluation of tunnel structural, civil, mechanical, electrical, signage, lighting, and fire/life safety/security elements
- Use tunnel inspection references

Target Audience

The target audience for the Tunnel Safety Inspection ILT course is primarily members of Federal, State, local (Authority or Commission) and Tribal highway agency employees, who are involved with tunnel design, inspection, and maintenance, as well as consultants involved in inspecting tunnels or in tunnel inspection management and leadership positions.

Training Level: Basic

Fee: 2021: $495 Per Person; 2022: N/A

Length: 2.5 DAYS (CEU: 1.7 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-130125V

Course Title

Tunnel Safety Inspection Refresher (VIRTUAL DELIVERY)

This 2.5-day, Instructor-led Training (ILT) is highly interactive and builds upon participants' prior knowledge of bridge and/or tunnel inspection. This course covers the entire breadth of knowledge necessary to manage or execute a successful tunnel inspection. However, it does not replace the need for specialized experts to assist in inspections. There are seven course modules. During the course, the instructor will lead participants through a series of case studies giving them an opportunity to practice and apply their knowledge in real-life tunnel inspection situations. The capstone case study comprises of a tunnel inspection exercise that takes place at the end of the course.

All participants must successfully complete the following prerequisite requirements prior to taking the FHWA-NHI-130125 course:

*130110 Tunnel Safety Inspection Training Course

*130124 Tunnel Safety Inspection Refresher Web-based Training

It is not required, but strongly recommended that participants possess some design or safety inspection experience of in-service bridges or tunnels.

Outcomes

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

- Explain the importance and purpose of tunnel inspection
- Apply the fundamentals of tunnel inspection
- Demonstrate the inspection and evaluation of tunnel structural, civil, mechanical, electrical, signage, lighting, and fire/life safety/security elements
- Use tunnel inspection references

Target Audience

The target audience for the Tunnel Safety Inspection ILT course is primarily members of Federal, State, local (Authority or Commission) and Tribal highway agency employees, who are involved with tunnel design, inspection, and maintenance, as well as consultants involved in inspecting tunnels or in tunnel inspection management and leadership positions.

Training Level: Basic

Fee: 2021: $495 Per Person; 2022: N/A

Length: 17 HOURS (CEU: 1.7 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131050

Course Title

Asphalt Pavement In-Place Recycling Techniques

Transportation agencies focusing on the use of sustainable, cost effective, and environmentally conscious construction practices often consider in-place recycling techniques as a viable alternative to the more traditional rehabilitation techniques used on asphalt-surfaced pavements. NHI training 131050 Asphalt Pavement In-place Recycling Techniques is designed to help participants acquire necessary skills for selecting the appropriate in-place recycling technique for a given set of conditions, choosing the appropriate materials for the project, developing suitable specifications, and constructing those projects effectively.

The Asphalt Pavement In-place Recycling Techniques course includes two brief Web-based training (WBT) modules, and two days of instructor-led, classroom-based training (ILT). Through independent study, classroom interaction, and workshop activities, participants explore the current technologies available in the area of asphalt pavement in-place recycling. Two WBT lessons introduce pavement evaluation techniques and the three potential recycling techniques, along with the types of equipment commonly used for each. The classroom session focuses on project and technique selection and justification, materials considerations and mix design, construction specifications, and project control considerations during construction.

Outcomes

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

- Describe the economic, environmental, and engineered performance benefits associated with using in-place asphalt recycling
- Identify the key factors that contribute to the selection of appropriate in-place asphalt recycling techniques under different traffic levels, pavement conditions, and environments
- Identify the key requirements in developing effective in-place asphalt recycling construction specifications, including method specification and end-result or performance specifications
- Demonstrate the ability to select the appropriate new materials and additives needed for each of three HMA pavement in-place recycling techniques
- List steps that can be taken to address a variety of issues that may impact the constructability of a project

Target Audience

This course is intended for State and local transportation agency engineers, such as pavement managers and maintenance engineers, and other agency personnel who are responsible for selecting, designing, or constructing the agency's asphalt pavement maintenance, resurfacing, rehabilitation, and reconstruction alternatives. The course particularly benefits those individuals responsible for selecting and designing asphalt in-place recycling projects, for writing effective specifications, or for inspecting asphalt in-place recycling projects during their construction. Contractors, consulting engineers, and industry representatives involved in asphalt pavement in-place recycling also will benefit from this course.

Training Level: Intermediate

Fee: 2021: $100 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131050A

WBT

Course Title

(Introduction to) Asphalt Pavement In-Place Recycling Techniques

This training is a prerequisite of another NHI training and is offered at no cost.

Transportation agencies focusing on the use of sustainable, cost-effective, and environmentally conscious construction practices often consider in-place recycling techniques as a viable alternative to the more traditional rehabilitation techniques used on asphalt-surfaced pavements. NHI training 131050 Asphalt Pavement In-place Recycling Techniques is designed to help participants acquire necessary skills for selecting the appropriate in-place recycling technique for a given set of conditions, choosing the appropriate materials for the project, developing suitable specifications, and constructing those projects effectively.

The Asphalt Pavement In-place Recycling Techniques course includes two brief Web-based training (WBT) modules, and two days of instructor-led, classroom-based training (ILT). Through independent study, classroom interaction, and workshop activities, participants explore the current technologies available in the area of asphalt pavement in-place recycling. Two WBT lessons introduce pavement evaluation techniques and the three potential recycling techniques, along with the types of equipment commonly used for each. The classroom session focuses on project and technique selection and justification, materials considerations and mix design, construction specifications, and project control considerations during construction.

Outcomes

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

- Describe the economic, environmental, and engineered performance benefits associated with using in-place asphalt recycling
- Identify the key factors that contribute to the selection of appropriate in-place asphalt recycling techniques under different traffic levels, pavement conditions, and environments
- Identify the key requirements in developing effective in-place asphalt recycling construction specifications, including method specification and end-result or performance specifications
- Demonstrate the ability to select the appropriate new materials and additives needed for each of three HMA pavement in-place recycling techniques
- List steps that can be taken to address a variety of issues that may impact the constructability of a project

Target Audience

This course is intended for State and local transportation agency engineers, such as pavement managers and maintenance engineers, and other agency personnel who are responsible for selecting, designing, or constructing the agency's asphalt pavement maintenance, resurfacing, rehabilitation, and reconstruction alternatives. The course particularly benefits those individuals responsible for selecting and designing asphalt in-place recycling projects, for writing effective specifications, or for inspecting asphalt in-place recycling projects during their construction. Contractors, consulting engineers, and industry representatives involved in asphalt pavement in-place recycling also will benefit from this course.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 2 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131100

Course Title

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

Studies have shown that roughness is one of the biggest priorities of highway users. Additional studies have shown that pavements that are built smooth stay smoother longer and provide a longer pavement life. Most State highway agencies (SHAs) have some type of smoothness specification that is used to evaluate the smoothness of newly constructed or rehabilitated pavements during acceptance testing. Many agencies also have incentives or disincentives for new construction and rehabilitation, which are based on pavement smoothness.

Increasingly these agencies are turning to inertial profilers as the most reliable instrument for construction acceptance testing and verifying pavement smoothness. The intent of this course is to train inertial profiler operators in the basics of performing construction acceptance testing and to train those reviewing the data to comprehend how those data were obtained and what they represent in order to build smoother riding roadways.

The course has been developed to be delivered in a single day of instructor-led training. In order to keep the instructor-led portion of the training to a single day, the training includes two hours of independent study that should be completed prior to attending the instructor-led session.

Outcomes

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

- Perform checks of the inertial profiler components to identify that the equipment is in proper working order.
- Determine the impact of current surface and environmental conditions on data collection.
- Collect profile data using appropriate operating techniques.
- Calculate a smoothness index using appropriate data processing techniques and computational procedures for use in construction quality control and specification compliance.
- Identify what features in a collected profile are manifested in a smoothness or roughness index.

Target Audience

The course was designed for an audience directly involved in the use of inertial profilers and the application of the data obtained from inertial profilers. This includes State and contractor road profiler operators who perform data collection, initial processing, and reporting of smoothness data. Paving superintendents, project engineers, pavement engineers, and inspectors who are performing data analysis, quality control, and acceptance will also benefit from this course. Ideally, each session of the course will include a mixture of State and contractor personnel, including those who collect data, those performing data processing, and those making decisions based upon data.

Training Level: Intermediate

Fee: 2021: $75 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131139

Course Title

Constructing and Inspecting Asphalt Paving Projects

The goal of this course is to prepare participants to ensure asphalt pavement construction projects conform to quality and technical specifications. The course materials introduce asphalt pavement construction best practices, from the importance of understanding project administration roles and responsibilities to the most vital elements of laydown operations and compaction.

Participants learn construction management responsibilities; recognize proper construction practices; identify construction issues and their source; determine the impact of construction issues on performance; and select communication strategies for contractors, consultants, and superiors. They can then apply the knowledge and skills to maximize quality on construction projects.

The course emphasizes the importance of a proactive approach to managing and inspecting construction projects at every stage. This includes quickly addressing problems, implementing corrective actions, and documenting communications between the agency and contractor.

Prior to attending class, participants complete a 5-minute online pre-assessment that identifies their familiarity with their agency's asphalt pavement construction and inspection topics and issues they hope to address through training. The pre-assessment is distributed by the Local Coordinator on behalf of the instructor.

Outcomes

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

- Explain the agency's and contractor's roles and responsibilities in supporting project quality
- Identify asphalt pavement construction best practices
- Relate common asphalt pavement construction issues to possible causes and impact on pavement performance
- Explain how to communicate construction issues to the contractor and up the project chain of command effectively
- Describe appropriate, timely inspection documentation procedures

Target Audience

This course is designed for participants who ensure a project is built to the owner's specifications. Participants can be relatively new to asphalt or general project inspection; however, those with broader experience will learn about innovative asphalt pavement construction technologies, participate in class discussions, and share successful practices. The primary audience comprises Federal, State, consultant, and local agency inspectors and contractor personnel who are involved in the planning, construction, and review of asphalt paving projects.

Training Level: Intermediate

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131139T

New Training WCT

Course Title

Constructing and Inspecting Asphalt Paving Projects (EXAM ONLY FOR 131139V)

DO NOT REGISTER FOR THIS COURSE UNLESS YOU ARE CURRENTLY ENROLLED IN 131139V

The goal of this course is to prepare participants to ensure asphalt pavement construction projects conform to quality and technical specifications. The course materials introduce asphalt pavement construction best practices, from the importance of understanding project administration roles and responsibilities to the most vital elements of laydown operations and compaction.

Participants learn construction management responsibilities; recognize proper construction practices; identify construction issues and their source; determine the impact of construction issues on performance; and select communication strategies for contractors, consultants, and superiors. They can then apply the knowledge and skills to maximize quality on construction projects.

The course emphasizes the importance of a proactive approach to managing and inspecting construction projects at every stage. This includes quickly addressing problems, implementing corrective actions, and documenting communications between the agency and contractor.

Prior to attending class, participants complete a 5-minute online pre-assessment that identifies their familiarity with their agency's asphalt pavement construction and inspection topics and issues they hope to address through training. The pre-assessment is distributed by the Local Coordinator on behalf of the instructor.

Outcomes

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

- Explain the agency's and contractor's roles and responsibilities in supporting project quality
- Identify asphalt pavement construction best practices
- Relate common asphalt pavement construction issues to possible causes and impact on pavement performance
- Explain how to communicate construction issues to the contractor and up the project chain of command effectively
- Describe appropriate, timely inspection documentation procedures

Target Audience

This course is designed for participants who ensure a project is built to the owner's specifications. Participants can be relatively new to asphalt or general project inspection; however, those with broader experience will learn about innovative asphalt pavement construction technologies, participate in class discussions, and share successful practices. The primary audience comprises Federal, State, consultant, and local agency inspectors and contractor personnel who are involved in the planning, construction, and review of asphalt paving projects.

Training Level: Intermediate

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 50

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131139V

Course Title

Constructing and Inspecting Asphalt Paving Projects (Virtual Delivery of NHI 131139)

The goal of this course is to prepare participants to ensureasphalt pavement construction projects conform to quality and technicalspecifications. The course materials introduce asphalt pavement constructionbest practices, from the importance of understanding project administrationroles and responsibilities to the most vital elements of laydown operations andcompaction.

Participants learn construction management responsibilities;recognize proper construction practices; identify construction issues and theirsource; determine the impact of construction issues on performance; and selectcommunication strategies for contractors, consultants, and superiors. They canthen apply the knowledge and skills to maximize quality on constructionprojects.

The course emphasizes the importance of a proactive approachto managing and inspecting construction projects at every stage. This includesquickly addressing problems, implementing corrective actions, and documentingcommunications between the agency and contractor.

Prior to attending class, participants complete a 5-minuteonline pre-assessment that identifies their familiarity with their agency'sasphalt pavement construction and inspection topics and issues they hope toaddress through training. The pre-assessment is distributed by the LocalCoordinator on behalf of the instructor.

The 131139V - Constructing and Inspecting Asphalt PavingProjects is now offered on-line as a virtual course. A virtualinstructor-led training provides 100% remote learning while ensuringparticipants have access to expert instructors, workshop activities, andengaging peer-to-peer discussions.

Register today and learn theimportance of a proactive approach to managing and inspecting constructionprojects at every stage in the convenience of your home and/or office anywhere in the country, remotely.

Outcomes

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

- Explain the agency's and contractor's roles and responsibilities in supporting project quality
- Identify asphalt pavement construction best practices
- Relate common asphalt pavement construction issues to possible causes and impact on pavement performance
- Explain how to communicate construction issues to the contractor and up the project chain of command effectively
- Describe appropriate, timely inspection documentation procedures

Target Audience

This course is designed for participants who ensure a project is built to the owner's specifications. Participants can be relatively new to asphalt or general project inspection; however, those with broader experience will learn about innovative asphalt pavement construction technologies, participate in class discussions, and share successful practices. The primary audience comprises Federal, State, consultant, and local agency inspectors and contractor personnel who are involved in the planning, construction, and review of asphalt paving projects.

Training Level: Intermediate

Fee: 2021: $250 Per Person; 2022: N/A

Length: 16 HOURS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-131141

New Training

Course Title

Quality Assurance for Highway Construction Projects

This course replaces NHI course #134064 Transportation Construction Quality Assurance.

Construction materials account for about 50% of Federal-aid spending (FHWA internal review citation here). Therefore, it is critical for States to have a quality assurance (QA) program to ensure that projects perform as expected and are long lasting. In fact, all States are required to have a QA program for Federal-aid projects on the NHS (23 CFR 637), but risks and inconsistencies in those programs present significant challenges to maintaining levels of quality in materials and project-produced materials such as asphalt, concrete, aggregate and soil.

NHI 131141 Quality Assurance for Highway Construction Projects helps you (1) understand the impact and importance of operating a sound quality assurance program, (2) realize the associated risks to payment, and (3) recognize risks to infrastructure performance. During the course you will consistently apply quality assurance concepts and identify strengths and weaknesses in your own agency's QA program.

This new 2-day instructor-led course prepares you to identify and use the six core elements of a quality assurance program for all types of highway projects, from the simplest to most complex. All the course content, including risk-based content, is related to practical experiences and provides numerous opportunities to share and learn from other participants. Topics include:

-Basics of quality assurance

-Quality assurance program requirements including industry and agency support, the six core elements of a program, and the use of QA specifications

-Quality control and acceptance including contractor and agency roles and responsibilities; QC plans; sampling, testing, and inspection; and control charts

-Using data to measure quality including collecting data, analyzing data, interpreting data, and quantifying data variability

-Payment including percent within limits and pay factors

-Verification and materials testing dispute resolution

Outcomes

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

- Consistently apply fundamental quality assurance concepts, terminology, and definitions
- Relate each of the six core elements of quality assurance to successful implementation of a quality assurance program
- Describe an organizational culture of quality
- Describe the quality assurance roles and responsibilities of agency and contractor personnel
- Apply the sampling protocols and mathematical concepts used to measure variability, review the effects of statistical distribution, and validate data to assess quality
- Describe the proper use of materials testing and inspection data for acceptance
- Relate successful quality assurance practices to alternative contracting methods
- Learn effective quality assurance practices to minimize the variability and life cycle cost associated with the construction and maintenance of a highway project

Target Audience

This is an intermediate-level course for personnel with at least one year's experience working with transportation materials and construction who apply QA specifications on transportation construction projects. Typical attendees include: Federal, state, and local agency materials and construction staff including inspectors, lab personnel, field technicians, and project managers, as well as Headquarters' engineers and Region- or District-level engineers and technicians. Secondary audiences that will benefit from the course and add value to discussions include contractor personnel, particularly their quality control managers. Additionally, consultants working for contractors or the agency as part of the quality assurance program could benefit.

Training Level: Intermediate

Fee: 2021: $100 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132012

Course Title

Soils and Foundations Workshop

This course is geared toward practicing design and construction engineers who routinely deal with soil and foundation problems but have little theoretical background in soil mechanics or foundation engineering. The course takes a project-oriented approach whereby the soils input to a bridge project is followed from conception to completion. In each phase of the project, the soil concepts will be developed into specific foundation designs and recommendations. The classroom presentation includes a variety of exercises to verify achievement of learning objectives. Each participant will take away a comprehensive reference manual on soils and foundations and a participant workbook containing a copy of all slides presented and completed exercises.

NOTE TO PARTICIPANT: All participants should bring calculators that perform trigonometric calculations, a note pad, and a pencil.

NOTE TO HOST: In addition to the typical host requirements of NHI courses, for this course the host is asked to arrange for the state's geotechnical engineering group to conduct a short presentation (usually on the second day of the course) summarizing the administrative and technical procedures followed by the host state.

Outcomes

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

- Identifying the minimum level of geotechnical input in various project phases of a highway project
- Recalling the equipment and procedures used to implement a subsurface investigation of soil and rock conditions
- Demonstrating basic skills in visual description of soils native to the host state
- Recalling geotechnical facilities and personnel in the host state
- Recalling the basic soil test procedures and how the results of the various soil tests are applied results to highway projects
- Listing procedures used for both settlement and stability analysis, and recalling design solutions to stability and settlement problems for approach roadway embankments
- Listing procedures used for determining bearing capacity and settlement of shallow foundations such as spread footings
- Identifying the basic skills needed in the design and construction management of driven pile and drilled shaft foundations
- Recalling the driven pile and drilled shaft foundation construction equipment and construction inspection procedures
- Description static load testing and recalling the basic skills needed to interpret static load test results
- Recalling the basic skills needed in the design and construction of earth retaining structures
- Discussing the format and minimum content of an adequate foundation report

Target Audience

Personnel from the following units at the transportation agency could benefit from this workshop: geotechnical, bridge design, roadway design, materials, construction, and maintenance. The personnel who will benefit the most are the first-line supervisors involved in the design of highway structures and embankments. 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. All attendees should be encouraged to attend the entire course, not just sections that are in their specialty. One of the major benefits of this course is to give engineers an appreciation of activities outside their specialties that influence, or are influenced by, the work of the geotechnical engineer.

Training Level: Basic

Fee: 2021: $550 Per Person; 2022: N/A

Length: 4 DAYS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132043

Course Title

Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes

This course presents the concepts of mechanically stabilized earth wall (MSEW) and reinforced soil slope (RSS) systems and their application to roadways. The construction materials for both systems are described and guidance on acceptance for use is given. MSEW and RSS system construction steps are taught and typical construction practices and techniques are presented.

Outcomes

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

- Recognize potential applications for MSEWs and RSS structures 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 MSEWs and RSS structures to confirm compliance with design
- Understand the steps for MSEW and RSS construction and the corresponding points for inspection

Target Audience

The primary audience for this course is agency and consultant construction engineers, inspectors, and technicians. In addition, management; specification and contracting specialists; bridge/structures, geotechnical, and roadway design engineers; and engineering geologists interested in construction aspects of MSEWs 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 MSEWs and RSSs and a 3-day course, FHWA-NHI-132080 Inspection of MSEWs and RSSs.)

Training Level: Intermediate

Fee: 2021: $175 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 35

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-132081

Course Title

Highway Slope Maintenance and Slide Restoration

As focus changes toward the asset management of our existing infrastructure, the value of maintaining and managing our embankment and cut slopes becomes more apparent. This course provides the essentials to slope maintenance and slide restoration for transportation field personnel with an asset management perspective. This course is not meant to be highly technical, and explains, conceptually and in layman's terms, the conditions and factors affecting slope movement, stability and deterioration, and the cost considerations of maintenance, stabilization and of slope failures. The course also provides the fundamental aspects of slope management systems and discusses the rationale of slope management considering the legal implications of slope failures and rock fall.

Outcomes

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

- Discuss common soil and rock slope movement and instability
- Describe common factors and conditions under which slopes deteriorate and become less stable
- Describe the affects of earth material properties on slope stability
- Discuss the influences of water on slope stability
- Identify failure-prone conditions
- Describe the importance of necessary communication and coordination with geotechnical specialists
- Discuss best maintenance practices
- Discuss methods of slope monitoring
- Describe key components of slope management systems
- Recognize common soil and rock slope stabilization techniques
- Compare cost differences between preventative measures for slope maintenance and slide restoration and costs associated with slope failures
- Discuss legal implications of slope failures, rock fall and management systems

Target Audience

The target audience for this course includes a wide range of transportation personnel consisting of Federal, State and local maintenance, geotechnical, operations and asset management engineers, geologists, managers, supervisors and personnel involved in assessing, maintaining, managing and repairing cut-slopes, fill-slopes and associated features. Although the potential audience of this course is wide-ranging, the course is primarily provided for the State maintenance specialists.

Training Level: Basic

Fee: 2021: $360 Per Person; 2022: N/A

Length: 2.5 DAYS (CEU: 1.5 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 35

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133112

Course Title

Design and Operation of Work Zone Traffic Control (1-Day)

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.

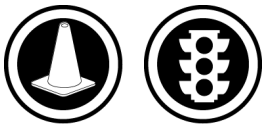
Training Level: Intermediate

Fee: 2021: $125 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov



Course Number

FHWA-NHI-133112A

Course Title

Design and Operation of Work Zone Traffic Control (3-Day)

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.

Training Level: Intermediate

Fee: 2021: $350 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133113

Course Title

Work Zone Traffic Control for Maintenance Operations

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

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.

Training Level: Accomplished

Fee: 2021: $125 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133115

Course Title

Advanced Work Zone Management and Design

This course provides participants with advanced levels of knowledge and competencies with technical and non-technical aspects of work zone traffic control practices including work zone planning, design, project management, and contract issues. The course is designed to provide maximum flexibility by including core, recommended, and optional lessons. Each participant receives a copy of the "Advanced Work Zone Management and Design" reference manual and a participant workbook that contains all lesson materials.

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 that may need to be resolved
- Demonstrate knowledge of the latest concepts as related to Parts 1, 5 and 6 of the MUTCD
- 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
- Consider the application of ITS technologies and where applicable apply ITS technologies to work zone planning, design and execution
- Consider alternative innovations, best practices and recent research findings in work zone planning, design and execution
- Develop temporary transportation management plans for safety and mobility
- 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 resolve community issues, including impacts of work zones on affected residential and business areas. Apply public participation, outreach, and work zone strategies to minimize or mitigate community impacts with respect to work zones
- 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
- Summarize work zone safety and mobility impacts and alternatives

Target Audience

State, and local design engineers, traffic and safety engineers, senior work zone traffic engineers, transportation planners, employees of metropolitan planning organizations and board members, regional planners, regional construction engineers (with work zone experience), and senior engineering technicians.

Training Level: Accomplished

Fee: 2021: $350 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133125

Course Title

Successful Traffic Signal Management: The Basic Service Approach

Successful Traffic Signal Management: The Basic Service Approach is a two-day course aimed at helping agencies ensure that their limited resources are directed towards meeting the needs of the agencies most important stakeholders. A Traffic Signal Management Plan (TSMP) is a tool that documents and aligns an agencies traffic signal design, operation and maintenance strategies to achieve basic service objectives. The application of systematic business processes is integral to maintaining the resources and workforce capability that is necessary to sustain the operation and maintenance of traffic signal systems over long periods of time. Agencies that clearly articulate their operational objectives and meaningfully measure performance tend to operate and maintain traffic signal systems more effectively than agencies that fail to document this information.

The purpose of this course will be to describe and expand on the Basic Service Concept for use in developing an agency's Traffic Signal Management Plan. Emphasis will be placed on an agency developing a simply stated goal and then developing objectives, strategies and tactics enabling them to accomplish their stated goal. Each element of the traffic signal management plan will be thoroughly covered, resulting in a guideline that agencies can follow to develop their own TSMP.

Outcomes

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

- Formulate clear objectives
- Select appropriate standards of performance
- Identify performance measures
- Relate organizational capabilities and resource allocation to objectives
- Assess infrastructure reliability
- Identify signal timing strategies
- Document communication policies
- Apply effective design strategies
- Develop a traffic signal management plan

Target Audience

Professionals involved in the design, management, operation or maintenance of traffic signal systems. This includes design engineers, operations engineers and technicians (advanced) of state/local agencies, consultants, and FHWA Operations staff.

Training Level: Basic

Fee: 2021: $330 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134001

Course Title

Principles and Applications of Highway Construction Specifications

Well-written highway construction specifications are those that can be interpreted accurately to minimize confusion and reduce owner-contractor disputes. Across the country, current practices, standards, and requirements for writing specifications are changing. Agencies also are using effective specifications to manage risk and support alternative contracting methods.

NHI 134001 Principles of Writing Highway Construction Specifications is a highly engaging, two-day, instructor-led training session. It includes content that highlights the role of specifications as contract documents and tools for assigning risk. Course participants engage in lessons and practice sessions to identify types of specifications, select the most appropriate type for a given project, and generate an original, effective highway construction specification.

This is not a grammar course; however, adequate course content emphasizes the use of basic grammar and writing style so that the learners can generate specifications that are correct, consistent, clear, complete, and concise.

Outcomes

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

- Explain the purposes of a specification.
- Explain how specifications are used to assign risk and influence the behavior of different parties, within a given a scenario.
- Compare the functions of Standard and Supplemental Specifications with the functions of Special Provisions.
- Explain how the "order of precedence" affects writing specifications and preparing plans.
- Describe the purpose of the General Provisions.
- Explain how a consistent writing style can affect the interpretation of specifications.
- Complete a checklist of the information needed before writing or revising a specification.
- Explain the potential benefits of writing in the active voice.
- Rewrite passive voice sentences into the active voice.
- Evaluate specifications to determine the need for imperative or indicative mood.
- State the five Cs used in specification writing. (Note: the five Cs include: correct; consistent; clear; complete; concise.)
- Explain each element of the AASHTO five-part format.
- Identify potential ambiguities in the wording, given a sample specification.
- Identify the potential benefits of each of the five Cs, given a sample specification.
- Apply the five Cs and the host agency's preferred format to revise the specification, given a sample specification.
- Write a new specification to a given set of criteria using the five Cs and the host agency's preferred format, given a sample specification.
- Compare method versus end-result specifications.
- Relate the type of specification to the allocation of risk.
- Write an end-result specification to replace a method specification, given an excerpt from a method specification.

Target Audience

This course is designed primarily for individuals who write, review, and implement an agency's contract specifications. Participants might represent Federal, State, and local transportation agencies; other public agencies; contractors; and consultant firms.Individuals who do not write specifications but may contribute to their development, as well as those who use specifications, could also benefit from this course and the interaction with their classmates. Such participants might include personnel from environmental, materials, or construction sections or units; legal departments; work zone and safety professionals; contractor personnel; and any others involved with the design and construction of transportation facilities.

Training Level: Intermediate

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134001T

WCT

Course Title

Principles and Applications of Highway Construction Specifications (EXAM ONLY FOR 134001V)

Well-written highway construction specifications are those that can be interpreted accurately to minimize confusion and reduce owner-contractor disputes. Across the country, current practices, standards, and requirements for writing specifications are changing. Agencies also are using effective specifications to manage risk and support alternative contracting methods.

NHI 134001 Principles of Writing Highway Construction Specifications is a highly engaging, two-day, instructor-led training session. It includes content that highlights the role of specifications as contract documents and tools for assigning risk. Course participants engage in lessons and practice sessions to identify types of specifications, select the most appropriate type for a given project, and generate an original, effective highway construction specification.

This is not a grammar course; however, adequate course content emphasizes the use of basic grammar and writing style so that the learners can generate specifications that are correct, consistent, clear, complete, and concise.

Outcomes

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

- Explain the purposes of a specification.
- Explain how specifications are used to assign risk and influence the behavior of different parties, within a given a scenario.
- Compare the functions of Standard and Supplemental Specifications with the functions of Special Provisions.
- Explain how the "order of precedence" affects writing specifications and preparing plans.
- Describe the purpose of the General Provisions.
- Explain how a consistent writing style can affect the interpretation of specifications.
- Complete a checklist of the information needed before writing or revising a specification.
- Explain the potential benefits of writing in the active voice.
- Rewrite passive voice sentences into the active voice.
- Evaluate specifications to determine the need for imperative or indicative mood.
- State the five Cs used in specification writing. (Note: the five Cs include: correct; consistent; clear; complete; concise.)
- Explain each element of the AASHTO five-part format.
- Identify potential ambiguities in the wording, given a sample specification.
- Identify the potential benefits of each of the five Cs, given a sample specification.
- Apply the five Cs and the host agency's preferred format to revise the specification, given a sample specification.
- Write a new specification to a given set of criteria using the five Cs and the host agency's preferred format, given a sample specification.
- Compare method versus end-result specifications.
- Relate the type of specification to the allocation of risk.
- Write an end-result specification to replace a method specification, given an excerpt from a method specification.

Target Audience

This course is designed primarily for individuals who write, review, and implement an agency's contract specifications. Participants might represent Federal, State, and local transportation agencies; other public agencies; contractors; and consultant firms.Individuals who do not write specifications but may contribute to their development, as well as those who use specifications, could also benefit from this course and the interaction with their classmates. Such participants might include personnel from environmental, materials, or construction sections or units; legal departments; work zone and safety professionals; contractor personnel; and any others involved with the design and construction of transportation facilities.

TRAINING LEVEL: Intermediate

FEE: 2021: $0 Per Person; 2022: N/A

LENGTH: 5 DAYS (CEU: 0 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134001V

Course Title

Principles and Applications of Highway Construction Specifications (Virtual Delivery of 134001)

Well-written highway construction specifications are thosethat can be interpreted accurately to minimize confusion and reduceowner-contractor disputes. Across the country, current practices, standards,and requirements for writing specifications are changing. Agencies also areusing effective specifications to manage risk and support alternativecontracting methods.

NHI 134001V - Principles of Writing Highway ConstructionSpecifications is now offered on-line as a virtual course. A virtualinstructor-led training provides 100% remote learning while ensuringparticipants have access to expert instructors, workshop activities, andengaging peer-to-peer discussions.

It includes content that highlights the roleof specifications as contract documents and tools for assigning risk. Courseparticipants engage in lessons and practice sessions to identify types ofspecifications, select the most appropriate type for a given project, andgenerate an original, effective highway construction specification.

This is not a grammar course; however, adequate coursecontent emphasizes the use of basic grammar and writing style so that thelearners can generate specifications that are correct, consistent, clear,complete, and concise.

Register today to experience a highly engaging, two-day, online instructor-led training session from the convenience of your home and/or office anywhere in the country, remotely.

Outcomes

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

- Explain the purposes of a specification.
- Explain how specifications are used to assign risk and influence the behavior of different parties, within a given a scenario.
- Compare the functions of Standard and Supplemental Specifications with the functions of Special Provisions.
- Explain how the “order of precedence” affects writing specifications and preparing plans.
- Describe the purpose of the General Provisions.
- Explain how a consistent writing style can affect the interpretation of specifications.
- Complete a checklist of the information needed before writing or revising a specification.
- Explain the potential benefits of writing in the active voice.
- Rewrite passive voice sentences into the active voice.
- Evaluate specifications to determine the need for imperative or indicative mood.
- State the five Cs used in specification writing. (Note: the five Cs include: correct; consistent; clear; complete; concise.)
- Explain each element of the AASHTO five-part format.
- Identify potential ambiguities in the wording, given a sample specification.
- Identify the potential benefits of each of the five Cs, given a sample specification.
- Apply the five Cs and the host agency’s preferred format to revise the specification, given a sample specification.
- Write a new specification to a given set of criteria using the five Cs and the host agency’s preferred format, given a sample specification.
- Compare method versus end-result specifications.
- Relate the type of specification to the allocation of risk.
- Write an end-result specification to replace a method specification, given an excerpt from a method specification.

Target Audience

This course is designed primarily for individuals who write, review, and implement an agency’s contract specifications. Participants might represent Federal, State, and local transportation agencies; other public agencies; contractors; and

consultant firms.Individuals who do not write specifications but may contribute to their development, as well as those who use specifications, could also benefit from this course and the interaction with their classmates. Such participants might include personnel from environmental, materials, or construction sections or units; legal departments; work zone and safety professionals; contractor personnel; and any others involved with the design and construction of transportation facilities.

TRAINING LEVEL: Intermediate

FEE: 2021: $250 Per Person; 2022: N/A

LENGTH: 16 HOURS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134005

Course Title

Value Engineering Workshop (3-day)

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as: a) providing the needed functions safely, reliably, and at the lowest overall cost; b) improving the value and quality of the project; and c) reducing the time to complete the project.

This course begins with a Web-based training (WBT) component that is completed prior to the first day of the class (134005A). The 3-day workshop involves training participants to be valued contributors to the Value Engineering team, conducting a Value Engineering study in a team environment. It is preferable that the host agency provides actual project(s) to be used in this course, although The National Highway Institute (NHI) can provide projects upon request. Depending on the projects selected for use in the course, and based on the request of the host agency, the 3-day classroom session can be expanded to 4 or 5 days in length (NHI-134005B and NHI-134005C).

Upon successful course completion, participants will have acquired the training necessary to successfully participate in future Value Engineering studies for their agencies.

Outcomes

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

- Explain how Value Engineering can improve project performance, reduce costs, and enhance value.
- Acquire the necessary behaviors and skills to be an effective Value Engineering team member with the ability to: Investigate the project and analyze project functions and costs; Creatively speculate on alternative ways to perform the various functions; Evaluate the most effective life-cycle alternatives; Develop viable alternatives into fully supported recommendations; Present the recommendations to stakeholders and agency management

Target Audience

The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance can be included in order to provide the multiple perspectives needed to maximize the effectiveness of the team.

Training Level: Basic

Fee: 2021: $450 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134005B

Course Title

Value Engineering Workshop (4-day)

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as: a) providing the needed functions safely, reliably, and at the lowest overall cost; b) improving the value and quality of the project; and c) reducing the time to complete the project.

This course begins with a Web-based training (WBT) component that is completed prior to the first day of the class. The 4-day workshop involves training participants to be valued contributors to the Value Engineering team, conducting a Value Engineering study in a team environment. It is preferable that the host agency provides actual project(s) to be used in this course, although The National Highway Institute (NHI) can provide projects upon request. Depending on the projects selected for use in the course, and based on the request of the host agency, the 3-day classroom session can be expanded to 3 or 5 days in length (NHI-134005 and NHI-134005C).

Upon successful course completion, participants will have acquired the training necessary to successfully participate in future Value Engineering studies for their agencies.

Outcomes

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

- Explain how value engineering can improve project performance, reduce costs, and enhance value.
- Acquire the necessary behaviors and skills to be an effective Value Engineering Team member with the ability to: Investigate the project and analyze project functions and costs; Creatively speculate on alternative ways to perform the various functions; Evaluate the most effective life-cycle alternatives; Develop viable alternatives into fully supported recommendations; Present the recommendations to stakeholders and agency management

Target Audience

The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance can be included in order to provide the multiple perspectives needed to maximize the effectiveness of the team.

Training Level: Basic

Fee: 2021: $580 Per Person; 2022: N/A

Length: 4 DAYS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134005C

Course Title

Value Engineering Workshop (5-day)

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as: a) providing the needed functions safely, reliably, and at the lowest overall cost; b) improving the value and quality of the project; and c) reducing the time to complete the project.

This course begins with a Web-based training (WBT) component that is completed prior to the first day of the class (134005A). The 3-day workshop involves training participants to be valued contributors to the Value Engineering team, conducting a Value Engineering study in a team environment. It is preferable that the host agency provides actual project(s) to be used in this course, although The National Highway Institute (NHI) can provide projects upon request. Depending on the projects selected for use in the course, and based on the request of the host agency, the 5-day classroom session can be shortened to 3 or 4 days in length (NHI-134005 and NHI-134005B).

Upon successful course completion, participants will have acquired the training necessary to successfully participate in future Value Engineering studies for their agencies.

Outcomes

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

- Explain how value engineering can improve project performance, reduce costs, and enhance value.
- Acquire the necessary behaviors and skills to be an effective Value Engineering Team member with the ability to: Investigate the project and analyze project functions and costs; Creatively speculate on alternative ways to perform the various functions; Evaluate the most effective life-cycle alternatives; Develop viable alternatives into fully supported recommendations; Present the recommendations to stakeholders and agency management

Target Audience

The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance can be included in order to provide the multiple perspectives needed to maximize the effectiveness of the team.

Training Level: Basic

Fee: 2021: $690 Per Person; 2022: N/A

Length: 5 DAYS (CEU: 3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134005V

Course Title

Value Engineering Workshop (3-day) VIRTUAL DELIVERY of 134005

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as: a) providing the needed functions safely, reliably, and at the lowest overall cost; b) improving the value and quality of the project; and c) reducing the time to complete the project.

This course begins with a Web-based training (WBT) component that is completed prior to the first day of the class (134005V). The 3-day ONLINE workshop involves training participants to be valued contributors to the Value Engineering team, conducting a Value Engineering study in a team environment. It is preferable that the host agency provides actual project(s) to be used in this course, although The National Highway Institute (NHI) can provide projects upon request. Depending on the projects selected for use in the course, and based on the request of the host agency, the 3-day classroom session can be expanded to 4 or 5 days in length (NHI-134005B/134005W) and NHI-134005C/134005X).

Upon successful course completion, participants will have acquired the training necessary to successfully participate in future Value Engineering studies for their agencies.

Outcomes

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

- Explain how Value Engineering can improve project performance, reduce costs, and enhance value.
- Acquire the necessary behaviors and skills to be an effective Value Engineering team member with the ability to: Investigate the project and analyze project functions and costs; Creatively speculate on alternative ways to perform the various functions; Evaluate the most effective life-cycle alternatives; Develop viable alternatives into fully supported recommendations; Present the recommendations to stakeholders and agency management

Target Audience

The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance can be included in order to provide the multiple perspectives needed to maximize the effectiveness of the team.

Training Level: Basic

Fee: 2021: $450 Per Person; 2022: N/A

Length: 24 HOURS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134005W

Course Title

Value Engineering Workshop (4-day) VIRTUAL DELIVERY of 134005B

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as: a) providing the needed functions safely, reliably, and at the lowest overall cost; b) improving the value and quality of the project; and c) reducing the time to complete the project.

This course begins with a Web-based training (WBT) component that is completed prior to the first day of the class (134005A). The 3-day workshop involves training participants to be valued contributors to the Value Engineering team, conducting a Value Engineering study in a team environment. It is preferable that the host agency provides actual project(s) to be used in this course, although The National Highway Institute (NHI) can provide projects upon request. Depending on the projects selected for use in the course, and based on the request of the host agency, the 3-day classroom session can be expanded to 4 or 5 days in length (NHI-134005B and NHI-134005C).

Upon successful course completion, participants will have acquired the training necessary to successfully participate in future Value Engineering studies for their agencies.

Outcomes

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

- Explain how Value Engineering can improve project performance, reduce costs, and enhance value.
- Acquire the necessary behaviors and skills to be an effective Value Engineering team member with the ability to: Investigate the project and analyze project functions and costs; Creatively speculate on alternative ways to perform the various functions; Evaluate the most effective life-cycle alternatives; Develop viable alternatives into fully supported recommendations; Present the recommendations to stakeholders and agency management

Target Audience

The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance can be included in order to provide the multiple perspectives needed to maximize the effectiveness of the team.

Training Level: Basic

Fee: 2021: $580 Per Person; 2022: N/A

Length: 32 HOURS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134005X

Course Title

Value Engineering Workshop (5-day) VIRTUAL DELIVERY of 134005X

Value Engineering (VE) is a systematic process of review and analysis of a project during the concept and design phases. VE is conducted by a multi-disciplined team of persons not involved in the project to provide recommendations such as: a) providing the needed functions safely, reliably, and at the lowest overall cost; b) improving the value and quality of the project; and c) reducing the time to complete the project.

This course begins with a Web-based training (WBT) component that is completed prior to the first day of the class (134005A). The 3-day workshop involves training participants to be valued contributors to the Value Engineering team, conducting a Value Engineering study in a team environment. It is preferable that the host agency provides actual project(s) to be used in this course, although The National Highway Institute (NHI) can provide projects upon request. Depending on the projects selected for use in the course, and based on the request of the host agency, the 3-day classroom session can be expanded to 4 or 5 days in length (NHI-134005B and NHI-134005C).

Upon successful course completion, participants will have acquired the training necessary to successfully participate in future Value Engineering studies for their agencies.

Outcomes

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

- Explain how Value Engineering can improve project performance, reduce costs, and enhance value.
- Acquire the necessary behaviors and skills to be an effective Value Engineering team member with the ability to: Investigate the project and analyze project functions and costs; Creatively speculate on alternative ways to perform the various functions; Evaluate the most effective life-cycle alternatives; Develop viable alternatives into fully supported recommendations; Present the recommendations to stakeholders and agency management

Target Audience

The target audience for this course consists of FHWA and state highway agency personnel in management, administrative, and engineering disciplines who will participate as Value Engineering team members. Consultants or agency representatives of all technical disciplines associated with project design, development, construction, and maintenance can be included in order to provide the multiple perspectives needed to maximize the effectiveness of the team.

Training Level: Basic

Fee: 2021: $690 Per Person; 2022: N/A

Length: 40 HOURS (CEU: 3 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134006

Course Title

Utility Coordination for Highway Projects

This is a blended course, with both Web-based and instructor-led components. The Web-based training component (NHI 134006A) must be completed before attending the instructor-led training session.

Every State highway agency participates in construction projects that include accommodation and relocation of utilities along public rights-of-way. 134006 Utility Coordination for Highway Projects considers how communication, cooperation, and coordination between transportation agencies and utility companies can mitigate or avoid common challenges. Participants in this blended course (combination of Web-based and instructor-led formats) learn how, when, and where in the project development process to identify and conduct effective utility coordination.

Participants first take a self-paced, Web-based training to learn about regulatory requirements for both public and private utilities, subsurface utility engineering (SUE), and their own State's Utility Accommodation Policy. During the 2-day classroom event, participants learn to identify risks and potential issues associated with utilities, and then work together to evaluate ways to avoid or mitigate those risks and issues. (Please note: An optional lesson on utility challenges in projects using design-build delivery and other alternative contracting methods is available to be taught at the discretion of the State.) By putting these lessons into practice, utility-related complications in many cases can be predicted and mitigated at the most appropriate stage of project development, which can reduce potential negative impacts to timeline and budget.

Outcomes

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

- Explain the importance of early and effective cooperation, communication, and coordination of utility-related activities throughout a project's lifecycle.
- Identify successful techniques that could be used to avoid or mitigate utility challenges throughout the project development and delivery process.
- Explain the major impacts of identified conflicts or issues on the schedule or budget of a project.
- Explain the basic skills necessary to identify utility conflicts and develop a utility conflict matrix.
- Generate a personal resource toolkit for each of six major areas of project development (planning, design, environmental considerations, right-of-way, construction, and maintenance).

Target Audience

The course targets Federal, State, and local personnel who are responsible for planning, designing, constructing, operating, and maintaining transportation facilities that involve the accommodation or relocation of utilities. It is most effectively delivered with participation from representatives of public and private utility companies, DOT contractors, risk managers, right-of-way staff, mid-to-senior level managers, and engineering consultants. The participation of utility company representatives in particular will be integral to the success of the course. Therefore, course organizers need to make every effort to include utility company personnel, as well as the Federal, State, and local transportation practitioners who comprise the more traditional audience for NHI training. Contractors and risk managers are appropriate and vital attendees as well. A minimum of 10% of every class should come from outside Federal, State, and local transportation agencies.

Training Level: Basic

Fee: 2021: $210 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134006A

WBT

Course Title

Introduction to Utility Coordination for Highway Projects

NHI 134006 is a blended course, with both Web-based and instructor-led components. The Web-based training component (NHI 134006A) must be completed before attending the instructor-led training session.

This training is a prerequisite of another NHI training and is offered at no cost.

Every State highway agency participates in construction projects that include accommodation and relocation of utilities along public rights-of-way. 134006 Utility Coordination for Highway Projects considers how communication, cooperation, and coordination between transportation agencies and utility companies can mitigate or avoid common challenges.

In the Web-based training, participants learn about regulatory requirements for both public and private utilities, subsurface utility engineering (SUE), and their own State's Utility Accommodation Policy. By putting these lessons into practice, utility-related complications in many cases can be predicted and mitigated at the most appropriate stage of project development, which can reduce potential negative impacts to timeline and budget.

Outcomes

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

- Explain the importance of early and effective cooperation, communication, and coordination of utility-related activities throughout a project's lifecycle.
- Identify successful techniques that could be used to avoid or mitigate utility challenges throughout the project development and delivery process.
- Explain the major impacts of identified conflicts or issues on the schedule or budget of a project.

Target Audience

The course targets Federal, State, and local personnel who are responsible for planning, designing, constructing, operating, and maintaining transportation facilities that involve the accommodation or relocation of utilities. It is most effectively delivered with additional participation from representatives of public and private utility companies, DOT contractors, risk managers, right-of-way staff, mid-to senior-level managers, and engineering consultants.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 4 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134006T

WCT

Course Title

Utility Coordination for Highway Projects (VIRTUAL DELIVERY - EXAM ONLY)

This is a blended course, with both Web-based and instructor-led components. The Web-based training component (NHI 134006A) must be completed before attending the instructor-led training session.

Every State highway agency participates in construction projects that include accommodation and relocation of utilities along public rights-of-way. 134006 Utility Coordination for Highway Projects considers how communication, cooperation, and coordination between transportation agencies and utility companies can mitigate or avoid common challenges. Participants in this blended course (combination of Web-based and instructor-led formats) learn how, when, and where in the project development process to identify and conduct effective utility coordination.

Participants first take a self-paced, Web-based training to learn about regulatory requirements for both public and private utilities, subsurface utility engineering (SUE), and their own State's Utility Accommodation Policy. During the 2-day classroom event, participants learn to identify risks and potential issues associated with utilities, and then work together to evaluate ways to avoid or mitigate those risks and issues. (Please note: An optional lesson on utility challenges in projects using design-build delivery and other alternative contracting methods is available to be taught at the discretion of the State.) By putting these lessons into practice, utility-related complications in many cases can be predicted and mitigated at the most appropriate stage of project development, which can reduce potential negative impacts to timeline and budget.

Outcomes

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

- Explain the importance of early and effective cooperation, communication, and coordination of utility-related activities throughout a project's lifecycle.
- Identify successful techniques that could be used to avoid or mitigate utility challenges throughout the project development and delivery process.
- Explain the major impacts of identified conflicts or issues on the schedule or budget of a project.
- Explain the basic skills necessary to identify utility conflicts and develop a utility conflict matrix.
- Generate a personal resource toolkit for each of six major areas of project development (planning, design, environmental considerations, right-of-way, construction, and maintenance).

Target Audience

The course targets Federal, State, and local personnel who are responsible for planning, designing, constructing, operating, and maintaining transportation facilities that involve the accommodation or relocation of utilities. It is most effectively delivered with participation from representatives of public and private utility companies, DOT contractors, risk managers, right-of-way staff, mid-to-senior level managers, and engineering consultants. The participation of utility company representatives in particular will be integral to the success of the course. Therefore, course organizers need to make every effort to include utility company personnel, as well as the Federal, State, and local transportation practitioners who comprise the more traditional audience for NHI training. Contractors and risk managers are appropriate and vital attendees as well. A minimum of 10% of every class should come from outside Federal, State, and local transportation agencies.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134006V

Course Title

Utility Coordination for Highway Projects (Virtual Delivery of 134006)

This is a blended course, with both Web-based and virtual instructor-led components. The Web-based training component (NHI 134006A) must be completed before attending the instructor-led training session.

Every State highway agency participates in construction projects that include accommodation and relocation of utilities along public rights-of-way. 134006 Utility Coordination for Highway Projects considers how communication, cooperation, and coordination between transportation agencies and utility companies can mitigate or avoid common challenges. Participants in this blended course (combination of Web-based and virtual instructor-led formats) learn how, when, and where in the project development process to identify and conduct effective utility coordination.

Participants first take a self-paced, Web-based training to learn about regulatory requirements for both public and private utilities, subsurface utility engineering (SUE), and their own State's Utility Accommodation Policy. During the 16 hour online classroom event, participants learn to identify risks and potential issues associated with utilities, and then work together to evaluate ways to avoid or mitigate those risks and issues. (Please note: An optional lesson on utility challenges in projects using design-build delivery and other alternative contracting methods is available to be taught at the discretion of the State.)

Register today to learn how putting these lessons into practice, utility-related complications in many cases can be predicted and mitigated at the most appropriate stage of project development, which can reduce potential negative impacts to timeline and budget.

Outcomes

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

- Explain the importance of early and effective cooperation, communication, and coordination of utility-related activities throughout a project's lifecycle.
- Identify successful techniques that could be used to avoid or mitigate utility challenges throughout the project development and delivery process.
- Explain the major impacts of identified conflicts or issues on the schedule or budget of a project.
- Explain the basic skills necessary to identify utility conflicts and develop a utility conflict matrix.
- Generate a personal resource toolkit for each of six major areas of project development (planning, design, environmental considerations, right-of-way, construction, and maintenance).

Target Audience

The course targets Federal, State, and local personnel who are responsible for planning, designing, constructing, operating, and maintaining transportation facilities that involve the accommodation or relocation of utilities. It is most effectively delivered with participation from representatives of public and private utility companies, DOT contractors, risk managers, right-of-way staff, mid-to-senior level managers, and engineering consultants. The participation of utility company representatives in particular will be integral to the success of the course. Therefore, course organizers need to make every effort to include utility company personnel, as well as the Federal, State, and local transportation practitioners who comprise the more traditional audience for NHI training. Contractors and risk managers are appropriate and vital attendees as well. A minimum of 10% of every class should come from outside Federal, State, and local transportation agencies.

Training Level: Basic

Fee: 2021: $210 Per Person; 2022: N/A

Length: 16 HOURS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134037A

Updated Training

Course Title

Managing Highway Contract Claims: Analysis and Avoidance

Construction contract claims are the result of the owner and the contractor being unable to come to agreement regarding an alleged change. Reducing or eliminating claims requires (1) a reduction in the number of potential changes, and (2) the implementation of practices that increase the likelihood of an owner and contractor resolving a dispute. This course provides the basic tools to address both elements of reducing or eliminating contract claims and has been updated to include an increased focus on claims avoidance with improved examples and additional best practices with state-specific activity.

In this course, participants first walk step-by-step through the evaluation of a contract claim, looking at each component. Separate course modules are devoted to these three components of a claim: entitlement, impact, and cost. The "Entitlement" module focuses on the contract and the proper interpretation of common contract clauses. The "Impacts" module focuses on delay and inefficiency--the two most difficult impacts to measure and, consequently, most difficult to resolve. The "Cost" module explores costs that can prove difficult for the project team to resolve.

Next, the participants identify and review best practices associated with successful dispute resolution. In addition, there is a module devoted solely to claims avoidance techniques and dispute resolution processes.

By completing this course, participants will have the opportunity to master techniques that can help them manage and avoid claims.

Outcomes

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

- Define "claim"
- List the three parts of a claim
- Describe the difference between a directed and constructive change
- List examples of directed and constructive changes
- List basic contract principles and rules of contract interpretation
- List the contract clauses most relevant to the evaluation of claims
- Define essential scheduling terms
- Explain the differences among the six types of delays
- List five methods for analyzing delays
- Explain how to perform a contemporaneous schedule analysis
- List five methods for measuring productivity/inefficiency
- Explain how to perform a measured mile analysis
- Describe how to avoid constructive acceleration
- List five methods for calculating costs
- List the four assumptions upon which a total cost calculation is based
- Identify project costs that are affected by delays
- Calculate extended home office overhead costs by the Eichleay and Canadian methods
- Identify acceleration costs
- Identify inefficiency costs
- Identify common miscellaneous costs
- Explain the key steps necessary to evaluate claims
- Describe the False Claims Act
- Demonstrate an ability to evaluate a contractor's claim

- Describe FHWA policy regarding participation in paying damages for contractor claims
- Explain the importance of a claims avoidance system
- Describe a claims avoidance and dispute resolution system
- Explain the strengths and weaknesses of dispute review board

Target Audience

This an intermediate level course.It is designed specifically for State DOTs, but is also appropriate for LPOs and MPOs. It is a valuable course for contractors, design consultants, project managers, and attorneys involved in the evaluation, management, and resolution of disputes on highway construction projects.

Training Level: Intermediate

Fee: 2021: $225 Per Person; 2022: N/A

Length: 2.5 DAYS (CEU: 1.5 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134037V

Course Title

Managing Highway Contract Claims: Analysis and Avoidance (Virtual Delivery of 134037A)

NHI-134037A - Managing Highway Contract Claims: Analysis and Avoidance is now offered on-line as a virtual course. A virtual instructor-led training provides 100% remote learning while ensuring participants have access to expert instructors, workshop activities, and engaging peer-to-peer discussions. Register today and learn the principles of tunnel inspection in the convenience of your home and/or office anywhere in the country, remotely.

Construction contract claims are the result of the owner and thecontractor being unable to come to agreement regarding an alleged change.Reducing or eliminating claims requires (1) a reduction in the number ofpotential changes, and (2) the implementation of practices that increase thelikelihood of an owner and contractor resolving a dispute. This courseprovides the basic tools to address both elements of reducing or eliminatingcontract claims and has been updated to include an increased focus on claimsavoidance with improved examples and additional best practices withstate-specific activity.

In this course, participants first walk step-by-step through theevaluation of a contract claim, looking at each component. Separate coursemodules are devoted to these three components of a claim: entitlement, impact,and cost. The "Entitlement" module focuses on the contract and theproper interpretation of common contract clauses. The "Impacts"module focuses on delay and inefficiency--the two most difficult impacts tomeasure and, consequently, most difficult to resolve. The "Cost"module explores costs that can prove difficult for the project team toresolve.

Next, the participants identify and review best practices associated with successful dispute resolution. In addition, there is a module devoted solely to claims avoidance techniques and dispute resolution processes.

By completing this course, participants willhave the opportunity to master techniques that can help them manage and avoid claims.

Register today to learn best practices associated with successful dispute resolution in the convenience of your home and/or office anywhere in the country, remotely.

Outcomes

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

- Define "claim"
- List the three parts of a claim
- Describe the difference between a directed and constructive change
- List examples of directed and constructive changes
- List basic contract principles and rules of contract interpretation
- List the contract clauses most relevant to the evaluation of claims
- Define essential scheduling terms
- Explain the differences among the six types of delays
- List five methods for analyzing delays
- Explain how to perform a contemporaneous schedule analysis
- List five methods for measuring productivity/inefficiency
- Explain how to perform a measured mile analysis
- Describe how to avoid constructive acceleration
- List five methods for calculating costs
- List the four assumptions upon which a total cost calculation is based
- Identify project costs that are affected by delays
- Calculate extended home office overhead costs by the Eichleay and Canadian methods
- Identify acceleration costs

- Identify inefficiency costs
- Identify common miscellaneous costs
- Explain the key steps necessary to evaluate claims
- Describe the False Claims Act
- Demonstrate an ability to evaluate a contractor's claim
- Describe FHWA policy regarding participation in paying damages for contractor claims
- Explain the importance of a claims avoidance system
- Describe a claims avoidance and dispute resolution system
- Explain the strengths and weaknesses of dispute review board

Target Audience

This an intermediate level course.It is designed specifically for State DOTs, but is also appropriate for LPOs and MPOs. It is a valuable course for contractors, design consultants, project managers, and attorneys involved in the evaluation, management, and resolution of disputes on highway construction projects.

Training Level: Intermediate

Fee: 2021: $225 Per Person; 2022: N/A

Length: 24 HOURS (CEU: 1.5 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 32

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134063

Updated Training

Course Title

Maintenance Leadership Academy

The Maintenance Leadership Academy (MLA) provides an intensive training program to individuals who hold positions as State, district, and county maintenance supervisors, superintendents, and managers. The MLA is an investment in an employee's role as a leader and mentor that helps agencies become more efficient and innovative. The MLA decreases the time it takes to acclimate new managers, improves decision-making, and supports workforce development.

Participants acquire an understanding of the various processes, methods, and materials that are applied to maintain and preserve their organization's bridge and highway systems. Participants develop a knowledge base of planning, scheduling, quality control, customer focus, program presentation, asset management, pavement and bridge preservation, contract management, and performance improvement. Completion requirements include:

-Enroll and attend a 1-hour Orientation Web-conference

-Complete 16.75 hours of independent study via paper-based study and web-based training modules

-Attend 10.5 days of instructor-led, classroom training

See sample outcomes below for each of the six modules that comprise the MLA.

NOTE: Interested hosts should submit their course requests at least three-four months in advance of the desired start date. Contact NHI with any questions about the MLA course structure.

Outcomes

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

- Lead a performance-based maintenance culture that supports data-driven decision-making and achieves quality results in all areas of maintenance work. (Module A)
- Select the most appropriate candidates and treatment for pavement and bridge distress conditions and to make sure the agency gets the best performance and value from pavement and bridge maintenance expenditures. (Module B)
- Manage their roadside and drainage assets proactively and effectively to get the most out of the resources expended and extend the life of roadside, pavement, and bridge assets. (Module C)
- Promote and deliver environmental compliance, stewardship, and sustainability in their organization and with their staff members. (Module D)
- Develop, implement, and manage a comprehensive, risk-based plan for weather-related events. (Module E)
- Support traffic services and establish work zones that comply with agency guidance under normal traffic conditions and traffic incidents. (Module F)

Target Audience

This course was designed for State, regional, or county personnel who manage highway maintenance programs and deal with oversight and quality assurance over broad geographic areas. They are involved with handling materials, scheduling, budgeting, and planning. Participants have an advanced skill in maintenance activities.

Training Level: Accomplished

Fee: 2021: $1550 Per Person; 2022: N/A

Length: 10.5 DAYS (CEU: 8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134063A

WCT

Course Title

Maintenance Leadership Academy - Module A Maintenance Administration (VIRTUAL DELIVERY-EXAM ONLY)

The Maintenance Academy will provide an extensive/intensive training program to individuals who hold positions as District, County and State maintenance supervisors. The participants will acquire an understanding of the various processes, methods, and materials that are applied to maintain their organization's bridge and highway systems. Participants will develop a knowledge base of personnel management, materials selection, equipment use, and applicable methods to react to problems in bridges, roadways, budgeting, and planning.

This curriculum will assist departments that are experiencing high turnover rates and want to decrease the time for acclimating new managers. The training will provide an opportunity for career development, highlighting the changes that have occurred over the past 20 years and the future of the Highway Maintenance field.

The Academy curriculum consists of self-paced lessons, Web conference training, and classroom sessions. Self-paced lessons are completed prior to attending the 3-week classroom session and are delivered both in Web-based and paper-based formats. Upon enrolling for the Maintenance Leadership Academy, participants will be invited to attend a 1-hour orientation Web conference that will provide an overview of the Academy's schedule and information on how to access the self-paced lessons.

Outcomes

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

- Communicate a justification for a budget to supervisors, legislators and managers, the public, and to the local workforce staff
- Express the desired process and expectations of an assigned maintenance activity or program
- Organize strategic and tactical tools to execute maintenance programs
- Demonstrate the components of quality service utilizing the maintenance program
- Calculate performance and results data for agency reporting

Target Audience

The target audience for this course is regional, state-wide, or county personnel who manage operations programs and deal with oversight and quality assurance over broader geographic areas. They are involved with handling materials, scheduling, budgeting and planning. Participants have an advanced skill in maintenance activities. Participants enrolling in the Academy will need to have taken NHI-134064 "Transportation Construction Quality Assurance" and NHI-131110 "Pavement Preservation Treatment Construction" or had equivalent training or experience in these content areas.

Training Level: Accomplished

Fee: 2021: $0 Per Person; 2022: N/A

Length: 4.5 DAYS (CEU: 2.7 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134063B

WCT

Course Title

Maintenance Leadership Academy - Module B Pavement & Bridge Preservation(VIRTUAL DELIVERY-EXAM ONLY)

"Pavement and Bridge Preservation" will provide an extensive/intensive training program to individuals who hold positions as District, County and State maintenance engineers. The participants will acquire an understanding of the various processes, methods, and materials that are applied to preserve bridge and pavement systems. Participants will develop a knowledge base of materials selection, equipment use, and application methods to conduct effective pavement and bridge preservation.

The following lesson topics will be covered in this course:

System Preservation

Pavement Evaluation and Analysis

Shaping and Shoulder

Crack Sealing

Thin Surface Treatments

Patching

Base/Subbase Stabilization and Repair

Bridge Preservation

Pavement Repair (Emergency Situations)

As this is a blended course, participants will be expected to complete 10.5 hours of Web-based Training and 7 hours of independent study prior to attending the Instructor-led portion of this course.

Outcomes

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

• Describe how various treatments fit into an overall system preservation program and when to implement them.

Target Audience

The target audience for this course is regional, state-wide, or county personnel who manage operations programs and deal with oversight and quality assurance over broader geographic areas. They are involved with handling materials, scheduling, budgeting and planning. Participants have an advanced skill in maintenance activities. Participants are required to complete NHI 131110 "Pavement Preservation Treatment Construction" a Web-based Training, or its equivalent, prior to taking this course.

Training Level: Accomplished

Fee: 2021: $0 Per Person; 2022: N/A

Length: 3.5 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134063C

WCT

Course Title

Maintenance Leadership Academy - Module C (VIRTUAL DELIVERY-EXAM ONLY)

The Maintenance Leadership Academy is a four-week training program for individuals who hold positions as State, district, and county maintenance supervisors. It is designed to help participants develop practical decision-making skills related to the various processes, methods, and materials that are applied to maintain their organizations' bridge and highway systems.

This course will assist departments that are experiencing high turnover rates and want to decrease the time for acclimating new managers. This training will provide an opportunity for career development and bring to light the changes that have occurred over the past 20 years and where the important field of highway maintenance is heading.

Module C consists of seven lessons dealing with roadway maintenance and drainage. In addition to a classroom-based, instructor-led training (ILT) component, lessons can also contain a self-paced, Web-based training (WBT) component, paper-based, independent study (IS) exercises, or Web conferences. The ILT portion of Module C will begin the second week of class.

Outcomes

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

- · Explain the importance of good drainage and describe a systematic approach to constructing and maintaining a drainage system
- · Recognize the properties and limitations of local soil types in various maintenance operation
- · Identify methods and regulations for maintaining and controlling outdoor advertising and litter
- · Explain how to supervise maintenance of public facilities, including emergency maintenance and shutdown procedures
- · Describe appropriate methods and regulations for maintenance and control of roadside vegetation
- · Describe maintenance issues related to the highway beautification program

Target Audience

The target audience for the Maintenance Leadership Academy is individuals who hold positions as State, district, and county maintenance supervisors involved with the operations of running a statewide, regional, or county operation and need the skills and knowledge associated with asset management.Assumed Training CompetenciesParticipants should understand and demonstrate specialized skills in a variety of maintenance tasks of the intermediate level and perform specialized tasks in limited areas or broad-based tasks with little or no daily supervision.

Training Level: Accomplished

Fee: 2021: $0 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134063D

WCT

Course Title

Maintenance Leadership Academy - Module D Environmental Protection (VIRTUAL DELIVERY-EXAM ONLY)

The Maintenance Leadership Academy is a training program for individuals who hold positions as State, district, and county state maintenance supervisors. It is designed to help participants develop practical decisionmaking skills related to the various processes, methods, and materials that are applied to maintain their organizations' bridge and highway systems.

The Academy will assist departments that are experiencing high turnover rates and want to decrease the time for acclimating new managers. This training will provide an opportunity for career development and bring to light the changes that have occurred over the past 20 years and where the important field of highway maintenance is heading.

The Environmental Protection module focuses on the practical implications of the letter and spirit of environmental laws and regulations in relation to highway maintenance operations and facilities. The module focuses on environmental protection issues related to both routine maintenance activities, and on federally-regulated work.

The Environmental Protection module is delivered using the independent study workbook and instructor-led training (ILT) methods. The independent study materials are completed by participants before attending the classroom session.

The goal for this module is to provide Maintenance supervisors with the background and skills needed to promote and deliver environmental compliance, stewardship, and sustainability in their organization and with their staff members.

Outcomes

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

- Describe the role of Maintenance supervisors in promoting environmental compliance, stewardship, and sustainability.
- Given maintenance-related scenarios describing routine maintenance activities and federally-regulated project commitments:
- a. Identify permits, plans, and program requirements that may apply.
- b. Explain how to meet environmental requirements and correctly document activities.
- c. Identify common environmental protection issues that might arise.
- d. Use your agency's coordination and resourcing protocols to determine the appropriate course of
- action to address environmental stewardship issues.

Target Audience

The target audience for the Maintenance Leadership Academy is individuals who hold positions as State, district, and county maintenance supervisors involved with the operations of running a statewide, regional, or county operation and need the skills and knowledge associated with asset management.Assumed Training CompetenciesParticipants should understand and demonstrate specialized skills in a variety of maintenance tasks of the intermediate level and perform specialized tasks in limited areas or broad-based tasks with little or no daily supervision.

Training Level: Accomplished

Fee: 2021: $0 Per Person; 2022: N/A

Length: 7 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134063E

WCT

Course Title

Maintenance Leadership Academy - Module E Weather-Related Operations (VIRTUAL DELIVERY-EXAM ONLY)

The Maintenance Leadership Academy is a training program for individuals who hold positions as State, district, and county maintenance supervisors. It is designed to help participants develop practical decisionmaking skills related to the various processes, methods, and materials that are applied to maintain their organization's bridge and highway systems.

The Weather-related Operations module prepares maintenance supervisors to develop, implement, and evaluate a weather-related operations plan.

The basic principles presented apply to all weather events. Throughout the course, the independent study assignments, class exercises, and discussions provide participants with an opportunity to consider the types of weather events they encounter regularly and apply the principles accordingly.

The Weather-related Operations module is delivered using independent study and classroom training methods. The independent study materials, consisting of an independent study workbook and Web-based training (WBT) module, are completed by participants before attending the classroom session.

The goal for this module is to prepare you to develop, implement, and manage a comprehensive, risk-based plan for weather-related events.

Outcomes

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

- Explain your State's policies, guidelines, and standards regarding treatment of roadways during inclement weather events.
- Given a scenario, identify information, procedures, and activities required for planning a response to a weather-related event.
- Given a scenario, select appropriate procedures and resources for executing a response to a weather-related event.
- Given a scenario, select appropriate procedures for documenting the response following a weather-related event.
- Explain the benefit of using an after-action review to inform future planning efforts.

Target Audience

The target audience for the Maintenance Leadership Academy is individuals who hold positions as State, district, and county maintenance supervisors involved with the operations of running a statewide, regional, or county operation and need the skills and knowledge associated with asset management.Assumed Training CompetenciesParticipants should understand and demonstrate specialized skills in a variety of maintenance tasks of the intermediate level and perform specialized tasks in limited areas or broad-based tasks with little or no daily supervision.

Training Level: Accomplished

Fee: 2021: $0 Per Person; 2022: N/A

Length: 7 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134063F

WCT

Course Title

Maintenance Leadership Academy - Module F Work Zone Traffic Safety (VIRTUAL DELIVERY-EXAM ONLY)

The Maintenance Leadership Academy is a training program for individuals who hold positions as district, county, and State maintenance supervisors. It is designed to help participants develop practical decision-making skills related to the various processes, methods, and materials that are applied to maintain their organizations' bridge and highway systems.

The Traffic and Work Zone Safety module focuses on the skills needed to provide safe work zones and traffic services for all road users and work crews. Since most agencies conduct their own traffic control training, this module provides a forum for comparing national versus state practice. It also emphasizes lane closure strategies and the need to minimize the impact work zones have on the traveling public. In addition to work zone traffic control, the module addresses permanent signs and markings; barriers, guardrails, crash cushions, and end treatments; and incident management.

The goal of this module is for you to be able to provide traffic services and establish work zones that comply with agency guidance under normal traffic conditions and traffic incidents. Achieving this goal minimizes risks to workers, emergency responders, and the travelling public.

Outcomes

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

- Explain how complying with work zone traffic control requirements mitigates risks and supports a culture of safety.
- Using a temporary traffic control scenario, select the appropriate traffic control application and devices to use.
- Using an example, determine if signs and markings comply with the Manual on Uniform Traffic Control Devices (MUTCD).
- Using an example, and your agency's standards and policies, decide whether replacing or upgrading barriers is appropriate.
- Explain how successful maintenance practices use effective traffic incident management and quick clearance goals.

Target Audience

The target audience for the Maintenance Leadership Academy is individuals who hold positions as State, district, and county maintenance supervisors involved with the operations of running a statewide, regional, or county operation and need the skills and knowledge associated with asset management.Assumed Training CompetenciesParticipants should understand and demonstrate specialized skills in a variety of maintenance tasks of the intermediate level and perform specialized tasks in limited areas or broad-based tasks with little or no daily supervision.

Training Level: Accomplished

Fee: 2021: $0 Per Person; 2022: N/A

Length: 8 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134063G

WBT

Course Title

Maintenance Leadership Academy (Course Materials)

IMPORTANT NOTICE: NHI 134063-G is the online curriculum attached to the Maintenance Leadership Academy. You must be enrolled in a current session of Maintenance Leadership Academy to register for NHI 134063-G. If you are not enrolled in Maintenance Leadership Academy and would like to take the series of Web-based trainings, please register for NHI 134109 Maintenance Training Series. If you complete the NHI 134063-G courses without being enrolled in the Maintenance Leadership Academy, you will not receive credit or certificates for the online curriculum. Anyone outside of the current Maintenance Leadership Academy sessions, please register for NHI 134109.

The Maintenance Leadership Academy provides an intensive training program to individuals who hold positions as State, district, and county maintenance supervisors. The Academy can help decrease the time it takes to acclimate new managers and provide an opportunity for career development.

Participants acquire an understanding of the various processes, methods, and materials that are applied to maintain their organization's bridge and highway systems. Participants develop a knowledge base of personnel management, materials selection, equipment use, and applicable methods to react to problems in bridges, roadways, budgeting, and planning.

The Academy curriculum consists of self-paced lessons accessed via the Web and classroom sessions. Self-paced lessons are completed prior to attending each of the two classroom sessions. Upon enrolling for the Maintenance Leadership Academy, participants attend a 1-hour orientation Web conference that provides an overview of the Academy's schedule and information on how to access the self-paced lessons.

An example of the structure of the Academy:

- Enroll and attend a 1-hour Web conference orientation
- Complete 22 hours of independent study materials
- Attend 8 days of classroom training
- Complete 10.5 hours of independent study material and attend a 1-hour homework review Web conference
- Attend the final 4 days of classroom training

Outcomes

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

- Describe the use of maintenance administration in achieving highway agency goals. (Module A)
- Describe how various treatments fit into an overall system preservation program and when to implement them. (Module B)
- Identify appropriate drainage maintenance and roadside management techniques. (Module C)
- Describe the maintenance manager's roles and responsibilities for developing, implementing, and managing a comprehensive plan for dealing with weather-related events. (Module D)
- Explain the maintenance and use of traffic control devices (including work zone plans, work zone traffic control devices, signs, striping, guardrails, and median barriers) in maintenance operations. (Module E)
- Describe how environmental protection issues, regulations and control measures affect highway maintenance activities. (Module F)

Target Audience

This course was designed for State, regional, or county personnel who manage operations programs and deal with oversight and quality assurance over broader geographic areas. They are involved with handling materials, scheduling, budgeting and planning. Participants have an advanced skill in maintenance activities. Participants enrolling in the Academy will need to have taken NHI-134064 "Transportation Construction Quality Assurance" and NHI-131110 "Pavement Preservation Treatment Construction" or had equivalent training or experience in these content areas.

Training Level: Accomplished

Fee: 2021: $0 Per Person; 2022: N/A

Length: 32.5 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 31

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134063V

Updated Training

Course Title

Maintenance Leadership Academy (Virtual Delivery)

The Maintenance Leadership Academy (MLA) provides an intensive training program to individuals who hold positions as State, district, and county maintenance supervisors, superintendents, and managers. The MLA is an investment in an employee's role as a leader and mentor that helps agencies become more efficient and innovative. The MLA decreases the time it takes to acclimate new managers, improves decision-making, and supports workforce development.

Participants acquire an understanding of the various processes, methods, and materials that are applied to maintain and preserve their organization's bridge and highway systems. Participants develop a knowledge base of planning, scheduling, quality control, customer focus, program presentation, asset management, pavement and bridge preservation, contract management, and performance improvement. Completion requirements include:

-Enroll and attend a 1-hour Orientation Web-conference

-Complete 16.75 hours of independent study via paper-based study and web-based training modules

-Attend 10.5 days of instructor-led, web-based conference training

See sample outcomes below for each of the six modules that comprise the MLA.

NHI-134063V Maintenance Leadership Academy is now offered on-line as a virtual course. A virtual instructor-led training provides 100% remote learning while ensuring participants have access to expert instructors, workshop activities, and engaging peer-to-peer discussions. Register today to improve decision-making and support workforce development in the convenience of your home and/or office from anywhere in the country, remotely.

NOTE: Interested hosts should submit their course requests at least three-four months in advance of the desired start date. Contact NHI with any questions about the MLA course structure.

Outcomes

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

- Lead a performance-based maintenance culture that supports data-driven decision-making and achieves quality results in all areas of maintenance work. (Module A)
- Select the most appropriate candidates and treatment for pavement and bridge distress conditions and to make sure the agency gets the best performance and value from pavement and bridge maintenance expenditures. (Module B)
- Manage their roadside and drainage assets proactively and effectively to get the most out of the resources expended and extend the life of roadside, pavement, and bridge assets. (Module C)
- Promote and deliver environmental compliance, stewardship, and sustainability in their organization and with their staff members. (Module D)
- Develop, implement, and manage a comprehensive, risk-based plan for weather-related events. (Module E)
- Support traffic services and establish work zones that comply with agency guidance under normal traffic conditions and traffic incidents. (Module F)

Target Audience

This course was designed for State, regional, or county personnel who manage highway maintenance programs and deal with oversight and quality assurance over broad geographic areas. They are involved with handling materials, scheduling, budgeting, and planning. Participants have an advanced skill in maintenance activities.

Training Level: Accomplished

Fee: 2021: $1550 Per Person; 2022: N/A

Length: 84 HOURS (CEU: 8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134067

Course Title

Construction Inspection of Bridge Rehabilitation Projects

This 4-day course has been designed to improve quality, ensure uniformity, and establish a minimum standard for bridge rehabilitation.

The keys to successfully ensuring quality on rehab jobs are: knowing what should happen on a given job; identifying problems when they do happen; and correctly using available resources to solve the problem. This course presents innovative and best practice inspection techniques for each structural element of a bridge.

This course will introduce participants to distress and deterioration they may encounter when working with concrete or steel that requires repair. It is essential to identify the issues that harm these materials because it is often poor construction techniques that lead to reduced structural condition or shortened service life. The focus then turns to construction and inspection practices pertaining to concrete decks, steel superstructures, concrete superstructures and substructures, joints, and bearings.

The course is activity-rich, using discussions of best practices, small and large group activities for identifying critical inspection moments, and a wide array of case studies from real projects to emphasize the importance of applying these techniques in the field.

Outcomes

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

- Relate observable deterioration of bridge structural elements to distress mechanisms
- Associate potential construction and materials problems
- Explain the role of the construction inspector as part of the overall project team
- Interpret drawings and specifications
- Describe rehabilitation sequences for various bridge systems, bridge types, and materials
- Explain basic inspection and testing of materials
- Make and maintain sufficient records

Target Audience

This course will be appropriate for inspectors with 1-5 years of experience who are seeking a better foundation in bridge rehabilitation techniques. They will likely have a basic grasp of construction and inspection methods, bridge terminology, and causes of distress and deterioration, although this information will be reviewed at the beginning of the course.The course will be appropriate for experienced bridge inspectors who are seeking to learn about innovative methods in bridge rehabilitation and obtain a refresher on familiar inspection methods. Construction supervisors, transportation department field inspectors, construction inspectors, field engineers, resident engineers, structural engineers, materials engineers, and other technical personnel involved in the inspection of bridge rehabilitation projects will benefit from this course. The course is designed for participants without an in-depth engineering background. However, those with engineering backgrounds are welcome to attend and can provide valuable perspective in the context of group activities and discussions.

Training Level: Basic

Fee: 2021: $475 Per Person; 2022: N/A

Length: 4 DAYS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134077

Course Title

Contract Administration Core Curriculum

More than 10,000 Federal-aid construction contracts are authorized by FHWA each year. Those contracts are subsequently administered by State departments of transportation and local public agencies that may not be familiar with FHWA's complex requirements for construction contracts. Recent FHWA program reviews of projects administered by local public agencies indicated that contract administration is a continuing high-risk area that needs additional focus.

Therefore, a newly revised, 2-day instructor-led training course was developed in concert with updates and revisions to the Contract Administration Core Curriculum (CACC) Manual (revised October 2014). The training was developed to explain basic Federal-aid requirements; promote awareness of FHWA policy; facilitate familiarity with the newly reorganized, revised, and expanded CACC manual; and allow supervised practice activities using the manual to find information. By engaging in a variety of in-class exercises and case studies, participants become quite familiar with the CACC Manual and learn how to best use it as a daily resource.

A basic understanding of the background and structure of the Federal-aid Highway Program (FAHP) is required for participants attending this course. Participants who are new to administering Federal-aid contracts should take NHI introductory course (NHI 310110 Federal-aid 101) to the Federal-aid Highway Program prior to attending CACC course. Anyone needing a refresher on the FAHP is encouraged to take the course as well.

Prior to attending class, all participants are expected to watch the Federal-aid Essentials video Stewardship and Oversight. This video is approximately 8.5-minutes long and can be accessed at www.fhwa.dot.gov/federal-aidessentials/.

Outcomes

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

- Use the Contract Administration Core Curriculum Manual (CACC) and other FHWA resources in order to answer questions regarding program-level and project-level requirements on Federal Aid (FA) projects
- Describe the impact program-level contract requirements have on individual FA projects
- Identify the contract requirements associated with administering FA projects for Federal and State entities at the pre-award, advertising and award, and post-award and constructions stages

Target Audience

This course is designed for Federal Highway Administration (FHWA) Division Office personnel who must read, interpret, and apply Federal regulations and guidance that affects administration of Federal-aid contracts, as well as any State and local government agency personnel who must interpret and apply Federal regulations and guidance that affects administration of Federal-aid contracts.

Training Level: Basic

Fee: 2021: $125 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134080

Course Title

Environmental Factors in Construction and Maintenance

NOTE: This course is intended for highway construction inspectors, maintenance supervisors, and other inspection and field personnel.

This is a blended course that comprises approximately 6 hours of independent study work and a 1.5-day instructor-led session. Participants must complete the independent study materials before attending the instructor-led session.

Mandated environmental considerations are an important part of all highway agencies' roadway construction and maintenance activities. NHI 134080 Environmental Factors in Construction and Maintenance focuses on balancing the need to fulfill environmental protections and the need to complete project activities in a safe, timely, and financially responsible manner.

This course emphasizes common environmental agency regulations, adherence to plans, early and frequent communication regarding construction and maintenance commitments, and the potential for encountering unexpected issues. Course activities help participants understand how to build environmental considerations into their standard practice. Learning to relate environmental commitments to construction and maintenance processes and practices can help transportation personnel ensure compliance with numerous and increasingly complex Federal, State, and local environmental regulations.

Course content is delivered via approximately 6 hours of independent study workbook materials and a 1.5-day classroom-based, instructor-led session. Two FHWA instructors relate their construction experience and environmental knowledge to help ensure that participants in this course will be able to apply the training content immediately to their projects and duties.

Outcomes

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

- Relate design-phase environmental commitments to construction documents
- Explain your role in early and continuous communication to support commitments that occurred during design phase
- Recognize the importance of environmental protection during construction and maintenance operations
- Describe quality control measures and documentation that can be implemented through the construction sequence to provide environmental mitigation measures
- Recognize the role of the project inspectors (and environmental inspectors, when used) in addressing environmental issues
- Describe a variety of environmental compliance and commitment tracking tools
- Identify resources for consultation on environmental issues

Target Audience

This course is intended primarily for Federal, State, and local highway construction inspectors, maintenance supervisors, and other inspection and field personnel who must ensure that identified environmental impacts are mitigated during construction and maintenance operations. This may include FHWA employees, as well as State employees and local agencies and consultants that oversee such activities.

Training Level: Basic

Fee: 2021: $125 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: 1.5 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134108B

WBT

Course Title

Plan Reading: Grading Plans

This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review the basics for highway plan reading. This course is recommended for the Transportation Curriculum Coordination Council levels II - IV. This course is primarily intended for inspectors and technicians.

The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training reviews the information found in the Grading Plans (sheets that begin with "B") section of a highway plan.

This training is part of the curriculum from the Plan Reading Series (FHWA-NHI-134108) which covers both basic plan reading instructions, as well as, providing a more in-depth level of instruction for anyone seeking more information and/or a review of plan reading. The other Web-based training modules include:

FHWA-NHI-134108A Highway Plan Reading Basics

FHWA-NHI-134108C Traffic Control Plans

FHWA-NHI-134108D Erosion and Sediment Control Plans

FHWA-NHI-134108E Right-of-Way Plans

FHWA-NHI-134108F County Plans

FHWA-NHI-134108G Bridge Plans

FHWA-NHI-134108H Culvert Plans

Outcomes

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

- Describe the information provided in the grading plans
- Identify grade characteristics provided in the typical grading sections sheets
- Explain the importance of plan and profile sheets
- Describe the different elements that can be depicted in plan and profile sheets

Target Audience

This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the construction process of highways and/or bridges. It is applicable to anyone desiring a better understanding of plan reading.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 1.5 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134112

WCT

Course Title

Principles and Practices for Enhanced Maintenance Management Systems

Is your agency in the process of enhancing its maintenance management capabilities?

Are you interested in learning more about developing effective performance measures for maintenance activities?

If so, join us for a blended training course that features both independent study material and facilitated Web-conferences. You will be introduced to the methods and practices used in an enhanced maintenance management system (MMS) to effectively maintain and operate a highway network. You will explore the principles and practices of using MMS to effectively examine efficient maintenance and operation of a highway network. Throughout the course, you will learn by participating in activities and assignments specific to using MMS.

The course materials rely heavily on the AASHTO Guidelines for Maintenance Management Systems, Transportation Asset Management Guide, and several other recent publications on the topic. To illustrate the application of the principles, the course materials are supplemented with examples from State and local highway agencies.

Participant Responsibilities:

- 7 Web-based lessons (Duration: 1- 1.5 hrs each)

- 3 Web-conferences (Duration: 2 hours each)

To obtain your certificate, you must complete all Web-based lessons and Web-conferences. To receive Continuing Education Units (CEUs), you must also pass the online test at the end of the course. You will need your own computer with an Internet connection as well as a telephone line in order to participate.

Outcomes

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

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

Target Audience

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

Training Level: Basic

Fee: 2021: $225 Per Person; 2022: N/A

Length: 15 HOURS (CEU: 1.5 UNITS)

Class Size: MINIMUM: 10; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134117

New Training WBT

Course Title

Preparing and Communicating Effective Utility Relocation Requirements

Preparing and practicing effective utility relocation requirements are critical for success in today's highway projects! Impacts from inefficiencies in the utility coordination process include cost overruns and time delays in transportation projects. Further, the lack of utility information in bid packages increases construction contractor's risks, which can lead to the possibility of fewer qualified bidders or higher bids. This self-paced, web-based training provides the information you need to understand the purpose and value of utility agreements as well as the requirements for them.

How do you know if this course is right for you? Read on to find out what you will learn and be able to apply to your role.

-If your role includes preparing and communicating utility agreements and their supporting documents, then this course can guide you through which elements to include and how to properly prepare them. Explore effective techniques for relocation plans; utility relocation cost estimates; and utility relocation schedules.

-FHWA division personnel will gain knowledge and tools for understanding utility agreements and construction bid packages and to evaluate the effectiveness of a State utility program.

-STAs and LPAs could significantly improve project delivery and minimize cost and time change orders through the preparation of complete, effective, documentation of utility agreements and utility-related construction bid packages.

Outcomes

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

- Differentiate effective supporting documents (utility relocation plans, utility relocation cost estimates, and utility relocation schedules) from ineffective supporting documents in a utility agreement.
- Evaluate the effectiveness of a utility agreement.
- Differentiate effective utility statements from ineffective utility statements.
- Evaluate the effectiveness of utility information in construction bid packages.

Target Audience

-Federal Highway Administration (FHWA) division officials and Federal Land Highway Division officials, including utility leads and area engineers-State transportation agencies (STAs) and local public agencies (LPAs) including utility practitioners (utility coordinators, utility engineers, and utility directors); design project managers and designers; construction engineers and project managers-Highway and utility consultants who handle utility coordination and relocations as part of a project delivery team, including utility coordination consultants, subsurface utility engineering firms, and design and construction consultants-Utility owner officials and their construction contractors.General, acceptable levels of experience or education include the following: -Some familiarity with utility agreements and what is communicated in project documents-Familiarity with utility accommodation and relocation regulations and practices-Familiarity with the transportation project delivery process-Familiarity with typical project documents such as plans, specifications, special provisions, cost estimates, and project schedulesAdditional helpful background:-Working knowledge of reading plans-Familiarity with Subsurface Utility Engineering (SUE)-FHWA-NHI-310110 "Federal-Aid Highways - 101" (State Version) or equivalent knowledge-FHWA-NHI-134006A "Introduction to Utility Coordination for Highway Projects" or equivalent knowledge

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3.5 HOURS (CEU: .4 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207A

New Training WBT

Course Title

How to Construct Durable Full-Depth Repairs in Concrete Pavements

Full-depth repairs are used to restore localized areas of slab damage that extend beyond the upper one-third of slab depth or originate from the slab bottom.

This course provides a comprehensive guide for performing full-depth repairs--from planning for, preparing, and evaluating the repair through testing and quality assurance after construction is complete. In the Web-based training you will find detailed, how-to instruction that covers the full scope of tasks involved in successfully completing a full-depth repair project. Instructional methods include short, focused, and task-based lessons, visual aids, and assignments that are directly applicable to work in the field.

Outcomes

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

- Explain the purpose of full-depth repairs
- Identify pavement problems that full-depth concrete pavement repairs can and cannot address
- Describe proper project review and material checks for a preservation job involving full-depth repair
- Explain the proper safety and personal protective equipment you will need when performing full-depth repair projects
- Describe the criteria for selecting repair locations and boundaries
- Explain what to do if you think the boundaries are marked incorrectly
- Explain how patching materials are selected for full-depth repair
- Describe the patch material mixing and handling factors that impact the quality of the repair
- Describe the different types of perimeter joint faces for transverse and longitudinal joints
- List important considerations for sawing perimeter joints
- Explain how deteriorated concrete can be removed from the repair area
- List the steps you can take to minimize damage to surrounding pavement when removing concrete
- Describe how to prepare the repair area for new concrete
- Define load transfer
- Describe important considerations for installing dowel bars for full-depth repairs
- List the three ways to connect longitudinal steel for CRCP full-depth repairs
- Explain how to handle the longitudinal joints in longer and shorter patches
- Explain the steps required to place, finish, and cure the concrete for a full-depth repair
- Describe the texturing methods used to match the patch texture with the surrounding pavement
- Explain the steps for sealing the patch perimeter joints
- Explain the difference between quality control and acceptance, including who is responsible
- Describe the tests that may be used for acceptance and opening to traffic

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207B

New Training WBT

Course Title

How to Construct Durable Partial-Depth Repairs in Concrete Pavements

This course provides a comprehensive guide for performing partial-depth repairs--from planning for, preparing, and evaluating the patch through testing and quality assurance after construction is complete. Partial-depth repairs are defined as the removal and replacement of small areas of deteriorated (or spalled) concrete pavement. Partial-depth repairs are an alternative to full-depth repairs in areas where slab deterioration is located primarily in the upper one-third to upper one-half of the slab and the existing load transfer devices (if any) are still functional.

This important preservation technique can slow or eliminate the spread of spalling distresses that tend to occur under repeated thermal stresses, freezing and thawing, and traffic loading. The information in this course covers all of the considerations for partial-depth repairs including patch materials and construction techniques to produce patches that are cost-effective and can last 10 to 15 years or longer.

You will discover detailed, how-to instruction that covers the full scope of tasks involved in successfully completing a full-depth repair project. The instructional methods in this Web-based training include short, focused, and task-based lessons, visual aids, and assignments that are directly applicable to work in the field.

Outcomes

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

- Explain what a partial-depth repair is, and why it is used
- Identify the types of distresses that partial-depth repair can and cannot address
- Describe the three types of partial-depth repairs used to replace deteriorated concrete
- Describe proper project review and material checks for a preservation job involving partial-depth repair
- Explain worker safety, health, and personal protective device considerations for partial-depth repair projects
- Describe the criteria for selecting repair locations and boundaries
- Explain what to do if you think the boundaries are marked incorrectly
- Describe the methods for removing deteriorated concrete in preparation for a partial-depth repair
- Identify which methods are appropriate for the different types of partial-depth repairs
- Describe how to prepare the existing slab for repair material
- Identify the materials used in a partial-depth repair
- List the factors that influence repair mixture selection
- Identify when compression relief is necessary for a partial-depth repair project
- Describe how to reestablish a joint or crack by installing joint or crack compression relief material or by sawing
- List the four major steps for properly placing the patching material
- Explain the process for completing the patch
- Explain the difference between quality control and acceptance, including who is responsible
- Describe the tests that may be used for acceptance and opening to traffic

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 2.5 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207C

New Training WBT

Course Title

Proper Diamond Grinding Techniques for Pavement Preservation

This course provides how-to instruction covering the scope of tasks and considerations involved in performing diamond grinding, diamond grooving, and next generation concrete surfacing (NGCS) operations.

Diamond grinding and grooving are surface restoration procedures used to correct concrete pavement surface distresses or deficiencies. They are often used in conjunction with other pavement preservation techniques (e.g., dowel bar retrofit, partial-depth repairs, full-depth repairs) as part of a comprehensive pavement preservation program. Each technique addresses a specific pavement shortcoming. In some situations, it may be justified to use diamond grinding or diamond grooving as the sole preservation technique. However, this depends on the conditions and characteristics of the specific project.

You will benefit from short, focused, and task-based lessons and visual aids that reinforce content by showing its relevance to work in the field.

Outcomes

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

- Explain what diamond grinding is, and why it is used
- Explain how diamond grinding equipment works
- Describe the steps to take to prepare for diamond grinding on a project
- List the components of the cutting head
- Describe how blade selection impacts grinding success
- Explain basic procedures for safely operating diamond grinding equipment
- Determine when specialized equipment may be necessary
- Explain how to measure head wear
- Define slurry
- Describe how slurry is picked up and disposed of during diamond grinding operations
- Name the diamond grinding machine's systems and their components
- Identify the system to which each part of the diamond grinding machine belongs
- Describe the function of each part or system on a diamond grinding machine
- Describe how diamond grinding is used to affect road smoothness, noise, and friction
- Explain what Next Generation Concrete Surfacing (NGCS) is, and when it is used
- List considerations for grinding on city streets
- Identify quality issues that can occur during diamond grinding
- Explain how diamond grinding quality issues can be prevented or addressed
- Identify issues that cannot be controlled by the contractor and require owner consideration and input
- Describe the equipment used in diamond grooving operations
- Explain how the diamond grooving texture is achieved

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 2 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207D

WBT

Course Title

Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching

This course provides how-to instruction that covers the scope of tasks and considerations involved in performing dowel bar retrofit and cross-stitching operations.

DBR is the installation of dowel bars at existing transverse joints or cracks in order to effectively transfer wheel loads across slabs and reduce deflections. Dowel bars are retrofitted into the joints of existing concrete pavements, which either do not have load transfer devices, or in which the existing devices are no longer functional.

Cross-stitching is a preservation method designed for longitudinal joints or cracks that are in relatively good condition, but that need to be tied stronger together.

This course contains short, focused lessons that are task-based, and contain detailed visual aids and videos, reinforcing content so that it can be directly applied to work in the field.

Outcomes

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

- Explain what dowel bar retrofitting and cross-stitching are, and why they are used
- Define load transfer
- Describe the steps you should take to prepare for a project involving DBR or cross-stitching
- Explain the basic components of DBR and cross-stitching projects
- Describe how to determine the size of the components for both DBR and cross-stitching
- Determine the proper locations to use DBR and cross-stitching for different pavement distresses
- Identify the materials used in DBR and cross-stitching operations
- List the important factors in selecting materials for DBR and cross-stitching
- Explain how slots are created and prepared for a DBR project
- Describe how dowel bars should be placed in the slot
- Explain how the backfill material is placed and finished
- Explain how to drill and clean holes for cross-stitching
- Describe the process for installing tie bars
- Explain the procedures for finishing the cross-stitching project
- Describe aspects of DBR and cross-stitching projects that are tested or inspected for quality or acceptance
- List important quality considerations for DBR and cross-stitching projects

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foremen, workers, technicians, agency inspectors, construction managers, and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 2 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207E

New Training WBT

Course Title

Proper Joint Sealing Techniques for Pavement Preservation

In this course you will find detailed, "how-to" instruction that covers the scope of tasks and considerations involved in performing joint sealing or resealing pavement joints and cracks. Short, focused lessons are task-based in nature and contain detailed visual aids and videos that reinforce content so you can apply new knowledge directly to your work in the field.

Sawed joints are sealed to prevent the intrusion of water, deicing chemicals, and incompressible materials into the pavement structure which can reduce the pavement's acceptable performance life. Joint sealing is shown to prevent several types of distresses, including joint associated distress, weakening of the base and subgrade supporting structure, blow ups, and voids beneath the joints and subsequent pavement faulting or pumping. It has also been shown recently that when wide joints are used, sealing joints can reduce the overall tire-pavement interaction noise.

Take this course to learn how to employ successful practices and techniques. Specifically, you will learn the answers to these questions:

1. Why is the technique an important part of concrete pavement preservation?
2. What options are available and which options provide the best opportunities for success?
3. What materials are involved in the techniques?
4. What are the specific, sequential tasks required to properly perform joint sealing?

Outcomes

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

- Describe what joint sealing is
- Explain why joints are sealed
- List considerations for preparing for and keeping safe on a joint sealing project
- Describe the materials used in a joint or crack sealing project and their differences
- Describe the standard details used for joint or crack sealing installations
- Identify equipment used for sawing and sealing or resealing joints and cracks
- Describe the purpose of each piece of equipment and how it works
- Explain how a joint or crack is prepared for sealing
- Describe the process for installing the backer rod (if it is used)
- Explain how the sealant or seal is installed
- Describe procedures for applying a penetrating concrete sealer
- Describe procedures for repairing hairline, minor random, and wide cracks
- List important quality considerations for joint sealing projects
- Describe quality control methods you can use to make sure a sealant reservoir is readyfor sealant installation and the sealant is installed properly
- Describe how sealant installations are inspected for quality assurance and acceptance
- Identify the distresses or problems that occur with joint sealants and seals
- Explain the steps to take during formed-in-place sealant or compression seal installation

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. Participants may have some awareness and past involvement with paving processes, but the training is appropriate for learners regardless of experience level with the techniques. The primary audience is contractors. This course will appeal to individuals in the following roles: construction supervisors, workers, and

technicians; agency inspectors and construction managers; and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 4 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207F

New Training WBT

Course Title

How to Construct Durable Full-Depth Repairs in Concrete Pavements (Spanish)

This course is in Spanish.

Full-depth repairs are used to restore localized areas of slab damage that extend beyond the upper one-third of slab depth or originate from the slab bottom.

This course, presented in Spanish, provides a comprehensive guide for performing full-depth repairs--from planning for, preparing, and evaluating the repair through testing and quality assurance after construction is complete. In the Web-based training you will find detailed, how-to instruction that covers the full scope of tasks involved in successfully completing a full-depth repair project. Instructional methods include short, focused, and task-based lessons, visual aids, and assignments that are directly applicable to work in the field.

Outcomes

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

- Explain the purpose of full-depth repairs
- Identify pavement problems that full-depth concrete pavement repairs can and cannot address
- Describe proper project review and material checks for a preservation job involving full-depth repair
- Explain the proper safety and personal protective equipment you will need when performing full-depth repair projects
- Describe the criteria for selecting repair locations and boundaries
- Explain what to do if you think the boundaries are marked incorrectly
- Explain how patching materials are selected for full-depth repair
- Describe the patch material mixing and handling factors that impact the quality of the repair
- Describe the different types of perimeter joint faces for transverse and longitudinal joints
- List important considerations for sawing perimeter joints
- Explain how deteriorated concrete can be removed from the repair area
- List the steps you can take to minimize damage to surrounding pavement when removing concrete
- Describe how to prepare the repair area for new concrete
- Define load transfer
- Describe important considerations for installing dowel bars for full-depth repairs
- List the three ways to connect longitudinal steel for CRCP full-depth repairs
- Explain how to handle the longitudinal joints in longer and shorter patches
- Explain the steps required to place, finish, and cure the concrete for a full-depth repair
- Describe the texturing methods used to match the patch texture with the surrounding pavement
- Explain the steps for sealing the patch perimeter joints
- Explain the difference between quality control and acceptance including who is responsible
- Describe the tests that may be used for acceptance and opening to traffic

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207G

New Training WBT

Course Title

How to Construct Durable Partial-Depth Repairs in Concrete Pavements (Spanish)

This course is in Spanish.

In this course, presented in Spanish, you will find a comprehensive guide for performing partial-depth repairs from planning, preparing, and evaluating the patch through testing and quality assurance after construction is complete.

Partial-depth repairs are defined as the removal and replacement of small areas of deteriorated, or spalled, concrete pavement. Partial-depth repairs are an alternative to full-depth repairs in areas where slab deterioration is located primarily in the upper one-third to upper one-half of the slab and the existing load transfer devices (if any) are still functional. The technique is an important preservation technique to slow or eliminate the spread of spalling distresses that tend to occur under repeated thermal stresses, freezing and thawing, and traffic loading. The information in this course will cover all of the considerations, including patch materials and construction techniques to produce patches that are cost-effective and can last 10 to 15 years or longer.

Specifically, you'll learn how to employ successful practices and techniques on concrete pavement preservation projects. The following questions are answered in this course:

Why is the technique an important part of concrete pavement preservation?

What options are available for performing the construction processes and procedures?

Which options provide the best opportunities for success?

What materials are involved in the techniques?

What are the proper techniques for mixing, placing, and curing?

What are the specific, sequential tasks required to properly perform each of the techniques?

Outcomes

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

- Explain what a partial-depth repair is and why it is used
- Identify the types of distresses that partial-depth repair can and cannot address
- Describe the three types of partial-depth repairs used to replace deteriorated concrete
- Describe proper project review and material checks for a preservation job involving partial-depth repair
- Explain worker safety, health, and personal protective device considerations for partial-depth repair projects
- Describe the criteria for selecting repair locations and boundaries
- Explain what to do if you think the boundariesare marked incorrectly
- Describe the methods for removing deteriorated concrete in preparation for a partial-depth repair
- Identify which methods are appropriate for the different types of partial-depth repairs
- Describe how to prepare the existing slab for repairs
- Identify the materials used in a partial-depth repair
- List the factors that influence repair mixture selection
- Identify when compression relief is necessary for a partial-depth repair project
- Describe how to reestablish a joint or crack by installing joint or crack compression relief material or by sawing
- List the four major steps for properly placing the patching material
- Explain the process for completing the patch
- Explain the difference between quality control and acceptance, including who is responsible
- Describe the tests that may be used foracceptance and opening to traffic

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207H

New Training WBT

Course Title

Proper Diamond Grinding Techniques for Pavement Preservation (Spanish)

This course is in Spanish.

In this course, presented in Spanish, you will find "how-to" instruction covering the scope of tasks and considerations involved in performing diamond grinding, diamond grooving, and next generation concrete surfacing (NGCS) operations.

Diamond grinding and grooving are surface restoration procedures used to correct concrete pavement surface distresses or deficiencies. They are often used in conjunction with other pavement preservation techniques (e.g., dowel bar retrofit, partial-depth repairs, full-depth repairs) as part of a comprehensive pavement preservation program. Each technique addresses a specific pavement shortcoming. In some situations, it may be justified to use diamond grinding or diamond grooving as the sole preservation technique; however, this depends on the conditions and characteristics of the specific project.

This course contains short, focused, task-based lessons that include detailed visual aids and videos, which reinforce the content so you can apply new knowledge directly to your work in the field.

Learn how to employ successful practices and techniques on concrete pavement preservation projects. Specifically, you will explore these questions:

Why is the technique an important part of concrete pavement preservation?

What options are available for performing the construction processes and procedures?

Which options provide the best opportunities for success?

What materials are involved in the techniques?

What are the proper techniques for mixing, placing, and curing?

What are the specific, sequential tasks required to properly perform each of the techniques?

Outcomes

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

- Explain what diamond grinding is and why it is used
- Explain how diamond grinding equipment works
- Describe the steps to take to prepare for diamond grinding on a project
- List the components of the cutting head
- Describe how blade selection impacts grinding success
- Explain basic procedures for safely operating diamond grinding equipment
- Determine when specialized equipment may be necessary
- Explain how to measure head wear
- Define slurry
- Describe how slurry is picked up and disposed of during diamond grinding operations
- Name the diamond grinding machine's systems and their components
- Identify the system to which each part of the diamond grinding machine belongs
- Describe the function of each part or system on a diamond grinding machine
- Describe how diamond grinding is used to affect road smoothness, noise, and friction
- Explain what Next Generation Concrete Surfacing (NGCS) is and when it is used;
- List considerations for grinding on city streets
- Identify quality issues that can occur during diamond grinding
- Explain how diamond grinding quality issues can be prevented or addressed
- Identify issues that cannot be controlled by the contractor and require owner consideration and input

- Describe the equipment used in diamond grooving operations
- Explain how the diamond grooving texture is achieved

Target Audience

This course provides support and instruction forindividuals involved in construction projects using concrete pavementpreservation techniques. This training is ideal for construction foreman,workers, and technicians; agency inspectors and construction managers; and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207I

WBT

Course Title

Proper Construction Techniques for Dowel Bar Retrofit (DBR) and Cross-Stitching (Spanish)

This course is in Spanish.

This course provides "how-to" instruction in Spanish that covers the scope of tasks and considerations involved in performing dowel bar retrofit andcross-stitching operations.

DBR is the installation of dowel bars at existing transverse joints or cracks to effectively transfer wheel loads across slabs and reduce deflections. Dowel bars are retrofitted into the joints of existing concrete pavements, which either do not have load transfer devices or in which the existing devices are no longer functional.

Cross-stitching is a preservation method designed for longitudinal joints or cracks that are in relatively good condition, but that need to be tied stronger together.

This course contains short, focused lessons that include detailed instructions along with visual aids and videos that reinforce the content so you can apply it directly to your work in the field. Take this course to find answers to these questions:

Why is the technique an important part of concrete pavement preservation?

What options are available for performing the construction processes and procedures?

Which options provide the best opportunities for success?

What materials are involved in the techniques?

What are the proper techniques for mixing, placing, and curing?

What are the specific, sequential tasks required to properly perform each of the techniques?

Outcomes

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

- Explain what dowel bar retrofitting and cross-stitching are, and why they are used
- Define load transfer
- Describe the steps you should take to prepare for a project involving DBR or cross-stitching
- Explain the basic components of DBR and cross-stitching projects
- Describe how to determine the size of the components for both DBR and cross-stitching
- Determine the proper locations to use DBR and cross-stitching for different pavement distresses
- Identify the materials used in DBR and cross-stitching operations
- List the important factors in selecting materials for DBR and cross-stitching
- Explain how slots are created and prepared for a DBR project
- Describe how dowel bars should be placed in the slot
- Explain how the backfill material is placed and finished
- Explain how to drill and clean holes for cross-stitching
- Describe the process for installing tie bars
- Explain the procedures for finishing the cross-stitching project
- Describe aspects of DBR and cross-stitching projects that are tested or inspected for quality or acceptance
- List important quality considerations for DBR and cross-stitching projects

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and

construction managers; and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134207J

New Training WBT

Course Title

Proper Joint Sealing Techniques for Pavement Preservation (Spanish)

This course is in Spanish.

In this course you will find detailed, "how-to" instruction in Spanish that covers the scope of tasks and considerations involved in performing joint sealing or resealing pavement joints and cracks. Short, focused lessons contain detailed visual aids and videos that reinforce content so you can apply new knowledge directly to your work in the field.

Sawed joints are sealed to prevent the intrusion of water, deicing chemicals, and incompressible materials into the pavement structure which can reduce the pavement's acceptable performance life. Joint sealing is shown to prevent several types of distresses, including joint associated distress, weakening of the base and subgrade supporting structure, blow ups, and voids beneath the joints and subsequent pavement faulting or pumping. It has also been shown recently that when wide joints are used, sealing joints can reduce the overall tire-pavement interaction noise.

Take this course to learn how to employ successful practices and techniques. Specifically, you will learn the answers to these questions:

Why is the technique an important part of concrete pavement preservation?

What options are available and which options provide the best opportunities for success?

What materials are involved in the techniques?

What are the specific, sequential tasks required to properly perform joint sealing?

Outcomes

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

- Explain what joint or crack sealing is, and when it should be performed;
- List important safety considerations when working on joint sealing projects;
- Explain how to prepare for joint sealing;
- Describe recommended materials and equipment used in joint sealing;
- Describe recommended construction procedures and process steps for joint sealing;
- Describe recommend procedures for repairing cracks;
- List the criteria for determining whether joint sealing results are of sufficient quality; and
- Identify typical problems encountered and how to avoid or resolve these issues.

Target Audience

This course provides support and instruction for individuals involved in construction projects using concrete pavement preservation techniques. This training is ideal for construction foreman, workers, and technicians; agency inspectors and construction managers; and engineers.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134208

Updated Training WBT

Course Title

Utility Investigations

Unknown utility conflicts on a highway project result in increased risks to highway contractors, which translate into higher bids as well as potential cost increases and delays during construction.

Challenges such as inadequate utility information and poor management of utility conflicts can affect project success through construction site disruptions, damage to utility installations, risks to public health and safety, unnecessary utility relocations, project delays, and higher project costs. This course provides an overview of methods and practices for conducting utility investigations during project delivery. Collecting accurate, complete information about existing utilities reduces risk during all phases of project delivery, from planning to construction.

Throughout this course, "utility investigation" is presented as a comprehensive process to identify and document existing utility facilities.

Outcomes

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

- Identify the purpose of conducting utility investigations.
- Relate utility investigation activities to project delivery phases.
- Compare various utility investigation methods.
- Apply a risk-based approach to utility investigations.
- Identify typical utility investigation deliverables.

Target Audience

The primary audience includes those responsible for managing pre-construction utility coordination and design for highway projects. Typical participants may include utility managers and highway designers from FHWA Divisions, State DOTs, LPAs, and utility companies. Also benefitting from this course are FHWA, State, and local agency decision-makers, designers, and construction personnel; highway contractors; surveyors; and information technology (IT) staff.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 3.5 HOURS (CEU: .3 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136065

Course Title

Risk Management

Managing transportation networks--including agency management, program development, and project delivery--is extremely complex and fraught with uncertainty. Any agency can use risk management as the Federal Highway Administration (FHWA) does: to focus limited resources; strengthen its ability to prioritize; and improve communication and foster transparent leadership.

In this 2-day, instructor-led class, participants are exposed to the principles, tools, and techniques used to identify, prioritize, respond to, and monitor risk. They learn to apply these risk management tools and techniques at any level of an organization (enterprise, program, project, or activity). Throughout the course, participants answer the following questions.

1. What is risk?

2. Why should programs be risk-based?

3. What should program managers know about the results of risk analysis, risk statements and responses, strategies, and tracking of implementation?

4. How can risks be measured?

5. How is risk management tied to strategic planning (especially with performance measures)?

This training event combines limited instructor presentations with robust group discussions and multiple team-based exercises. Course material is based on FHWA generally accepted risk management principles and practice. Teams of participants work on agency-specified objectives to identify and manage risks. They leave class with work products including a risk register template and other tools for identifying, prioritizing, and responding to risk.

NOTE: Participants use tools and methods from each step of the risk management framework in a series of exercises that provide realistic, job-relevant practice in applying the risk management process. In order to maximize the impact of the training and increase the likelihood of participants' mastery of the risk management process, the agency can select active agency issues (project, program, or network) for use during the exercises. In addition, the agency can provide problem statements and pre-select the teams for the exercises.

Outcomes

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

- Recognize the connection between effective risk management and achieving organizational objectives.
- Follow the steps of the risk management process to identify and develop risk strategies.
- Apply the risk management process to one's own level of decision-making within an organization.

Target Audience

The target audience for this course includes Federal, State and local highway employees who are responsible for directing and managing any aspects of highway-related programs and projects such as planning, environment, project development, design, construction, operations, maintenance, and finance. Asset management practitioners may also find this course content helpful as they develop their asset management plans. Audience experience, background, knowledge, skills and abilities will vary. No previous experience with risk management is required.

Training Level: Basic

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138008

Course Title

Transportation Performance Management (TPM) for Bridges

Starting in 2019, this course will be delivered for free to Metropolitan Planning Organizations and State DOTs. The reduced price is being provided by the FHWA Office of Infrastructure. YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138008executivesummary/

'Transportation Performance Management for Bridges' is a one-day Instructor-led Training course offered by NHI, the authoritative source in transportation training.

Moving Ahead for Progress in the 21st Century Act (MAP-21) established, and Fixing America's Surface Transportation (FAST) continued, new requirements for reporting on national performance measures and making progress toward targets in several national goal areas, including the condition of the bridges on the National Highway System (NHS). This course helps agencies apply Transportation Performance Management (TPM) concepts to implement the bridge-related TPM requirements.

The course begins with an overview of key performance management concepts. It then reviews performance measures defined for assessing and reporting bridge performance. Finally, the course details how to set and report bridge performance targets and assess performance against agency targets.

The main goals of the course are to provide agency staff with the skills and abilities to use the national bridge performance management measures to assess bridge condition, establish bridge performance targets, report bridge performance, and assess progress toward achieving bridge performance targets in compliance with the TPM requirements in 23 CFR 490.

The course is organized in the following lessons:

+ TPM Overview

+ Bridge Performance Management and Related Rules

+ Bridge Performance Data

+ Setting Bridge Performance Targets

+ Reporting, Accountability, and Transparency

The course includes a written assessment. The course was launched in May 2018.

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138008executivesummary/

To enroll in this Instructor-led Training course, select the 'View Sessions' button and select 'Add To Cart' next to your session choice. If there are no upcoming sessions, select 'Sign Up for Session Alerts.'

Any organization can host this course. To host this course and bring training to your organization, click the 'Host this Course' button.

Outcomes

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

- Describe the transportation performance management (TPM) requirements related to bridge performance
- Describe the performance-based planning and programming process and asset management process as they apply to bridges
- Identify required bridge performance measures, as well as other common bridge performance measures
- Use and interpret bridge performance data
- Identify key supporting business practices for establishing and assessing progress toward achieving targets
- Establish bridge performance targets using data on existing performance and predicted future funds, deterioration, and investment strategies
- Explain common challenges in establishing bridge performance targets and approaches that can be used to address them
- Describe required process for bridge performance measurement, reporting, and assessment

Target Audience

The target audience for this Instructor-led Training course consists primarily of professionals responsible for collecting, analyzing, and reporting bridge performance data; managing bridge inventories; recommending bridge investment strategies; and setting bridge performance targets. This audience includes bridge managers, asset managers, planners, performance management, and programming staff of State and local agencies, consultants, and FHWA.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142045

Course Title

Pedestrian Facility Design

To emphasize the importance of planning for pedestrians, the course focuses on case examples involving corridor and 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. This training was developed to provide information and application opportunities to 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 by people with disabilities, and accessibility improvements need to be implemented for existing facilities.

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
- 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, disability and orientation specialists, transportation planners, architects, landscape architects, as well as decisionmakers at the project planning level.

Training Level: Intermediate

Fee: 2021: $190 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: .9 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142046

Course Title

Bicycle Facility Design

This training will assist planners and designers in learning how to apply the existing standards and how to deal with other technical issues involved. 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 bicycling (and shared use) facilities being planned and built. Although there are no Federal design standards for bicycle facilities, the AASHTO Guide for the Development of Bicycle Facilities, or a modification thereof, serves as a design guide. As with most guides, the AASHTO guide cannot address every possible scenario so designers often need to apply engineering judgment where specific information is not provided. The training fee includes a copy of the AASHTO Guide for the Development of Bicycle Facilities.

Outcomes

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

- List the needs of bicyclists as transportation 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 decisionmakers at the project planning level.

Training Level: Accomplished

Fee: 2021: $220 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: 1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142048

Course Title

Managing Road Impacts on Stream Ecosystems: An Interdisciplinary Approach

Managing Road Impacts on Stream Ecosystems: An Interdisciplinary Approach is a three-day course that is intended to introduce and discuss the basic concepts related to the impacts that roadways have on streams and stream ecosystems. The course will be structured to first address the ecological and physical characteristics of stream ecosystems, discuss the impacts that roadways can have on those ecosystems, and then turn to tools that the practitioner can use to help avoid and mitigate those effects. Through the use of Case Examples, discussion, and other application techniques, the participants will be afforded an opportunity to use critical thinking to identify solutions and preventative measures related to the impacts of roads on streams and their riparian communities.

Outcomes

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

- Evaluate how roads interact with and impact stream ecosystems
- List major State and Federal Requirements that apply to roadway impacts on stream ecosystems:
- Identify relevant stakeholders
- Involve stakeholders in an environmental review process
- Describe the benefits of collaboration among disciplines in assessing and mitigating road impacts to stream ecosystems
- Describe the characteristics and functions of a stream ecosystem
- Identify stream restoration tools and techniques
- Develop monitoring protocols
- Identify risk and uncertainty associated with treatment approaches in fluvial environments

Target Audience

This course has been developed for FHWA, State Department of Transportation (DOTs), Federal and State environmental resource agency staff and consultants involved in the design, construction, operation, and maintenance of roadway facilities. The course is intended to address the issues of and be of benefit to both the engineers and the environmental specialists involved in highway design, planning, and maintenance. Participants should have some general knowledge of stream dynamics and ecological considerations. However, an extensive background is neither required nor assumed.

Training Level: Intermediate

Fee: 2021: $440 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142054

Course Title

Design and Implementation of Erosion and Sediment Control

This training is the result of a joint effort between the Federal Highway Administration (FHWA) and the U.S. Environmental Protection Agency (EPA), and 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. The agencies also are committed to ensuring that regulatory issues are addressed accurately and uniformly. Each discipline involved in a highway construction project has a different set of priorities. Reflecting the National Highway Institute's (NHI) commitment to learner-centered training, the course offers participants opportunities for discussion and joint problem solving, enabling participants to 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 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 failures
- Link Federal and State environmental regulations to the components of the ESC plan

Target Audience

The training targets Federal, State, and local highway design, construction, inspection, and maintenance staff. In addition, environmental agency representatives, 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 control erosion and sedimentation.

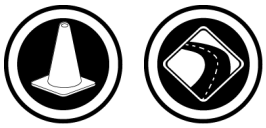
Training Level: Intermediate

Fee: 2021: $315 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov



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:

- Describe Active and Passive Devices used in connection with at-grade crossings
- Identify techniques and engineering principles used for at-grade crossings
- Appraise existing at-grade crossings
- Develop alternate methods to improve railroad-highway grade 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.

Training Level: Accomplished

Fee: 2021: $210 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135027

Course Title

Urban Drainage Design (3-Day)

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.

Training Level: Intermediate

Fee: 2021: $380 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135027A

Course Title

Urban Drainage Design (4-Day)

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.

Training Level: Intermediate

Fee: 2021: $405 Per Person; 2022: N/A

Length: 4 DAYS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135028

Course Title

Highway Stormwater Pump Station Design

This course provides detailed instruction in the design and analysis of highway stormwater pump stations including guidance on location and type selection. A major portion of the course is devoted to recommended hydraulic design procedures for sizing and optimizing the performance of stormwater pump stations and includes solving of classroom example problems. 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:

- Describe what a pump station is and where they are used
- Define the drainage area for a pump station and construct the resulting mass inflow curve
- Calculate the storage volume required for a pump station and discuss ways to acquire that volume
- Determine pump operational schedule and perform mass curve routing of the inflow hydrograph
- Calculate the size of the discharge line and select required pump size
- Define dimensions of the wet well and perform system evaluation
- Describe basic mechanical and electrical concepts important in pump station design
- Describe available pump station software

Target Audience

Highway designers or hydraulic engineers who have responsibility for the design and analysis of highway stormwater pumping stations, and managers who review pump station design projects. To derive the most benefit from this training, course participants should have knowledge of the fundamentals of highway hydrology, pavement drainage, stormdrain design, and open channel flow.

Training Level: Intermediate

Fee: 2021: $170 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135041

Course Title

One-Dimensional Modeling of River Encroachments with HEC-RAS

The host is responsible for providing a minimum of one computer for each pair of participants. The computers shall have the following minimum specifications:

Intel Based Pentium processor higher (Pentium III or higher is recommended), Microsoft Windows 95, 98, ME with 212 MB of RAM (1 GB recommended) or Window NT 4.0, 2000, Vista, XP, 7, or 8 with 1 GB of RAM (1 GB recommended), including the .NET framework, a hard drive with at least 60 megabytes of free space (100 MB or more is recommended), CD-ROM drive, and 1024 x 768 color video display.

The course focuses on the use and application of HEC-RAS software, developed by the Hydrologic Engineering Center of the U.S. Army Corps of Engineers. Modeling principles and techniques will be presented using the latest version of HEC-RAS.

HEC-RAS, River Analysis System, solves the conservation of energy equation for one-dimensional steady flow analysis to determine water surface elevations for a given discharge. The Standard Step solution scheme is used combined with Manning's equation to compute cross section conveyance which allows for the construction of backwater and forewater profiles under subcritical, supercritical, and mixed flow regimes. HEC-RAS is capable of simulating structures in natural waterways and constructed channels. Specifically, it has built-in functionality to simulate a variety of bridge types, culverts, roadway approaches/embankments, and roadway encroachments.

Prior to the beginning of the course, participants are strongly encouraged to enroll in the Web-based training entitled, 135091 Basic Hydraulic Principles Review. Mastery of the concepts covered in this WBT is important to successful completion of the Instructor-led training.

Outcomes

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

- Manage HEC-RAS files.
- Navigate the HEC-RAS windows.
- Describe the types of hydraulic modeling situations for which one-dimensionalapplication of HEC-RAS is appropriate.
- Describe one-dimensional hydraulic modeling principles used in HEC-RAS
- including conservation of energy, mass, and momentum.
- Build input data files for use with HEC-RAS for steady state applications with and without roadway encroachments including bridges, culverts, and multiple openings.
- Develop one-dimensional water surface elevations and velocity estimates using the HEC-RAS computer program.
- View and manipulate the output from the HEC-RAS computer program.
- Evaluate hydraulic conditions using HEC-RAS modeling program through
- various transportation related hydraulic structures including weirs, culverts, and bridges.
- Identify and troubleshoot modeling problems, including those indicated by errors,warnings, and notes.

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.

TRAINING LEVEL: Intermediate

FEE: 2021: $395 Per Person; 2022: N/A

LENGTH: 3 DAYS (CEU: 1.7 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135046

Course Title

Stream Stability and Scour at Highway Bridges

The National Highway Institute's (NHI) 3-day Stream Stability and Scour at Highway Bridges course provides participants with comprehensive training in the prevention of hydraulic-related bridge failures. Course participants will receive training in conducting a stream stability classification and qualitative analysis of stream response and make estimates of scour at a bridge opening.

Material for the course comes primarily from two Hydraulic Engineering Circulars (HEC), "Evaluating Scour at Bridges" (HEC-18), 5th Edition (2012), and "Stream Stability at Highway Structures" (HEC-20), 4th Edition (2012). The effects of stream instability, scour, erosion, and stream aggradation and degradation are covered. Quantitative techniques are provided for estimating long-term degradation and for calculating the magnitude of contraction scour in a bridge opening. Procedures for estimating local scour at bridge piers and abutments for simple and complex substructures are also provided. A comprehensive workshop integrates qualitative analysis and analytical techniques to determine the need for a Scour Plan of Action for correcting stream instability and scour problems. For this 3-day course, the host agency will need to select 3 optional topics (out of 8 possible topics). Course instructors will contact the host prior to the course to complete a pre-course questionnaire, determine optional topics to be taught, and discuss the course schedule.

This comprehensive training provides preventive techniques for identifying, analyzing, and calculating various hydraulic factors that impact bridge stability. Public and private sector engineers responsible for maintaining the integrity of highway bridges will find it invaluable.

Prior to the beginning of the course, participants are strongly encouraged to enroll in the following Web-based training (WBT) courses: 135091 Basic Hydraulic Principles Review, 135086 Stream Stability Factors and Concepts, and 135087 Scour at Highway Bridges: Concepts and Definitions. Mastery of the concepts covered in these WBTs will enhance participation in the Instructor-led training.

Outcomes

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

- Identify indicators of stream instability that can threaten bridges
- Identify stream types and their potential for instability problems
- Describe open-channel hydraulics concepts in bridge scour and stream instability analyses
- Define types of scour that can occur at bridge crossings
- Describe aggradation, degradation, and contraction scour
- Calculate contraction scour for live bed and clear water conditions
- Describe factors that influence scour at piers
- Calculate pier scour for three typical case studies
- Describe the factors that influence scour at abutments
- Describe how HEC-18, HEC-20, and HEC-23 provide analysis procedures for stream instability and bridge scour
- Perform Level I and II analyses
- Classify a stream using two different classification systems
- Conduct a qualitative analysis of stream responses
- Apply the HEC-18 scour equations to determine total scour at a bridge
- Determine the need for a Scour Plan of Action at a scour-critical bridge

Target Audience

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

TRAINING LEVEL: Intermediate

FEE: 2021: $445 Per Person; 2022: N/A

LENGTH: 3 DAYS (CEU: 2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135047

Course Title

Stream Stability and Scour at Highway Bridges for Bridge Inspectors

This course is an abbreviated presentation of 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 135046 or as a stand-alone presentation.

NHI Courses 135086 and 135087 are Web-based trainings and are prerequisites for NHI Hydraulics courses 135047 and 135048.

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.

Training Level: Basic

Fee: 2021: $135 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135048

Course Title

Countermeasure Design for Bridge Scour and Stream Instability (2.5-Day)

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.

NHI Courses #135086 and #135087 are Web-based training module and are prerequisites for NHI Hydraulics courses 135047 and 135048.

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.

Training Level: Intermediate

Fee: 2021: $460 Per Person; 2022: N/A

Length: 2.5 DAYS (CEU: 1.5 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135056

Course Title

Culvert Design

The National Highway Institute's (NHI) 3-day Culvert Design course provides participants with an in-depth, hands-on understanding of how to hydraulically size and design a highway culvert. The course covers a range of design topics, including allowable headwater at the inlet, permissible outlet velocity, energy dissipation measures, aquatic organism passage, mechanisms of culvert failures, and repair and rehabilitation options.

Material for this 3-day course is primarily derived from the Hydraulic Design Series No. 5 (HDS 5), Hydraulic Design of Highway Culverts textbook, which is provided to participants. Additional references used throughout this course include Hydraulic Engineering Circular No. 14 (HEC-14); Hydraulic Design of Energy Dissipators for Culverts and Channels; HEC-26, Culvert Design for Aquatic Organism Passage; and HEC-9, Debris Control Structures, Evaluation, and Countermeasures. Course topics include culvert design principles and procedures and debris control structures. Throughout the course, participants engage in a number of workshops where problems are completed, both long-hand and with a computer using the FHWA HY-8 Culvert Hydraulic Analysis and Design Program. Additionally, a portable hydraulic flume is set up in the classroom for the participants to observe hydraulic principles associated with various culvert configurations, aquatic organism passage features, and culvert linings.

At the end of this course, participants will be able to apply fundamental engineering concepts, methods, and the HY-8 computer program to analyze and design culvert crossings meeting a variety of hydraulic and environmental design criteria.

Prior to taking this course, participants are strongly encouraged to enroll in the Web-based training (WBT) entitled, 135091 Basic Hydraulic Principles Review. Mastery of the concepts covered in this WBT is important to successful completion of the Instructor-led training.

Outcomes

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

- Justify the importance of culvert design
- Explain the overall culvert design process
- Summarize basic hydraulic concepts
- Discuss factors influencing hydraulic performance and design of culverts
- Explain how to calculate culvert outlet velocity
- Apply nomographs and computer methods to design a roadway culvert
- Design culverts that meet aquatic organism passage (AOP) requirements
- Assess impacts of repair and rehabilitation of culverts on hydraulic performance
- Design energy dissipator and debris control structures for culverts
- Design culverts for various situations
- Discuss culvert failures and how they can be prevented

Target Audience

This intermediate-level training course is intended for hydraulic engineers, transportation engineers, and highway designers involved with roadway drainage and culvert design. Environmental scientists with an interest in aquatic organism passage may also benefit from participation in this course.

Training Level: Intermediate

Fee: 2021: $405 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

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.

Training Level: Basic

Fee: 2021: $390 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

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.

Training Level: Intermediate

Fee: 2021: $460 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135082

Course Title

Highways in the Coastal Environment

Over 60,000 miles of roads in the United States are occasionally exposed to coastal surge and waves. Due to these unique design conditions, many highways and bridges suffer damage during coastal storms, including hurricanes and El Nino events. The purpose of this course is to teach important concepts and terminology of coastal science and engineering to highway engineers for use in the planning and design of coastal roads. The course is based on the Hydraulic Engineering Circular (HEC) No. 25, "Highways in the Coastal Environment" (2nd Edition), which is also used in the course as a reference manual.

The course includes the use of a portable flume for demonstration of key concepts and for hands-on participant activities. In addition to the presentation of materials and the flume demonstrations, the course incorporates various workshops and exercises to reinforce key concepts. Topics covered in the course include:

1. Introduction to highways in the coastal environment
2. Waves
3. Tide and water levels
4. Revetment design for coastal embankments
5. Wave loads on bridge decks
6. Coastal geology and sediments
7. Shoreline change and stabilization
8. Road overwash
9. Tidal inlets and coastal bridges

Outcomes

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

- Describe coastal engineering design issues related to highways using standard terminology with an understanding of the physical processes unique to this design environment
- Identify appropriate planning, analysis, and design methods for highways and bridges exposed to coastal surge and waves
- Describe differing levels of complexity involving coastal engineering and appropriate qualifications of engineers and coastal engineering consultants to address this complexity in design.

Target Audience

Participants are adult learners with (1) a general civil engineering education and background who currently work in highway planning and design and (2) coastal engineers with some experience in transportation engineering.

Training Level: Intermediate

Fee: 2021: $460 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 14; MAXIMUM: 24

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135090

Course Title

Hydraulic Design of Safe Bridges

The National Highway Institute's (NHI) 3-day 135090 Hydraulic Design of Safe Bridges course provides participants with an intensive training on the hydraulic analysis and design of bridges. The goal of this course is to provide information needed to safely build bridges, while optimizing costs and limiting the impact to property and the environment.

This engaging course includes 12 mandatory lessons that are standard to the course and 3 optional lessons that allow the host agency to customize the course to their particular needs. The optional lessons are: a lesson intended for coastal states with bridges crossing tidal waterways; a lesson that supplements the Unsteady Flow Modeling Concepts lesson and provides additional knowledge of the requirements for one-dimensional unsteady flow modeling; and a lesson that supplements the Scour and Stream Instability Concepts lesson, which enables participants to identify situations requiring sediment transport computations as part of the bridge hydraulics analysis. The host agency will select two optional lessons for the delivery of this course.

Material for this 3-day course is primarily derived from the Hydraulic Design Series No. 7 (HDS 7), Hydraulic Design of Safe Bridges, which is provided to course participants. The course covers significant aspects of bridge hydraulic design including: regulatory topics, specific approaches for bridge hydraulic modeling, hydraulic model selection, bridge design impacts on scour and stream instability, and sediment transport.

Prior to the beginning of the course, participants are strongly encouraged to enroll in the Web-based training (WBT) entitled, 135091 Basic Hydraulic Principles Review. Mastery of the concepts covered in this WBT is important to successful completion of this course.

Outcomes

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

- Describe the ways hydraulic design affects bridge performance and public safety
- Describe hydraulic conditions that occur in the vicinity of bridges
- Identify regulatory requirements and design constraints important to bridge projects
- Describe the input requirements for one-dimensional models
- Identify conditions when one-dimensional modeling is adequate to develop accurate hydraulic results for safe bridge design
- Describe the effects of atypical bridge hydraulic conditions on bridge design
- Perform a qualitative risk assessment for a bridge replacement project
- Describe the properties and input requirements for two-dimensional models
- Distinguish conditions requiring two-dimensional modeling to develop accurate hydraulic results for safe bridge design
- Define the types of scour and stream instability that affect bridge design
- Identify how hydraulic variables are obtained from one- and two-dimensional models
- Assess whether a replacement bridge design alternative will have adequate hydraulic capacity to meet design criteria
- Distinguish conditions requiring unsteady flow modeling to develop accurate hydraulic results for safe bridge design
- Describe additional analyses that contribute to the hydraulic aspects of safe bridge design
- Determine the minimum required foundation depth based on scour conditions
- Assess the likelihood of a bridge project causing adverse hydraulic impacts downstream
- Demonstrate strategies for communicating hydraulic recommendations to various stakeholders

Target Audience

The target audience for 135090 Hydraulic Design of Safe Bridges is primarily members of Federal or State departments of transportation. This typically includes hydraulic engineers with a wide range of experience; however, structural and geotechnical engineers would benefit from an understanding of many of the topics in this course. The complexity of some of the engineering decisions made can have significant impacts on structural and geotechnical designs. Additionally, many other segments of the national and international engineering community may find this course

valuable. Federal, State, and local highway hydraulic engineers responsible for maintaining the integrity of highway bridges against possible hydraulic related problems will rely on this course and HDS 7 for guidance. Consultants who perform bridge engineering work are also encouraged to attend.

TRAINING LEVEL: Intermediate

FEE: 2021: $375 Per Person; 2022: N/A

LENGTH: 3 DAYS (CEU: 1.8 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135095

Course Title

Two-Dimensional Hydraulic Modeling of Rivers at Highway Encroachments (with 4-day VIRTUAL OPTION)

UPCOMING 135095 WCT FORMATTED SESSIONS INCLUDE:

July 20-23 Central Region 8:30am to 3:30pm Central Time Zone;

August 3-6 Eastern Region 8:30am to 3:30pm Eastern Time Zone;

August 17-20 Western Region 8:30am to 3:30pm Pacific Time Zone'

August 31-September 3, Central Region, 8:30am to 3:30pm, Central Time Zone;

September 21-24, Eastern Region, 8:30am to 3:30pm, Eastern Time Zone;

October 5-8, Western Region, 8:30am to 3:30pm, Pacific Time Zone;

October 26-29, Western Region, 8:30am to 3:30pm, Mountain Time Zone

THIS AN UPDATE OF COURSE NO. 135071.

The course provides a well-balanced mix of lessons, demonstrations, and exercises for a comprehensive introduction to two-dimensional modeling concepts, including; background data necessary to support a model, hydraulic modeling parameters, mesh development, model simulation parameters, model calibration, hydraulic structures, and reviewing two-dimensional model results. Extracting hydraulic parameters for use in bridge scour evaluation is also discussed. Each concept is demonstrated and participants are given hands-on exercises to apply what they have learned. Once all modeling concepts are covered a comprehensive exercise is provided for participants to apply their skills on a project from start to finish.

Participants will receive a participant workbook that includes hard copies of presentation slides and step-by-step exercises. Electronic data needed for the exercises will also be provided.

Following completion of this course, participants should recognize situations where two-dimensional modeling is preferred and use SMS to successfully compile, execute, and review results for a SRH-2D model on a bridge or other hydraulic structure project.

PREREQUISITE NOTE: Course participants should have knowledge of the fundamentals of open channel flow hydraulics. The free web-based training course, NHI 135091 "Basic Hydraulic Principles Review" is available for those wishing to refresh their knowledge.

HOST NOTE: The host is responsible for providing a minimum of one computer for each pair of students. The computers shall have the following minimum specifications: Microsoft Windows XP with 512 MB of RAM (2 GB recommended) or Windows Vista, Windows 7, or Windows 8 with 1 GB of RAM (4 GB recommended), graphics card (OpenGL 1.5 or higher must be supported). The use of a dedicated graphics card is strongly recommended, display resolution of 1024 x 768 or greater.

Outcomes

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

- Recognize the differences between 1D and 2D hydraulic models
- Use background data in SMS for 2D modeling projects
- Use SMS to setup and run 2D models
- Visualize and review 2D model results
- Add structures to 2D models
- Evaluate 2D hydraulic parameters for use in bridge scour analysis

Target Audience

The target audience for this course is FHWA and state Department of Transportation hydraulicspersonnel and other Federal, state, local or consulting engineers who have responsibility for, or desire to work with, the hydraulic analysis and design of highway river crossings.

TRAINING LEVEL: Intermediate

FEE: 2021: $425 Per Person; 2022: N/A

LENGTH: 3 DAYS (CEU: 2.1 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 26

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135095A

WCT

Course Title

SRH-2D Model Data files, Diagnostics & Verifying 2D Model Results WCT

This course, NHI-135095A SRH-2D Model Data Files, Diagnostics and Verifying 2D Model Results, is a follow-on Web-conference Training (WCT) to NHI-135095 Two-Dimensional Hydraulic Modeling of Rivers at Highway Encroachments, a 3-day Instructor-led Training (ILT). This course provides participants an introduction to the various data files used for SRH-2D input, the files created by SRH-Pre and the output files created by SRH-2D. Participants will become familiar with the file formats, how the files are used and learn about the various diagnostic messages output by SRH-2D. Participants will also learn how to use monitor lines in SRH-2D and how to use the output from the monitor lines to verify model convergence.

This course presents material in a series of three Web-conference training sessions, supplemented by two hands-on exercises. The sessions are as follows: Session 1: Introduction, Course Overview, Data Flow in SRH-2D, Output Files and Diagnostics; Session 2: Monitor Lines; and Session 3: Summary and Exercise Review.

As part of the course materials, a set of independent study exercise data files and demonstration files will be provided. The data files for the independent study sessions are distributed at the end of the corresponding lesson. The demonstration data files are used at designated demonstration times.

Offerings of this course are intended to be delivered within a given work week, with Session 1 typically delivered on a Monday, Session 2 on a Wednesday, and Session 3 on a Friday. Alternate timing for the sessions can be scheduled at the request of the host, but the course is not intended to be conducted over a long period of time.

Outcomes

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

- List the data files and file formats used for input to and output from the SRH-2D hydraulic model and state how they can interact with the files
- Identify the diagnostic messages from SRH-2D and explain how each of the messages can help in running and debugging SRH-2D models
- Set up and run an SRH-2D simulation using monitor lines to check model continuity
- Demonstrate the ability to work with SRH-2D files and monitor lines using simulation example exercises

Target Audience

The target audience for this course are FHWA and State Department of Transportation hydraulics personnel and other Federal, State, local or consulting engineers who have responsibility for, or desire to work with, the hydraulic analysis and design of highway river crossings. Course participants should have knowledge of the fundamentals of open channel flow hydraulics. It is suggested (but not required) that course participants take NHI-135091 Basic Hydraulic Principles Review (WBT).

Training Level: Intermediate

Fee: 2021: $150 Per Person; 2022: N/A

Length: 8 DAYS (CEU: .8 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 15

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135095B

WCT

Course Title

Model Terrain Development with Various Data Sources WCT

This course, NHI-135095B SRH-2D Model Terrain Development with Various Data Sources, is a follow-on Web-conference Training (WCT) to NHI-135095 Two-Dimensional Hydraulic Modeling of Rivers at Highway Encroachments, a 3-day Instructor-led Training (ILT). This course provides participants instruction to learn how to process and effectively use LiDAR and other elevation format types in defining geometry for 2D hydraulic models. Participants will learn how to identify potential data issues. Participants will also learn various methods for modifying the geometry for the simulation and will be able to use the software to import data from other data sources and export data to be used in formats compatible with other standard programs.

This course presents material in a series of three Web-conference training sessions, supplemented by two hands-on exercises. The sessions are as follows: Session 1: Introduction, Course Overview, Working with LiDAR and Other Elevation Data, and Importing/Exporting in Alternate Data Formats; Session 2: Feature Stamping and Polygon Editing; and Session 3: Summary and Exercise Review.

As part of the course materials, a set of independent study exercise data files and demonstration files will be provided. The data files for the independent study sessions are distributed at the end of the corresponding lesson. The demonstration data files are used at designated demonstration times.

Offerings of this course are intended to be delivered within a given work week, with Session 1 typically delivered on a Monday, Session 2 on a Wednesday, and Session 3 on a Friday. Alternate timing for the sessions can be scheduled at the request of the host, but the course is not intended to be conducted over a long period of time.

Outcomes

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

- Import and process LiDAR data for use in an SRH-2D simulation
- List several import and export data format types and describe how to interact with each
- Identify other types of elevation data input/output data types supported by SRH-2D
- Modify elevation datasets using the feature stamping tools in SMS and list other methods for modifying elevation geometry
- Practice using SMS to import and export data and modify elevation geometry

Target Audience

The target audience for this course is FHWA and State Department of Transportation hydraulics personnel and other Federal, State, local or consulting engineers who have responsibility for, or desire to work with, the hydraulic analysis and design of highway river crossings. Course participants should have knowledge of the fundamentals of open channel flow hydraulics. It is suggested (but not required) that course participants take NHI-135091 Basic Hydraulic Principles Review (WBT).

Training Level: Intermediate

Fee: 2021: $150 Per Person; 2022: N/A

Length: 9 DAYS (CEU: .9 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 25

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-135095V

Course Title

Two-Dimensional Hydraulic Modeling of Rivers at Highway Encroachments (VIRTUAL DELIVERY)

NHI-135095V Two-Dimensional Hydraulic Modeling of Rivers at Highway Encroachments is an 4-day virtual online training that provides a well-balanced mix of lessons, demonstrations, and exercises for a comprehensive introduction to two-dimensional modeling concepts, including; background data necessary to support a model, hydraulic modeling parameters, mesh development, model simulation parameters, model calibration, hydraulic structures, and reviewing two-dimensional model results. Extracting hydraulic parameters for use in bridge scour evaluation is also discussed. Each concept is demonstrated, and participants are given hands-on exercises to apply what they have learned. Once all modeling concepts are covered, a comprehensive exercise is provided for participants to apply their skills on a project from start to finish. Participants will receive a participant workbook that includes hard copies of presentation slides and step-by-step exercises. Electronic data needed for the exercises will also be provided. Following completion of this course, participants should recognize situations where two-dimensional modeling is preferred and use SMS to successfully compile, execute, and review results for a SRH-2D model on a bridge or other hydraulic structure project.

Outcomes

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

- Recognize the differences between 1D and 2D hydraulic models
- Use background data in SMS for 2D modeling projects
- Use SMS to setup and run 2D models
- Visualize and review 2D model results
- Add structures to 2D models
- Evaluate 2D hydraulic parameters for use in bridge scour analysis

Target Audience

The target audience for this course is FHWA and state Department of Transportation hydraulicspersonnel and other Federal, state, local or consulting engineers who have responsibility for, or desire to work with, the hydraulic analysis and design of highway river crossings.

Training Level: Intermediate

Fee: 2021: $425 Per Person; 2022: N/A

Length: 21 HOURS (CEU: 2.1 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 23

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134001

Course Title

Principles and Applications of Highway Construction Specifications

Well-written highway construction specifications are those that can be interpreted accurately to minimize confusion and reduce owner-contractor disputes. Across the country, current practices, standards, and requirements for writing specifications are changing. Agencies also are using effective specifications to manage risk and support alternative contracting methods.

NHI 134001 Principles of Writing Highway Construction Specifications is a highly engaging, two-day, instructor-led training session. It includes content that highlights the role of specifications as contract documents and tools for assigning risk. Course participants engage in lessons and practice sessions to identify types of specifications, select the most appropriate type for a given project, and generate an original, effective highway construction specification.

This is not a grammar course; however, adequate course content emphasizes the use of basic grammar and writing style so that the learners can generate specifications that are correct, consistent, clear, complete, and concise.

Outcomes

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

- Explain the purposes of a specification.
- Explain how specifications are used to assign risk and influence the behavior of different parties, within a given a scenario.
- Compare the functions of Standard and Supplemental Specifications with the functions of Special Provisions.
- Explain how the "order of precedence" affects writing specifications and preparing plans.
- Describe the purpose of the General Provisions.
- Explain how a consistent writing style can affect the interpretation of specifications.
- Complete a checklist of the information needed before writing or revising a specification.
- Explain the potential benefits of writing in the active voice.
- Rewrite passive voice sentences into the active voice.
- Evaluate specifications to determine the need for imperative or indicative mood.
- State the five Cs used in specification writing. (Note: the five Cs include: correct; consistent; clear; complete; concise.)
- Explain each element of the AASHTO five-part format.
- Identify potential ambiguities in the wording, given a sample specification.
- Identify the potential benefits of each of the five Cs, given a sample specification.
- Apply the five Cs and the host agency's preferred format to revise the specification, given a sample specification.
- Write a new specification to a given set of criteria using the five Cs and the host agency's preferred format, given a sample specification.
- Compare method versus end-result specifications.
- Relate the type of specification to the allocation of risk.
- Write an end-result specification to replace a method specification, given an excerpt from a method specification.

Target Audience

This course is designed primarily for individuals who write, review, and implement an agency's contract specifications. Participants might represent Federal, State, and local transportation agencies; other public agencies; contractors; and consultant firms.Individuals who do not write specifications but may contribute to their development, as well as those who use specifications, could also benefit from this course and the interaction with their classmates. Such participants might include personnel from environmental, materials, or construction sections or units; legal departments; work zone and safety professionals; contractor personnel; and any others involved with the design and construction of transportation facilities.

TRAINING LEVEL: Intermediate

FEE: 2021: $250 Per Person; 2022: N/A

LENGTH: 2 DAYS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134001T

WCT

Course Title

Principles and Applications of Highway Construction Specifications (EXAM ONLY FOR 134001V)

Well-written highway construction specifications are those that can be interpreted accurately to minimize confusion and reduce owner-contractor disputes. Across the country, current practices, standards, and requirements for writing specifications are changing. Agencies also are using effective specifications to manage risk and support alternative contracting methods.

NHI 134001 Principles of Writing Highway Construction Specifications is a highly engaging, two-day, instructor-led training session. It includes content that highlights the role of specifications as contract documents and tools for assigning risk. Course participants engage in lessons and practice sessions to identify types of specifications, select the most appropriate type for a given project, and generate an original, effective highway construction specification.

This is not a grammar course; however, adequate course content emphasizes the use of basic grammar and writing style so that the learners can generate specifications that are correct, consistent, clear, complete, and concise.

Outcomes

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

- Explain the purposes of a specification.
- Explain how specifications are used to assign risk and influence the behavior of different parties, within a given a scenario.
- Compare the functions of Standard and Supplemental Specifications with the functions of Special Provisions.
- Explain how the "order of precedence" affects writing specifications and preparing plans.
- Describe the purpose of the General Provisions.
- Explain how a consistent writing style can affect the interpretation of specifications.
- Complete a checklist of the information needed before writing or revising a specification.
- Explain the potential benefits of writing in the active voice.
- Rewrite passive voice sentences into the active voice.
- Evaluate specifications to determine the need for imperative or indicative mood.
- State the five Cs used in specification writing. (Note: the five Cs include: correct; consistent; clear; complete; concise.)
- Explain each element of the AASHTO five-part format.
- Identify potential ambiguities in the wording, given a sample specification.
- Identify the potential benefits of each of the five Cs, given a sample specification.
- Apply the five Cs and the host agency's preferred format to revise the specification, given a sample specification.
- Write a new specification to a given set of criteria using the five Cs and the host agency's preferred format, given a sample specification.
- Compare method versus end-result specifications.
- Relate the type of specification to the allocation of risk.
- Write an end-result specification to replace a method specification, given an excerpt from a method specification.

Target Audience

This course is designed primarily for individuals who write, review, and implement an agency's contract specifications. Participants might represent Federal, State, and local transportation agencies; other public agencies; contractors; and consultant firms.Individuals who do not write specifications but may contribute to their development, as well as those who use specifications, could also benefit from this course and the interaction with their classmates. Such participants might include personnel from environmental, materials, or construction sections or units; legal departments; work zone and safety professionals; contractor personnel; and any others involved with the design and construction of transportation facilities.

Training Level: Intermediate

Fee: 2021: $0 Per Person; 2022: N/A

Length: 5 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134001V

Course Title

Principles and Applications of Highway Construction Specifications (Virtual Delivery of 134001)

Well-written highway construction specifications are thosethat can be interpreted accurately to minimize confusion and reduceowner-contractor disputes. Across the country, current practices, standards,and requirements for writing specifications are changing. Agencies also areusing effective specifications to manage risk and support alternativecontracting methods.

NHI 134001V - Principles of Writing Highway ConstructionSpecifications is now offered on-line as a virtual course. A virtualinstructor-led training provides 100% remote learning while ensuringparticipants have access to expert instructors, workshop activities, andengaging peer-to-peer discussions.

It includes content that highlights the roleof specifications as contract documents and tools for assigning risk. Courseparticipants engage in lessons and practice sessions to identify types ofspecifications, select the most appropriate type for a given project, andgenerate an original, effective highway construction specification.

This is not a grammar course; however, adequate coursecontent emphasizes the use of basic grammar and writing style so that thelearners can generate specifications that are correct, consistent, clear,complete, and concise.

Register today to experience a highly engaging, two-day, online instructor-led training session from the convenience of your home and/or office anywhere in the country, remotely.

Outcomes

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

- Explain the purposes of a specification.
- Explain how specifications are used to assign risk and influence the behavior of different parties, within a given a scenario.
- Compare the functions of Standard and Supplemental Specifications with the functions of Special Provisions.
- Explain how the "order of precedence" affects writing specifications and preparing plans.
- Describe the purpose of the General Provisions.
- Explain how a consistent writing style can affect the interpretation of specifications.
- Complete a checklist of the information needed before writing or revising a specification.
- Explain the potential benefits of writing in the active voice.
- Rewrite passive voice sentences into the active voice.
- Evaluate specifications to determine the need for imperative or indicative mood.
- State the five Cs used in specification writing. (Note: the five Cs include: correct; consistent; clear; complete; concise.)
- Explain each element of the AASHTO five-part format.
- Identify potential ambiguities in the wording, given a sample specification.
- Identify the potential benefits of each of the five Cs, given a sample specification.
- Apply the five Cs and the host agency's preferred format to revise the specification, given a sample specification.
- Write a new specification to a given set of criteria using the five Cs and the host agency's preferred format, given a sample specification.
- Compare method versus end-result specifications.
- Relate the type of specification to the allocation of risk.
- Write an end-result specification to replace a method specification, given an excerpt from a method specification.

Target Audience

This course is designed primarily for individuals who write, review, and implement an agency's contract specifications. Participants might represent Federal, State, and local transportation agencies; other public agencies; contractors; and

consultant firms.Individuals who do not write specifications but may contribute to their development, as well as those who use specifications, could also benefit from this course and the interaction with their classmates. Such participants might include personnel from environmental, materials, or construction sections or units; legal departments; work zone and safety professionals; contractor personnel; and any others involved with the design and construction of transportation facilities.

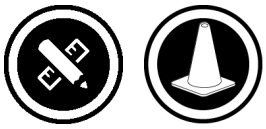
TRAINING LEVEL: Intermediate

FEE: 2021: $250 Per Person; 2022: N/A

LENGTH: 16 HOURS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov



Course Number

FHWA-NHI-134112

Course Title

Principles and Practices for Enhanced Maintenance Management Systems

Is your agency in the process of enhancing its maintenance management capabilities?

Are you interested in learning more about developing effective performance measures for maintenance activities?

If so, join us for a blended training course that features both independent study material and facilitated Web-conferences. You will be introduced to the methods and practices used in an enhanced maintenance management system (MMS) to effectively maintain and operate a highway network. You will explore the principles and practices of using MMS to effectively examine efficient maintenance and operation of a highway network. Throughout the course, you will learn by participating in activities and assignments specific to using MMS.

The course materials rely heavily on the AASHTO Guidelines for Maintenance Management Systems, Transportation Asset Management Guide, and several other recent publications on the topic. To illustrate the application of the principles, the course materials are supplemented with examples from State and local highway agencies.

Participant Responsibilities:

- 7 Web-based lessons (Duration: 1- 1.5 hrs each)

- 3 Web-conferences (Duration: 2 hours each)

To obtain your certificate, you must complete all Web-based lessons and Web-conferences. To receive Continuing Education Units (CEUs), you must also pass the online test at the end of the course. You will need your own computer with an Internet connection as well as a telephone line in order to participate.

Outcomes

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

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

Target Audience

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

Training Level: Basic

Fee: 2021: $225 Per Person; 2022: N/A

Length: 15 HOURS (CEU: 1.5 UNITS)

Class Size: MINIMUM: 10; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136002

Course Title

Financial Planning for Transportation Asset Management

Financial plans provide an excellent opportunity for agencies to demonstrate to constituents that they are responsibly managing their transportation assets. Get the information you need to develop or further develop your TAM Financial Plans!

The blended training approach to NHI 136002 Financial Planning for Transportation Asset Management (TAM) includes a brief (one-hour) Web-based training (WBT) component. The WBT builds foundational knowledge of financial planning in the context of TAM and reviews common vocabulary and background information.

Then, an instructor-led, classroom-based event completes the blended approach. Over the course of 1.5 days, participants discover the key content areas of a financial plan and explore the approaches to developing one. A facilitator guides small working groups as they create a financial plan outline that includes each content area. The groups identify gaps that could reduce the plan's effectiveness and identify the next steps their agency must take to fully develop the financial plan. The teams' financial plan outlines are evaluated by the instructor. Participants leave the classroom with a useful work product that can be further developed and used in the agency's financial planning process.

Outcomes

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

- Describe the financial plan's purpose and benefits.
- Create an outline that identifies the components of the financial plan and describes for each component: the required content; key factors that influence the development; the stakeholders involved in the development of the component; and the roles and responsibilities of each stakeholder.
- Identify gaps in policies, data, and processes that need to be addressed by your agency to develop the financial plan, using the financial plan outline.
- Recommend the next steps the agency could take to develop the financial plan.

Target Audience

The primary target audience for this training is anyone involved with developing the financial plan, including asset managers, program managers, financial officers and managers (revenue, budget, accounting, and audit), maintenance directors, planners, and their staff. While titles and roles vary from agency to agency, staff involved in developing a financial plan generally consist of engineers, planners, analysts, accountants, auditors, and data managers. The participants may include staff from one transportation agency or could include a blend of state and regional participants from metropolitan planning organizations (MPOs) or rural planning organizations. Secondary target audiences include chief executive officers from state departments of transportation (DOT) and their staff, operations directors, legislative liaisons, as well as local and regional transportation agencies.

Training Level: Basic

Fee: 2021: $200 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: 1.1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136002T

WCT

Course Title

Financial Planning for Transportation Asset Management (EXAM ONLY FOR 136002V)

THIS IS THE EXAM ONLY FOR CURRENT PARTICIPANTS ENROLLED IN 136002V

Financial plans provide an excellent opportunity for agencies to demonstrate to constituents that they are responsibly managing their transportation assets. Get the information you need to develop or further develop your TAM Financial Plans!

The blended training approach to NHI 136002 Financial Planning for Transportation Asset Management (TAM) includes a brief (one-hour) Web-based training (WBT) component. The WBT builds foundational knowledge of financial planning in the context of TAM and reviews common vocabulary and background information.

Then, an instructor-led, classroom-based event completes the blended approach. Over the course of 1.5 days, participants discover the key content areas of a financial plan and explore the approaches to developing one. A facilitator guides small working groups as they create a financial plan outline that includes each content area. The groups identify gaps that could reduce the plan's effectiveness and identify the next steps their agency must take to fully develop the financial plan. The teams' financial plan outlines are evaluated by the instructor. Participants leave the classroom with a useful work product that can be further developed and used in the agency's financial planning process.

Outcomes

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

- Describe the financial plan's purpose and benefits.
- Create an outline that identifies the components of the financial plan and describes for each component: the required content; key factors that influence the development; the stakeholders involved in the development of the component; and the roles and responsibilities of each stakeholder.
- Identify gaps in policies, data, and processes that need to be addressed by your agency to develop the financial plan, using the financial plan outline.
- Recommend the next steps the agency could take to develop the financial plan.

Target Audience

The primary target audience for this training is anyone involved with developing the financial plan, including asset managers, program managers, financial officers and managers (revenue, budget, accounting, and audit), maintenance directors, planners, and their staff. While titles and roles vary from agency to agency, staff involved in developing a financial plan generally consist of engineers, planners, analysts, accountants, auditors, and data managers. The participants may include staff from one transportation agency or could include a blend of state and regional participants from metropolitan planning organizations (MPOs) or rural planning organizations. Secondary target audiences include chief executive officers from state departments of transportation (DOT) and their staff, operations directors, legislative liaisons, as well as local and regional transportation agencies.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 5 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136002V

Course Title

Financial Planning for Transportation Asset Management (Virtual Delivery of 136002)

Financial plans provide an excellent opportunity for agencies to demonstrate to constituents that they are responsibly managing their transportation assets. Get the information you need to develop or further develop your TAM Financial Plans!

The blended training approach to NHI 136002 Financial Planning for Transportation Asset Management (TAM) includes a brief (one-hour) Web-based training (WBT) component. The WBT builds foundational knowledge of financial planning in the context of TAM and reviews common vocabulary and background information.

Then, an instructor-led, web-based conference training event completes the blended approach. Over the course of 1.5 days, participants discover the key content areas of a financial plan and explore the approaches to developing one. A facilitator guides small working groups as they create a financial plan outline that includes each content area. The groups identify gaps that could reduce the plan's effectiveness and identify the next steps their agency must take to fully develop the financial plan. The teams' financial plan outlines are evaluated by the instructor. Participants leave the classroom with a useful work product that can be further developed and used in the agency's financial planning process.

NHI-136002V-Financial Planning for Transportation Asset Management is now offered on-line as a virtual course. A virtual instructor-led training provides 100% remote learning while ensuring participants have access to expert instructors, workshop activities, and engaging peer-to-peer discussions. Register today and learn to develop or further develop your TAM Financial Plans!

Outcomes

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

- Describe the financial plan's purpose and benefits.
- Create an outline that identifies the components of the financial plan and describes for each component: the required content; key factors that influence the development; the stakeholders involved in the development of the component; and the roles and responsibilities of each stakeholder.
- Identify gaps in policies, data, and processes that need to be addressed by your agency to develop the financial plan, using the financial plan outline.
- Recommend the next steps the agency could take to develop the financial plan.

Target Audience

The primary target audience for this training is anyone involved with developing the financial plan, including asset managers, program managers, financial officers and managers (revenue, budget, accounting, and audit), maintenance directors, planners, and their staff. While titles and roles vary from agency to agency, staff involved in developing a financial plan generally consist of engineers, planners, analysts, accountants, auditors, and data managers. The participants may include staff from one transportation agency or could include a blend of state and regional participants from metropolitan planning organizations (MPOs) or rural planning organizations. Secondary target audiences include chief executive officers from state departments of transportation (DOT) and their staff, operations directors, legislative liaisons, as well as local and regional transportation agencies.

Training Level: Basic

Fee: 2021: $200 Per Person; 2022: N/A

Length: 12 HOURS (CEU: 1.1 UNITS)

Class Size: MINIMUM: 10; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136065

Course Title

Risk Management

Managing transportation networks--including agency management, program development, and project delivery--is extremely complex and fraught with uncertainty. Any agency can use risk management as the Federal Highway Administration (FHWA) does: to focus limited resources; strengthen its ability to prioritize; and improve communication and foster transparent leadership.

In this 2-day, instructor-led class, participants are exposed to the principles, tools, and techniques used to identify, prioritize, respond to, and monitor risk. They learn to apply these risk management tools and techniques at any level of an organization (enterprise, program, project, or activity). Throughout the course, participants answer the following questions.

1. What is risk?

2. Why should programs be risk-based?

3. What should program managers know about the results of risk analysis, risk statements and responses, strategies, and tracking of implementation?

4. How can risks be measured?

5. How is risk management tied to strategic planning (especially with performance measures)?

This training event combines limited instructor presentations with robust group discussions and multiple team-based exercises. Course material is based on FHWA generally accepted risk management principles and practice. Teams of participants work on agency-specified objectives to identify and manage risks. They leave class with work products including a risk register template and other tools for identifying, prioritizing, and responding to risk.

NOTE: Participants use tools and methods from each step of the risk management framework in a series of exercises that provide realistic, job-relevant practice in applying the risk management process. In order to maximize the impact of the training and increase the likelihood of participants' mastery of the risk management process, the agency can select active agency issues (project, program, or network) for use during the exercises. In addition, the agency can provide problem statements and pre-select the teams for the exercises.

Outcomes

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

- Recognize the connection between effective risk management and achieving organizational objectives.
- Follow the steps of the risk management process to identify and develop risk strategies.
- Apply the risk management process to one's own level of decision-making within an organization.

Target Audience

The target audience for this course includes Federal, State and local highway employees who are responsible for directing and managing any aspects of highway-related programs and projects such as planning, environment, project development, design, construction, operations, maintenance, and finance. Asset management practitioners may also find this course content helpful as they develop their asset management plans. Audience experience, background, knowledge, skills and abilities will vary. No previous experience with risk management is required.

Training Level: Basic

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136065A

Course Title

Risk Management Executive Summary

This 1-day training is an overview of FHWA-NHI-134065 and covers principles of risk management.

Outcomes

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

- Explain the overall organizational context, importance of risk management, and risk framework to others
- Follow a consistent process for managing risk
- Utilize standard risk terminology, tools and methods
- Implement appropriate risk identification techniques
- Write an effective and meaningful risk statement
- Accurately estimate likelihood and impact of each risk event
- Create a consistent matrix to prioritize risk

Target Audience

The target audience for this course includes Federal, State and local highway managers and executives who are responsible for directing and managing all aspects of highway related programs/projects such as planning, environment, project development, design, construction, operations, maintenance, and finance.

Training Level: Basic

Fee: 2021: $100 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 18; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136106A

Course Title

Introduction to Transportation Asset Management with Workshop

"An Introduction to Transportation Asset Management" was updated in Fall of 2017 to reflect the Asset Management Rule (23 CFR part 515) and includes a summary of specific provisions related to asset management. Whether your agency is focused on meeting current requirements or planning for future enhancements and implementation, this course can help you meet those challenges!

Stakeholders today demand transparency in the transportation agency's decision process; meanwhile, the agency faces higher expectations for customer service with fewer available resources. Transportation asset management (TAM) is a strategic approach to managing physical transportation infrastructure. The TAM environment promotes effective use of funding and can provide a method for defending the need for additional resources because it uses reliable data and a clear set of expected performance metrics to guide investment decisions and identify required resources.

NHI 136106A is a 1.5-day course that covers the principles of TAM and introduces the core questions every agency should be able to answer about its assets. Join this class to participate in a series of workshops that help you apply asset management principles to real-life situations. You'll also find an agency assessment tool that can be used to identify gaps between the desired and actual use of TAM principles. Other topics introduced in this course include: asset management principles; performance management; long-term financial planning; risk assessment; and implementation.

This course is a prerequisite for NHI 136106B "Development of a Transportation Asset Management Plan." You may also be interested in NHI 136106C "Introduction to Transportation Asset Management Plans," which is a Web-based training. See the NHI website for additional information on each of these courses.

Outcomes

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

- Champion the use of asset management principles and concepts within the organization
- Define their role in supporting the agency's asset management efforts
- Identify the strengths and weaknesses of your agency's asset management program
- Identify strategies for advancing your agency's use of asset management principles

Target Audience

This training is designed for 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. Participants should represent a number of organizational units, including (but not limited to) planning, engineering (e.g., facility management, design, construction), capital programming, maintenance and operations, financial management, traffic and safety engineering, system operation and management, and information technology. The course is also intended for individuals who manage or provide critical information to senior managers, or who have direct responsibility for meeting specific transportation system performance or program delivery targets.

Training Level: Basic

Fee: 2021: $270 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136106B

Course Title

Developing a Transportation Asset Management Plan

"Developing a Transportation Asset Management Plan" was updated in Fall of 2017 to reflect the Asset Management Rule (23 CFR part 515) and incorporate recent FHWA guidance on risk management, life-cycle planning, and financial planning.

The class combines a brief (1-hour) Web-based training prerequisite with a 1.5-day instructor-led session to introduce the role of the Transportation Asset Management Plan (TAMP) as a planning, communication, and accountability tool. You will encounter lessons focusing on three primary components to the TAMP, including strategic performance management, risk assessment, and financial management. The workshops throughout the course allow you to work through real-life examples and practice skills, such as setting strategies. You'll find a variety of resources, tools, and guidelines for use in developing a TAMP.

This course is the second in a series of courses on transportation asset management. All participants registering for this course must have completed the prerequisite NHI 136106A An Introduction to Transportation Asset Management or have demonstrated a solid background in transportation asset management principles and planning. In any event, all participants must successfully complete the Web-based training 136106C. The Web-based training is available at no additional charge and can be accessed via the NHI website.

Outcomes

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

- Describe the role of a Transportation Asset Management Plan in a transportation agency.
- Identify strategies for incorporating risk into investment decisions.
- Explain how to determine whether an agency is making sustainable, long-term investments in its assets.
- Develop a Transportation Asset Management Plan that matches the amount of data and the sophistication of the analysis tools available.

Target Audience

The course is intended for senior-level and mid-level managers from State departments of transportation and other transportation agencies, who have the responsibility for decision-making in one or more areas addressed by transportation asset management. Course participants should represent a broad range of organizational units, such as (but not limited to) planning, engineering (facility management, design, and construction), capital programming, maintenance and operations, financial management, traffic and safety engineering, system operation and management, and information technology. If the agency has an Asset Management Steering Committee, its members would benefit from this course. In addition, individuals who manage individual assets or provide critical information to senior managers, or who have direct responsibility for meeting specific transportation system performance or program delivery targets, are also excellent candidates for attending the course.

Training Level: Intermediate

Fee: 2021: $270 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: 1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136106V

Course Title

Introduction to Transportation Asset Management with Workshop (Virtual Delivery of 136106A)

"An Introduction to Transportation Asset Management" was updated in Fall of 2017 to reflect the Asset Management Rule (23 CFR part 515) and includes a summary of specific provisions related to asset management. Whether your agency is focused on meeting current requirements or planning for future enhancements and implementation, this course can help you meet those challenges!

Stakeholders today demand transparency in the transportation agency's decision process; meanwhile, the agency faces higher expectations for customer service with fewer available resources. Transportation asset management (TAM) is a strategic approach to managing physical transportation infrastructure. The TAM environment promotes effective use of funding and can provide a method for defending the need for additional resources because it uses reliable data and a clear set of expected performance metrics to guide investment decisions and identify required resources.

NHI 136106A is a 1.5-day course that covers the principles of TAM and introduces the core questions every agency should be able to answer about its assets. Join this class to participate in a series of workshops that help you apply asset management principles to real-life situations. You'll also find an agency assessment tool that can be used to identify gaps between the desired and actual use of TAM principles. Other topics introduced in this course include: asset management principles; performance management; long-term financial planning; risk assessment; and implementation.

This course is a prerequisite for NHI 136106B "Development of a Transportation Asset Management Plan." You may also be interested in NHI 136106C "Introduction to Transportation Asset Management Plans," which is a Web-based training. See the NHI website for additional information on each of these courses.

NHI-136106A- Introduction to Transportation Asset Management with Workshop is now offered on-line as a virtual course. A virtual instructor-led training provides 100% remote learning while ensuring participants have access to expert instructors, workshop activities, and engaging peer-to-peer discussions.

Register today to learn the principles of Transportation Asset Management in the convenience of your home and/or office anywhere in the country, remotely.

Outcomes

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

- Champion the use of asset management principles and concepts within the organization.
- Define their role in supporting the agency's asset management efforts
- Identify the strengths and weaknesses of your agency's asset management program
- Identify strategies for advancing your agency's use of asset management principles

Target Audience

This training is intended for 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. Participants should represent a number of organizational units, including (but not limited to) planning, engineering (e.g., facility management, design, construction), capital programming, maintenance and operations, financial management, traffic and safety engineering, system operation and management, and information technology. The course is also intended for individuals who manage or provide critical information to senior managers, or who have direct responsibility for meeting specific transportation system performance or program delivery targets.

Training Level: Basic

Fee: 2021: $270 Per Person; 2022: N/A

Length: 12 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136106W

Course Title

Developing a Transportation Asset Management Plan (Virtual Delivery of 136106B)

"Developing a Transportation Asset Management Plan" was updated in Fall of 2017 to reflect the Asset Management Rule (23 CFR part 515) and incorporate recent FHWA guidance on risk management, life-cycle planning, and financial planning.

The class combines a brief (1-hour) Web-based training prerequisite with a 1.5-day online instructor-led session to introduce the role of the Transportation Asset Management Plan (TAMP) as a planning, communication, and accountability tool. You will encounter lessons focusing on three primary components to the TAMP, including strategic performance management, risk assessment, and financial management. The workshops throughout the course allow you to work through real-life examples and practice skills, such as setting strategies. You'll find a variety of resources, tools, and guidelines for use in developing a TAMP.

This course is the second in a series of courses on transportation asset management. All participants registering for this course must have completed the prerequisite NHI-136106A or NHI-136106V - An Introduction to Transportation Asset Management or have demonstrated a solid background in transportation asset management principles and planning. In any event, all participants must successfully complete the Web-based training 136106C. The Web-based training is available at no additional charge and can be accessed via the NHI website.

Register today to attend this course in the convenience of your home and/or office anywhere in the country, remotely.

Outcomes

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

- Describe the role of a Transportation Asset Management Plan in a transportation agency.
- Identify strategies for incorporating risk into investment decisions.
- Explain how to determine whether an agency is making sustainable, long-term investments in its assets.
- Develop a Transportation Asset Management Plan that matches the amount of data and the sophistication of the analysis tools available.

Target Audience

The course is intended for senior-level and mid-level managers from State departments of transportation and other transportation agencies, who have the responsibility for decision-making in one or more areas addressed by transportation asset management. Course participants should represent a broad range of organizational units, such as (but not limited to) planning, engineering (facility management, design, and construction), capital programming, maintenance and operations, financial management, traffic and safety engineering, system operation and management, and information technology. If the agency has an Asset Management Steering Committee, its members would benefit from this course. In addition, individuals who manage individual assets or provide critical information to senior managers, or who have direct responsibility for meeting specific transportation system performance or program delivery targets, are also excellent candidates for attending the course.

Training Level: Intermediate

Fee: 2021: $270 Per Person; 2022: N/A

Length: 12 HOURS (CEU: 1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138012

Course Title

Effective Target Setting for Transportation Performance Management

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138012executivesummary/

'Effective Target Setting for Transportation Performance Management' is a 2-day Instructor-led Training (ILT) course offered by NHI, the authoritative source in transportation training.

Transportation agencies have been moving toward a performance-based management approach for over a decade. The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) Act further emphasized the importance of target setting within a performance management context. MAP-21 requires State Departments of Transportation (State DOTs), Metropolitan Planning Organizations (MPOs), and public transit providers to set performance targets for the United States Department of Transportation's (USDOT's) established national performance measures.

It is anticipated that performance management principles will carry forward in subsequent legislation as it has been shown to be good business practice and has been supported by the United States Government Accountability Office (GAO). While FHWA and most State DOTs and MPOs have experience with developing performance measures and reporting on condition/performance, experience is much more limited in setting performance targets and reporting on the achievement (or not) of those targets. Understanding and applying targets within a Transportation Performance Management (TPM) program is a critical component of TPM.

This course will provide the information needed on how to establish and use performance targets. The course will answer these broad questions: What is a target?, Why should I set targets?, How do I set targets?, How do I use targets? The focus of this training will be at the State/MPO level. Federal employees will learn about their role in the context of States/MPOs going through the target setting steps.

This course includes a written assessment. The course content was last updated in October 2017.

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL:

https://connectdot.connectsolutions.com/nhi138012executivesummary/

To enroll in this Instructor-led Training course, click the 'View Sessions' button and click 'Add To Cart' next to your session choice. If there are no upcoming sessions, click 'Sign Up for Session Alerts.'

Any organization can host this course. To host this course and bring training to your organization, click the 'Host this Course' button.

Outcomes

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

- Explain the value of setting appropriate and effective targets as part of performance management and within the context of current legislation
- Describe what a target is and the importance of establishing a baseline
- Explain the importance of collaboration in the target setting process and in the context of current legislation
- Explain the key steps to set an effective target
- Explain the factors involved in setting targets
- Explain how trade-offs should be considered in determining targets between system performance areas
- Set a target
- Identify coordination needs in target setting
- Identify key stakeholder roles
- Identify key components of effective condition/performance tracking and progress assessment
- Identify strategies to communicate target data and information effectively
- Identify mitigation strategies for challenges related to target setting

Target Audience

The target audience for this Instructor-led Training course includes the following: + Technical roles responsible for setting targets + Planning/programming staff who develop the Statewide Transportation Improvement Plan (STIP) and Regional Transportation Improvement Plans (RTIPs) + Staff dedicated to performance management + Individuals who will be involved in coordination/collaboration of target setting + Federal Highway Administration/Division Office employees and FTA employees who provide oversight for and assistance with target setting, including Performance and Management Analysts (PMAs) and subject area specialists who will assist their state and local partners A secondary target audience for this training includes higher-level decision makers who will ultimately decide on which targets to use.

Training Level: Basic

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138006A

Course Title

Transportation Performance Management for Safety - Essentials

This course will be delivered for free to Metropolitan Planning Organizations and State DOTs. The reduced price is being provided by the FHWA Office of Infrastructure. Prior to taking this course, participants are encouraged to take the Transportation Performance Management Overview for the MAP-21 and FAST Acts Instructor-led Training course NHI-138004, or have a foundational knowledge of transportation performance management. YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138006executivesummary/ A web-based version of this course is also available: NHI-138005.

'Transportation Performance Management (TPM) for Safety - Essentials' is a one-day Instructor-led Training course offered by NHI.

This course explains the safety performance measures and noteworthy practices necessary for States to comply with the MAP-21 and FAST Act requirements. The course recommends an evidence-based and data-driven methodology for setting safety targets and provides participants with an understanding of the safety data needed to meet the safety TPM requirements. The course helps improve the ability of States to coordinate target setting between the State Departments of Transportation (State DOTs) and the State Highway Safety Office (SHSO), as well as between the State DOT and the State's Metropolitan Planning Organizations (MPOs).

This Instructor-led Training course provides hands-on exercises with reviewing crash data trends and establishing safety targets based on planned safety programs, external factors, and countermeasure deployment. The course also includes a written assessment.

The course is organized into the following lessons:

+ Introduction
+ Safety Performance Management and Performance-Based Planning
+ Safety Performance Measures and Related Data
+ Performance-Based Safety Target Setting
+ Resource Allocation in Safety Performance Management
+ Safety Performance Reporting, Accountability, and Transparency

This course was condensed from a two-day version (#138006) in August of 2018.

To enroll in this Instructor-led Training course, select the 'View Sessions' button and select 'Add To Cart' next to your session choice. If there are no upcoming sessions, select 'Sign Up for Session Alerts.'

Outcomes

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

- Describe the planning process as it applies to safety
- List legislative and regulatory requirements
- List data sources for safety performance measures and targets
- Describe the coordination and collaboration processes for target setting between the State DOT and the SHSO and the State DOT and the MPOs in the State
- Describe the process and methods for setting evidence-based safety targets
- Identify considerations for making safety-related resource allocation decisions
- Define approaches for safety performance reporting, accountability, and transparency

Target Audience

The target audience for this Instructor-led Training course primarily includes State DOT safety specialists, planners, and others involved in the safety performance-based planning process; SHSO planners and decision makers; and MPO planners, safety experts, and decision makers. FHWA, the National Highway Traffic Safety Administration (NHTSA), Strategic Highway Safety Plan (SHSP) stakeholders, Rural Transportation Planning Organizations, and senior decision-

makers make up a secondary audience.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138007

Course Title

Performance-based Planning and Programming

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138007executivesummary/

'Performance-based Planning and Programming' is a two-day Instructor-led Training course offered by NHI, the authoritative source in transportation training.

As recent economic, political, and social trends have placed greater emphasis on public sector accountability and cost-effectiveness, many transportation agencies across the country have begun to shift towards a performance-based approach to plan, manage, and operate their systems. This course will familiarize transportation agencies with the key elements of a performance-based planning and programming (PBPP) framework, the relationship of these elements within existing planning and programming processes, and the connection of these elements to Transportation Performance Management (TPM) requirements initiated by legislation, including the Moving Ahead for Progress in the 21st Century (MAP-21) Act and continued under the Fixing America's Surface Transportation (FAST) Act and the Statewide and Nonmetropolitan Transportation Planning; Metropolitan Transportation Planning Final Rule, which was published in the Federal Register on May 27, 2016.

This course begins by providing an overview of PBPP and then walks the participants through each element of the US Department of Transportation (USDOT) PBPP framework, providing examples of alternative approaches and real-world applications.

Participants in the course will gain insight on several key learning points, including:

+ How to apply performance management principles within the planning and programming process to achieve desired agency goals and performance outcomes

+ How to connect PBPP with other performance management activities, plans, and products

+ How to assess and learn from transferable planning and programming practices in use across the US, including examples of how agencies are moving towards implementing PBPP

This course includes a written assessment. The course content was last updated in July 2017.

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL:

https://connectdot.connectsolutions.com/nhi138007executivesummary/

To enroll in this Instructor-led Training course, select the 'View Sessions' button and select 'Add To Cart' next to your session choice. If there are no upcoming sessions, select 'Sign Up for Session Alerts.'

Any organization can host this course. To host this course and bring training to your organization, click the 'Host this Course' button.

Outcomes

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

- Describe requirements for performance-based planning and programming.
- Describe the elements of the performance-based planning and programming framework.
- Describe how the performance-based planning and programming framework relates to the TPM requirements.
- Describe opportunities to engage the public in a performance-based planning and programming process.
- Explain how to integrate various performance-based plans using data and information contained within those plans.
- Recognize the role of coordination in developing performance-based plans.

Target Audience

The target audience for this Instructor-led Training course primarily includes transportation professionals responsible for developing and implementing performance-based plans and programs, and those responsible for integration and linkage of other requirements, under performance-based legislation initiated by MAP-21 and continued under FAST. This includes a broad audience of State DOTs, MPOs, regional planning organizations (RPOs), transit agencies, and USDOT staff. Participants should have knowledge of the planning process.

Training Level: Basic

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138008

Course Title

Transportation Performance Management (TPM) for Bridges

Starting in 2019, this course will be delivered for free to Metropolitan Planning Organizations and State DOTs. The reduced price is being provided by the FHWA Office of Infrastructure. YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138008executivesummary/

'Transportation Performance Management for Bridges' is a one-day Instructor-led Training course offered by NHI, the authoritative source in transportation training.

Moving Ahead for Progress in the 21st Century Act (MAP-21) established, and Fixing America's Surface Transportation (FAST) continued, new requirements for reporting on national performance measures and making progress toward targets in several national goal areas, including the condition of the bridges on the National Highway System (NHS). This course helps agencies apply Transportation Performance Management (TPM) concepts to implement the bridge-related TPM requirements.

The course begins with an overview of key performance management concepts. It then reviews performance measures defined for assessing and reporting bridge performance. Finally, the course details how to set and report bridge performance targets and assess performance against agency targets.

The main goals of the course are to provide agency staff with the skills and abilities to use the national bridge performance management measures to assess bridge condition, establish bridge performance targets, report bridge performance, and assess progress toward achieving bridge performance targets in compliance with the TPM requirements in 23 CFR 490.

The course is organized in the following lessons:

+ TPM Overview

+ Bridge Performance Management and Related Rules

+ Bridge Performance Data

+ Setting Bridge Performance Targets

+ Reporting, Accountability, and Transparency

The course includes a written assessment. The course was launched in May 2018.

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138008executivesummary/

To enroll in this Instructor-led Training course, select the 'View Sessions' button and select 'Add To Cart' next to your session choice. If there are no upcoming sessions, select 'Sign Up for Session Alerts.'

Any organization can host this course. To host this course and bring training to your organization, click the 'Host this Course' button.

Outcomes

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

- Describe the transportation performance management (TPM) requirements related to bridge performance
- Describe the performance-based planning and programming process and asset management process as they apply to bridges
- Identify required bridge performance measures, as well as other common bridge performance measures
- Use and interpret bridge performance data
- Identify key supporting business practices for establishing and assessing progress toward achieving targets
- Establish bridge performance targets using data on existing performance and predicted future funds, deterioration, and investment strategies
- Explain common challenges in establishing bridge performance targets and approaches that can be used to address them
- Describe required process for bridge performance measurement, reporting, and assessment

Target Audience

The target audience for this Instructor-led Training course consists primarily of professionals responsible for collecting, analyzing, and reporting bridge performance data; managing bridge inventories; recommending bridge investment strategies; and setting bridge performance targets. This audience includes bridge managers, asset managers, planners, performance management, and programming staff of State and local agencies, consultants, and FHWA.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138009

Course Title

Transportation Performance Management for Pavements

This course will be delivered for free to Metropolitan Planning Organizations and State DOTs. The reduced price is being provided by the FHWA Office of Infrastructure. YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138009executivesummary/

'Transportation Performance Management for Pavements' is a one-day Instructor-led Training course offered by NHI, the authoritative source in transportation training.

Recent legislation has resulted in new requirements for national performance measures and targets in several measure areas, including pavement conditions. Moving Ahead for Progress in the 21st Century Act (MAP-21) established the requirements, and Fixing America's Surface Transportation (FAST) continued them. Most States and other transportation agencies have established their own measures for pavement conditions; however, few transportation officials have experience in managing a performance-based program with specific outcome-oriented pavement targets.

This course is intended to review concepts in Transportation Performance Management (TPM), identify specific measures used for characterizing pavement conditions, and provide methods for analyzing and recommending pavement condition targets and approaches for monitoring pavement networks. One important aspect of TPM is monitoring performance once targets have been established and using information on current performance to guide decision making. The final portion of the course focuses on performance monitoring and approaches for updating performance targets over time.

The main goal of the course is to provide agency staff with the skills and abilities to use the national measures to assess pavement condition, establish pavement condition targets, and report and evaluate pavement performance over time.

The course is organized into the following lessons:

+ Overview of TPM Legislative and Regulatory Requirements

+ Relating Pavement Performance to Planning, Asset Management and Existing Pavement Programs

+ The National Pavement Performance Measures

+ Setting Pavement Performance Targets

+ Reporting, Accountability, and Transparency

The course includes a written assessment. The course was launched in December 2017.

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138009executivesummary/

To enroll in this Instructor-led Training course, select the 'View Sessions' button and select 'Add To Cart' next to your session choice. If there are no upcoming sessions, select 'Sign Up for Session Alerts.'

Any organization can host this course. To host this course and bring training to your organization, click the 'Host this Course' button.

Outcomes

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

- Describe the national performance management regulations related to pavement conditions
- List the data requirements for computing condition using national pavement performance metrics and measures
- Describe the process for using the national metrics and measures to assess pavement condition
- Describe the relationship of pavement performance measures and targets with the performance-based planning and programming process and asset management programs as they apply to pavement networks
- Calculate pavement performance targets using existing and historical condition data, funding, other programming constraints, and predicted future condition information
- Explain common challenges in establishing pavement performance targets and approaches that can be used to address them
- Describe the process for pavement performance reporting and evaluation

Target Audience

The target audience for this Instructor-led Training course primarily consists of professionals responsible for pavement analysis, pavement project selection, evaluation of pavement investment strategies and associated risks, recommending pavement targets, and monitoring pavement condition. This audience may include pavement engineers, asset managers, planners, performance management, and programming staff of State and local agencies, consultants, and FHWA staff.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138011

Course Title

The Role of Data in Transportation Performance Management

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138011executivesummary/

'The Role of Data in Transportation Performance Management' is a two-day Instructor-led Training (ILT) course offered by NHI, the authoritative source in transportation training. Its goal is to enable participants to manage, analyze, integrate, and use data from diverse sources to support an effective agency Transportation Performance Management (TPM) function.

As transportation management agencies are preparing for federally legislated performance management requirements, many want to improve their data programs to support desired results. This course will help agencies improve management and use of data to meet the TPM requirements of 23 CFR 490 and the related Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation Act (FAST).

The course begins with an overview of data management. It then details each part of the data supply chain, covering common needs, considerations, and challenges along the way. The course also covers issues related to data assessment and data improvement planning. The course material is synthesized at the end of the course through a group exercise in which participants create a data management and improvement plan.

This training can provide a useful starting point for agencies that wish to undertake improvements at all stages of the data life cycle.

The course includes a written assessment. The course content was last updated December 2017.

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138011executivesummary/

To enroll in this Instructor-led Training course, click the 'View Sessions' button and click 'Add To Cart' next to your session choice. If there are no upcoming sessions, click 'Sign Up for Session Alerts.'

Any organization can host this course. To host this course and bring training to your organization, click the 'Host this Course' button.

Outcomes

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

- Discuss the purpose and benefits of accurate and current relevant data in TPM activities
- Describe TPM data analysis needs for system performance areas
- Explain the elements of TPM and related business practices and the data that supports them
- List data requirements related to use of performance projections for target setting
- Identify common data quality issues and techniques for addressing them
- Identify existing gaps in data quality, availability, linkage, and analysis tools that impact the ability to meet federally legislated requirements, as well as support broader agency performance management processes
- Develop a data management and improvement plan

Target Audience

The target audience for this Instructor-led Training course primarily includes staff at FHWA, State DOTs, MPOs, and national organizations, such as Association of Metropolitan Planning Organizations (AMPO) and American Association of State Highway and Transportation Officials (AASHTO) who would benefit from an overview of data management in the context of TPM applications and an appreciation for some basic data management concepts. The course is appropriate for the following types of roles: + Mid-level managers with TPM-related responsibilities + Pavement, bridge, safety, road inventory, traffic data managers, and analysts + Information technology staff that build reports or develop applications that support TPM business needs + Senior agency managers who have a strong interest in improving data at their organizations + Entry-level data managers and analysts who will be supporting agency TPM practicesNote: As an overview course, this course is not intended for seasoned transportation data professionals or those seeking an in-depth coverage of data needs and uses within any single performance area. It does not cover technical skill development in

database design, query methods, data integration, or data analysis.

Training Level: Basic

Fee: 2021: $200 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138011

Course Title

The Role of Data in Transportation Performance Management

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138011executivesummary/

'The Role of Data in Transportation Performance Management' is a two-day Instructor-led Training (ILT) course offered by NHI, the authoritative source in transportation training. Its goal is to enable participants to manage, analyze, integrate, and use data from diverse sources to support an effective agency Transportation Performance Management (TPM) function.

As transportation management agencies are preparing for federally legislated performance management requirements, many want to improve their data programs to support desired results. This course will help agencies improve management and use of data to meet the TPM requirements of 23 CFR 490 and the related Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation Act (FAST).

The course begins with an overview of data management. It then details each part of the data supply chain, covering common needs, considerations, and challenges along the way. The course also covers issues related to data assessment and data improvement planning. The course material is synthesized at the end of the course through a group exercise in which participants create a data management and improvement plan.

This training can provide a useful starting point for agencies that wish to undertake improvements at all stages of the data life cycle.

The course includes a written assessment. The course content was last updated December 2017.

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138011executivesummary/

To enroll in this Instructor-led Training course, click the 'View Sessions' button and click 'Add To Cart' next to your session choice. If there are no upcoming sessions, click 'Sign Up for Session Alerts.'

Any organization can host this course. To host this course and bring training to your organization, click the 'Host this Course' button.

Outcomes

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

- Discuss the purpose and benefits of accurate and current relevant data in TPM activities
- Describe TPM data analysis needs for system performance areas
- Explain the elements of TPM and related business practices and the data that supports them
- List data requirements related to use of performance projections for target setting
- Identify common data quality issues and techniques for addressing them
- Identify existing gaps in data quality, availability, linkage, and analysis tools that impact the ability to meet federally legislated requirements, as well as support broader agency performance management processes
- Develop a data management and improvement plan

Target Audience

The target audience for this Instructor-led Training course primarily includes staff at FHWA, State DOTs, MPOs, and national organizations, such as Association of Metropolitan Planning Organizations (AMPO) and American Association of State Highway and Transportation Officials (AASHTO) who would benefit from an overview of data management in the context of TPM applications and an appreciation for some basic data management concepts. The course is appropriate for the following types of roles: + Mid-level managers with TPM-related responsibilities + Pavement, bridge, safety, road inventory, traffic data managers, and analysts + Information technology staff that build reports or develop applications that support TPM business needs + Senior agency managers who have a strong interest in improving data at their organizations + Entry-level data managers and analysts who will be supporting agency TPM practicesNote: As an overview course, this course is not intended for seasoned transportation data professionals or those seeking an in-depth coverage of data needs and uses within any single performance area. It does not cover technical skill development in

database design, query methods, data integration, or data analysis.

TRAINING LEVEL: Basic

FEE: 2021: $200 Per Person; 2022: N/A

LENGTH: 2 DAYS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138012

Course Title

Effective Target Setting for Transportation Performance Management

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138012executivesummary/

'Effective Target Setting for Transportation Performance Management' is a 2-day Instructor-led Training (ILT) course offered by NHI, the authoritative source in transportation training.

Transportation agencies have been moving toward a performance-based management approach for over a decade. The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) Act further emphasized the importance of target setting within a performance management context. MAP-21 requires State Departments of Transportation (State DOTs), Metropolitan Planning Organizations (MPOs), and public transit providers to set performance targets for the United States Department of Transportation's (USDOT's) established national performance measures.

It is anticipated that performance management principles will carry forward in subsequent legislation as it has been shown to be good business practice and has been supported by the United States Government Accountability Office (GAO). While FHWA and most State DOTs and MPOs have experience with developing performance measures and reporting on condition/performance, experience is much more limited in setting performance targets and reporting on the achievement (or not) of those targets. Understanding and applying targets within a Transportation Performance Management (TPM) program is a critical component of TPM.

This course will provide the information needed on how to establish and use performance targets. The course will answer these broad questions: What is a target?, Why should I set targets?, How do I set targets?, How do I use targets? The focus of this training will be at the State/MPO level. Federal employees will learn about their role in the context of States/MPOs going through the target setting steps.

This course includes a written assessment. The course content was last updated in October 2017.

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL:

https://connectdot.connectsolutions.com/nhi138012executivesummary/

To enroll in this Instructor-led Training course, click the 'View Sessions' button and click 'Add To Cart' next to your session choice. If there are no upcoming sessions, click 'Sign Up for Session Alerts.'

Any organization can host this course. To host this course and bring training to your organization, click the 'Host this Course' button.

Outcomes

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

- Explain the value of setting appropriate and effective targets as part of performance management and within the context of current legislation
- Describe what a target is and the importance of establishing a baseline
- Explain the importance of collaboration in the target setting process and in the context of current legislation
- Explain the key steps to set an effective target
- Explain the factors involved in setting targets
- Explain how trade-offs should be considered in determining targets between system performance areas
- Set a target
- Identify coordination needs in target setting
- Identify key stakeholder roles
- Identify key components of effective condition/performance tracking and progress assessment
- Identify strategies to communicate target data and information effectively
- Identify mitigation strategies for challenges related to target setting

Target Audience

The target audience for this Instructor-led Training course includes the following: + Technical roles responsible for setting targets + Planning/programming staff who develop the Statewide Transportation Improvement Plan (STIP) and Regional Transportation Improvement Plans (RTIPs) + Staff dedicated to performance management + Individuals who will be involved in coordination/collaboration of target setting + Federal Highway Administration/Division Office employees and FTA employees who provide oversight for and assistance with target setting, including Performance and Management Analysts (PMAs) and subject area specialists who will assist their state and local partners A secondary target audience for this training includes higher-level decision makers who will ultimately decide on which targets to use.

Training Level: Basic

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-139011

Course Title

Fundamentals of Freight Data Workshop

The Federal Highway Administration's (FHWA) one and half day workshop, Fundamentals of Freight Data is intended for freight transportation professionals at state Departments of Transportation (DOT) and Metropolitan Planning Organizations (MPO), including planners and policy- and decision-makers who need information on freight data for a variety of uses. These freight data uses include regional profiles, Long-Range Transportation Plans (LRTP), State Freight Plans, State and MPO Transportation Improvement Plans (STIP/TIP), freight performance measures, forecasting, studies facility/corridor planning and strategic policy planning, among others.

The workshop will provide participants with a broad knowledge of freight data sources. As well as the ability to utilize freight data for transportation planning program/project development and policy analysis.

It is important to understand the topic of freight for many reasons, including: policy and strategic planning, local planning, project development, operations and performance management. Understanding and being able to use freight data is not an easy endeavor, yet it is one that is critical to master for many transportation planning projects. This workshop provides broad knowledge of the freight data sources used in the primary freight activities needed for transportation planning and effective policy decision making.

This workshop is not meant to be a comprehensive and in-depth examination of freight data and its applications. It will present the characteristics and key limitations of existing data, methods for collecting local/state data, and overall use of freight data.

Outcomes

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

- Understand needs and uses for freight data
- Identify the major sources and types of freight data
- Review noteworthy applications of freight data
- Determine freight data needs for your organization

Target Audience

The target audience for this training includes those individuals directly involved in freight activities, including: State DOT transportation and freight planners, city and county planners who deal with freight issues, MPO staff, public sector transportation and freight planners, economic development analysts, and FHWA employees. It is expected that attendees will already have a basic freight transportation foundation before attending this workshop. Participants should be familiar with general freight terminology, modes and trends before participating in this workshop. The NHI course, Integrating Freight in the Transportation Planning Process (139006) which is offered online or equivalent experience can provide the fundamentals necessary to prepare for this workshop.

Training Level: Basic

Fee: 2021: $375 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-141029

Course Title

Basic Relocation under the Uniform Act

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 Policies 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 displaced as a result of 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 of the Uniform Act and implementing regulations
- Describe the Uniform Act planning requirements
- Describe an agency's advisory services responsibilities
- Describe the elements of comparable replacement housing
- Calculate replacement housing payments for owners and tenants
- Explain replacement housing of last resort
- Compute residential and non-residential moving costs

Target Audience

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

Training Level: Basic

Fee: 2021: $430 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-141030

Course Title

Advanced Relocation under the Uniform Act

This training goes beyond the basic functional areas of relocation assistance and concentrates on areas of specific concern, such as mortgage differential payments, settlement costs, and partial acquisitions. Other topics, including comparability, last resort housing, multiple use, tenants, and nonresidential moves -- including businesses, are also covered. The training is designed to allow flexibility in adjusting course materials to meet the needs of the requesting agency.

Prerequisites: Completion of FHWA-NHI-141029 Basic Relocation and the Web-based training FHWA-NHI-141045 Real Estate Acquisition Under the Uniform Act: An Overview or approximately one year of experience working in the relocation program.

Outcomes

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

- Explain the principles that govern relocation provisions of the Uniform Relocation and Real Property Acquisition Policies 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 advisory assistance plans for difficult relocation areas
- Determine eligibility for certain relocation payments in difficult relocation cases
- Determine challenging issues when calculating complex nonresidential moving costs
- Calculate complex nonresidential moving costs

Target Audience

Federal, State, and local public agencies, FHWA personnel, right-of-way contractors, and other interested persons.

Training Level: Intermediate

Fee: 2021: $425 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-141031

Course Title

Business Relocation under the Uniform Act

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, substitute personal property payments, reestablishment expenses, and fixed payment in lieu of (ILO) payments. A module about the move process includes the move option available to a business, as well as the need for an inventory and move specifications.

Outcomes

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

- Provide advisory services for businesses
- Determine moving and related expense payments for businesses, farms and non-profit organizations
- Determine reestablishment expenses for small businesses
- Determine fixed payments for businesses, farms and non-profit organizations
- Evaluate the move process for businesses
- Determine how to move hazardous materials for businesses

Target Audience

State departments of transportation, local public agencies, FHWA personnel, and other Federal agency personnel. Suggest that participants have at least two years general relocation experience.

Training Level: Accomplished

Fee: 2021: $425 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 35

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-141043

Course Title

Appraisal for Federal-Aid Highway Programs

Please note that this training has been approved for Continuing Education Credits in several states by their respective appraisal licensing boards. As part of our training delivery, we will assist in preparing the documents required for course approval in your state. However, any fees associated with the application process are the responsibility of the requestor. Additionally, this course counts toward IRWA's SR/WA designation and R/W-AC re-certification. Participants should bring an HP 12c calculator for the classroom exercises.

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act) and its implementing regulations require the uniform and equitable treatment of persons displaced from their homes, businesses, or farms and establish uniform and equitable land acquisition policies for public programs using Federal funds. Title III of the Uniform Act addresses real property acquisition policies, including appraisal requirements.

The training is designed to help transportation professionals understand and conform with the appraisal requirements of the Uniform Act and 49 CFR Part 24. It is intended for experienced appraisal personnel and focuses on preparing, presenting, and understanding appraisal reports in conformance with the Uniform Act. In addition, the training addresses the appraiser's role in the overall project development process and how an appraiser's expertise can assist in completing a transportation project effectively and efficiently.

Outcomes

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

- Explain basic eminent domain principles
- Apply Federal-aid appraisal requirements
- Use partial acquisition appraisal techniques
- Explain the use and application of the waiver valuation process
- Apply appraisal techniques to unique situations within highway programs
- Describe the role of the appraiser in the land acquisition process

Target Audience

State departments of transportation (DOTs), local public agencies (LPAs), city and county attorneys, consultants; FHWA and other Federal agency staff involved in the appraisal process. Prerequisite: A course in the basic practices and principles of real estate appraisal (e.g. International Right of Way Association course 400, the Appraisal Institute's courses 110 and 120) or a college-level course in appraisal.

Training Level: Intermediate

Fee: 2021: $230 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 35

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-141044

Course Title

Appraisal Review for Federal-Aid Highway Programs

Please note that this training has been approved for Continuing Education Credits in several States by their respective appraisal licensing boards. As part of our course delivery, we will assist in preparing the documents required for course approval in your State. However, any fees associated with the application process are the responsibility of the requestor. Additionally, this training counts toward IRWA's SR/WA designation and R/W-AC re-certification. Participants should bring an HP 12c calculator for the classroom exercises.

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as amended (Uniform Act) ensures that persons whose real property is acquired or who are displaced as a result of a Federal or Federally-assisted project are treated fairly and consistently. This course focuses on the application of appraisal review principles and how they fit within the Uniform Act and 49 CFR Part 24 as related to transportation project development. Focusing on larger parcel, uneconomic remnants, cost to cure, and severance damages, the course discusses the qualifications, roles, and responsibilities of the review appraiser from pre- to post-appraisal activities.

Outcomes

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

- Explain basic eminent domain principles
- Apply Federal-Aid appraisal review requirements
- Apply appraisal review techniques to unique situations within Federal-Aid highway programs
- Describe the role of the review appraiser in the land acquisition process

Target Audience

State departments of transportation (DOTs), local public agencies (LPAs), city and county attorneys, consultants; FHWA and other Federal agency staff involved in the appraisal process. Prerequisite: A course in the basic practices and principles of real estate appraisal (e.g. International Right of Way Association course 400, the Appraisal Institute's courses 110 and 120) or a college-level course in appraisal.

Training Level: Accomplished

Fee: 2021: $160 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 35

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-141050

Course Title

Introduction to Federal-Aid Right of Way Requirements for Local Public Agencies

This two-day introductory course provides Local Public Agencies (LPAs) with a working knowledge of Federal requirements and procedures for acquiring property for Federally-assisted transportation projects. The course focuses on applying the Uniform Act and related Federal Regulations to specific situations and issues. Designed as a hands-on, highly interactive learning experience, instructors guide participants through a series of right-of-way (ROW) problem solving exercises and large group discussions. We encourage those with limited ROW knowledge to register for the free NHI 141045 web-based training course in advance of this instructor-led course session.

Outcomes

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

- Explain the legal basis for land acquisition by a governmental entity
- Assess the impact of a roadway improvement as it relates to the Uniform Act
- Sequence the right-of-way process (ROW) within the overall project development process
- Determine the appropriate valuation process for ROW acquisition
- Apply the Uniform Act requirements for ROW acquisition
- Apply the Uniform Act requirements to relocation assistance
- Determine the agency's responsibilities for managing real property

Target Audience

Those within local public agencies who are responsible for acquiring right-of-way for federally-funded projects, as well as those responsible for oversight of LPAs, in addition to FHWA personnel, consultants, Federal and State staff and other interested parties.

Training Level: Basic

Fee: 2021: $215 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 35

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-141052

Course Title

Successful Acquisition under the Uniform Act

This course will provide the knowledge and skills that a public agency negotiator needs to complete acquisitions that comply with the Uniform Act.

Outcomes

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

- Explain the legal basis for land acquisition by a governmental entity
- Identify the pre-acquisition materials necessary for property acquisition
- Explain the basics of the valuation process
- Describe the acquisition process under the Uniform Act
- Formulate effective negotiation skills, using best practices
- Discuss legal aspects of real property acquisition
- Discuss the role and limitations of consultants in the acquisition process

Target Audience

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

Training Level: Basic

Fee: 2021: $215 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-141053

New Training WBT

Course Title

Foundations of Federal-Aid Highway Program Appraisals

Foundations of Federal-Aid Highway Program Appraisals is a 7-hour Web-based Training course offered by NHI, the authoritative source in transportation training.

To appraise real property for acquisition for Federal-aid highway programs, it is essential for appraisers to understand how to incorporate Uniform Act and 49 CFR Part 24 appraisal requirements into classical appraisal principles.

This course helps improve conformity with appraisal requirements of the Uniform Act and implementing requirements of 49 CFR Part 24.

Learners explore the appraiser's role in the overall project development process and how an appraiser's expertise can assist in completing a transportation project effectively and efficiently.

At the end of each course module, learners will complete a multiple-choice module assessment to measure achievement of the course learning outcomes.

Outcomes

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

- Identify the basic principles of eminent domain.
- Differentiate between eminent domain and police power.
- Differentiate between just compensation and fair market value.
- Identify Federal-aid appraisal requirements of the Uniform Act and 24 CFR Part 24 related to highway appraisals.
- Identify additional steps required for an appraisal of a partial taking versus a full taking.
- Identify appraisal techniques related to partial acquisition during a right-of-way appraisal.
- Differentiate between the Federal Rule and the State Rule for estimating the fair market value of partial acquisition.
- Identify appraisal techniques related to acquisition of easements and other real property interests.
- Apply appraisal techniques to problems unique to Federal-aid highway programs.
- Identify when to use the waiver valuation.
- Identify when the Federal-aid appraisal requirements from 49 CFR Part 24 related to the conflict of interest regulation should be applied.
- Identify the role of the appraiser in the land acquisition process prior to the appraisal.
- Identify Federal-aid appraisal requirements of 49 CFR Part 24 related to an appraisal scope of work.
- Identify the role of the appraiser in the land acquisition process after the appraisal.
- Identify an appraiser's role during the legal process.

Target Audience

The target audience for this WBT course includes representatives from Federal Uniform Act Agencies, State Departments of Transportation (DOTs), Local Public Agencies (LPAs), consultant/fee appraisers, and FHWA staff involved with the appraisal process that have attended a basic practices and principles of real estate appraisal course.

Training Level: Intermediate

Fee: 2021: $0 Per Person; 2022: N/A

Length: 7 HOURS (CEU: .7 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134063F

WCT

Course Title

Maintenance Leadership Academy - Module F Work Zone Traffic Safety (VIRTUAL DELIVERY-EXAM ONLY)

The Maintenance Leadership Academy is a training program for individuals who hold positions as district, county, and State maintenance supervisors. It is designed to help participants develop practical decision-making skills related to the various processes, methods, and materials that are applied to maintain their organizations' bridge and highway systems.

The Traffic and Work Zone Safety module focuses on the skills needed to provide safe work zones and traffic services for all road users and work crews. Since most agencies conduct their own traffic control training, this module provides a forum for comparing national versus state practice. It also emphasizes lane closure strategies and the need to minimize the impact work zones have on the traveling public. In addition to work zone traffic control, the module addresses permanent signs and markings; barriers, guardrails, crash cushions, and end treatments; and incident management.

The goal of this module is for you to be able to provide traffic services and establish work zones that comply with agency guidance under normal traffic conditions and traffic incidents. Achieving this goal minimizes risks to workers, emergency responders, and the travelling public.

Outcomes

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

- Explain how complying with work zone traffic control requirements mitigates risks and supports a culture of safety.
- Using a temporary traffic control scenario, select the appropriate traffic control application and devices to use.
- Using an example, determine if signs and markings comply with the Manual on Uniform Traffic Control Devices (MUTCD).
- Using an example, and your agency's standards and policies, decide whether replacing or upgrading barriers is appropriate.
- Explain how successful maintenance practices use effective traffic incident management and quick clearance goals.

Target Audience

The target audience for the Maintenance Leadership Academy is individuals who hold positions as State, district, and county maintenance supervisors involved with the operations of running a statewide, regional, or county operation and need the skills and knowledge associated with asset management.Assumed Training CompetenciesParticipants should understand and demonstrate specialized skills in a variety of maintenance tasks of the intermediate level and perform specialized tasks in limited areas or broad-based tasks with little or no daily supervision.

Training Level: Accomplished

Fee: 2021: $0 Per Person; 2022: N/A

Length: 8 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142005

Course Title

NEPA and the Transportation Decisionmaking Process

This comprehensive, three-day, instructor-led course presents the historical background and evolution of the National Environmental Policy Act (NEPA) and related environmental laws. It discusses their influence on FHWA's policies and procedures for the transportation project development and decisionmaking process. The course examines how the framework of laws, regulations, policies, and guidance integrate social, environmental, and economic factors in making transportation project decisions that are in the best overall public interest.

The course emphasizes the Council on Environmental Quality and FHWA's regulations; FHWA policy and guidance for implementing NEPA, Section 4(f) of the Department of Transportation Act, and related environmental requirements. It discusses the NEPA Essential Elements in detail, including purpose and need, alternatives, impacts, mitigation, public involvement, interagency coordination and documentation. The course presents the requirements and considerations used to decide whether to prepare an environmental impact statement, an environmental assessment or determination that a project is categorically excluded from either. While this is not a course in environmental document writing, it presents the key principles for preparing high quality environmental documents, including the core principles from the FHWA/AASHTO/American Council of Engineering Companies Improving the Quality of Environmental Documents and the FHWA IQED initiative. The course also includes group exercises that allow participants to apply the course concepts to a realistic project scenario involving several transportation, social and environmental considerations.

Outcomes

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

- Describe the NEPA principles in relation to transportation project development.
- Describe how the NEPA umbrella concept influences the transportation decisionmaking process.
- Explain the roles and responsibilities of participants in the NEPA process.
- Describe the importance of a reasoned, collaborative process when developing and evaluating alternatives.
- Discuss 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 the documentation requirements of the NEPA process.
- Discuss environmental streamlining, stewardship, and leadership in managing the NEPA process.

Target Audience

The target audience for this course includes FHWA, State departments of transportation (including consultants acting on behalf of the State), Federal and State environmental resource agencies, local governments, and metropolitan planning organizations who participate in the transportation decisionmaking process. We strongly encourage the sponsoring organization to invite a mix of planning and environmental staff from these agencies.

Training Level: Intermediate

Fee: 2021: $370 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@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. It involves creative thinking as well as the willingness and ability to interact openly and sensitively to the public's preferred forms of communication and participation. Public involvement is about reaching out to and involving the public in transportation decisionmaking. The public should have a role in every phase of decisionmaking, including the design of the participation plan itself. Successful public involvement addresses the public's procedural, psychological, and substantive needs while gathering useful information. 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:

- Describe U.S. DOT transportation decisionmaking processes, including those that trigger the National Environmental Policy Act
- Describe the relationship between public involvement and decisionmaking
- Develop a public involvement plan with stakeholder assistance that includes attention to non-traditional populations as an evaluation component
- Describe interest-based problem solving and the values that underlie it
- Identify ways to enhance public involvement plans

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.

Training Level: Basic

Fee: 2021: $425 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142045

Course Title

Pedestrian Facility Design

To emphasize the importance of planning for pedestrians, the course focuses on case examples involving corridor and 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. This training was developed to provide information and application opportunities to 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 by people with disabilities, and accessibility improvements need to be implemented for existing facilities.

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
- 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, disability and orientation specialists, transportation planners, architects, landscape architects, as well as decisionmakers at the project planning level.

Training Level: Intermediate

Fee: 2021: $190 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: .9 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142046

Course Title

Bicycle Facility Design

This training will assist planners and designers in learning how to apply the existing standards and how to deal with other technical issues involved. 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 bicycling (and shared use) facilities being planned and built. Although there are no Federal design standards for bicycle facilities, the AASHTO Guide for the Development of Bicycle Facilities, or a modification thereof, serves as a design guide. As with most guides, the AASHTO guide cannot address every possible scenario so designers often need to apply engineering judgment where specific information is not provided. The training fee includes a copy of the AASHTO Guide for the Development of Bicycle Facilities.

Outcomes

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

- List the needs of bicyclists as transportation 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 decisionmakers at the project planning level.

Training Level: Accomplished

Fee: 2021: $220 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: 1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142047

Course Title

Water Quality Management of Highway Runoff

In reaction to the impact of human activity on water quality, the Clean Water Act was passed in 1972 in order to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The act regulates discharges to U.S. waters through permits issued under the National Pollutant Discharge Elimination System permitting program and places requirements on State transportation agencies for managing runoff water quality. Understanding the legal responsibilities, 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 this course is to provide a basic understanding of water quality parameters, processes, requirements, and best management practices (BMPs) in order to provide the transportation community with guidance on how to mitigate impacts and protect water quality. The 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 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 State department of transportation staff who negotiate permit conditions with the appropriate State agency; design engineers who must be cognizant of permit requirements; construction personnel who implement the highway designs; inspectors who ensure that water quality management features (BMPs) are functioning as designed; biologists who identify habitat for wildlife and potential ecosystem impacts; landscape architects and botanists who ensure that vegetation is preserved to the maximum extent practicable and that appropriate vegetation is used to provide water quality benefits after construction; and environmental scientists who monitor and evaluate water quality.

Training Level: Intermediate

Fee: 2021: $355 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142048

Course Title

Managing Road Impacts on Stream Ecosystems: An Interdisciplinary Approach

Managing Road Impacts on Stream Ecosystems: An Interdisciplinary Approach is a three-day course that is intended to introduce and discuss the basic concepts related to the impacts that roadways have on streams and stream ecosystems. The course will be structured to first address the ecological and physical characteristics of stream ecosystems, discuss the impacts that roadways can have on those ecosystems, and then turn to tools that the practitioner can use to help avoid and mitigate those effects. Through the use of Case Examples, discussion, and other application techniques, the participants will be afforded an opportunity to use critical thinking to identify solutions and preventative measures related to the impacts of roads on streams and their riparian communities.

Outcomes

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

- Evaluate how roads interact with and impact stream ecosystems
- List major State and Federal Requirements that apply to roadway impacts on stream ecosystems:
- Identify relevant stakeholders
- Involve stakeholders in an environmental review process
- Describe the benefits of collaboration among disciplines in assessing and mitigating road impacts to stream ecosystems
- Describe the characteristics and functions of a stream ecosystem
- Identify stream restoration tools and techniques
- Develop monitoring protocols
- Identify risk and uncertainty associated with treatment approaches in fluvial environments

Target Audience

This course has been developed for FHWA, State Department of Transportation (DOTs), Federal and State environmental resource agency staff and consultants involved in the design, construction, operation, and maintenance of roadway facilities. The course is intended to address the issues of and be of benefit to both the engineers and the environmental specialists involved in highway design, planning, and maintenance. Participants should have some general knowledge of stream dynamics and ecological considerations. However, an extensive background is neither required nor assumed.

Training Level: Intermediate

Fee: 2021: $440 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142049

Course Title

Beyond Compliance: Historic Preservation in Transportation Project Development

Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of their undertakings on properties listed in, or eligible for listing in the National Register of Historic Places. This is accomplished through consultation with resource agencies, stakeholders, tribes, Native Hawaiian organizations, and the public. The regulation implementing Section 106 strongly encourages close coordination between the Section 106 process and National Environmental Policy Act (NEPA) requirements. The regulation also gives agencies great flexibility in how they fulfill their Section 106 responsibilities.

This training is designed to help transportation professionals meet the requirements of Section 106 and take advantage of the flexibility offered by the Section 106 regulation. The training focuses on the fundamentals of Section 106, placing it in context with other environmental requirements, including NEPA and Section 4(f) of the Department of Transportation Act. The course presents a number of innovative and programmatic approaches to Section 106 compliance that streamline and enhance environmental reviews and project delivery. The training emphasizes practical, real-world approaches for completing the Section 106 process, with the goal of balancing historic preservation concerns with the needs of transportation projects.

Outcomes

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

- Identify key historic preservation laws and other authorities
- Describe the Section 106 process
- Define the roles and responsibilities of all parties in the Section 106 process
- Describe the NEPA transportation decisionmaking 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 in or affected by the Federal-Aid Highway program, including staff of State DOTs, MPOs, FHWA headquarters and field offices, city and county governments, tribal governments, consultants, State and tribal Historical Preservation Offices (SHPO/THPO), and other Federal and State resource agencies that deal with transportation issues.

Training Level: Basic

Fee: 2021: $420 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142054

Course Title

Design and Implementation of Erosion and Sediment Control

This training is the result of a joint effort between the Federal Highway Administration (FHWA) and the U.S. Environmental Protection Agency (EPA), and 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. The agencies also are committed to ensuring that regulatory issues are addressed accurately and uniformly. Each discipline involved in a highway construction project has a different set of priorities. Reflecting the National Highway Institute's (NHI) commitment to learner-centered training, the course offers participants opportunities for discussion and joint problem solving, enabling participants to 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 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 failures
- Link Federal and State environmental regulations to the components of the ESC plan

Target Audience

The training targets Federal, State, and local highway design, construction, inspection, and maintenance staff. In addition, environmental agency representatives, 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 control erosion and sedimentation.

Training Level: Intermediate

Fee: 2021: $315 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142055

Course Title

Advanced Seminar on Transportation Project Development: Navigating the NEPA Maze

Building upon demonstrated knowledge and understanding of the NEPA project development process, this advanced training provides practical tools and approaches to successfully resolve complex environmental issues and challenges. Designed in seminar format, this training is highly interactive and guides participants through the NEPA decisionmaking process, pointing out potential pitfalls and providing the skills and knowledge to apply critical thinking to reach defensible decisions.

Outcomes

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

- Manage and deliver projects and programs more effectively
- Apply tools and techniques to their jobs
- Apply principles of environmental stewardship and streamlining to complex projects
- Employ integrated coordination of related laws and regulations, as well as coordination among all stakeholders
- Identify strategies to manage controversial projects
- Formulate solutions to complex environmental challenges
- Apply lessons learned from relevant case law
- Build a defensible administrative record
- Identify solutions to emerging issues

Target Audience

Experienced environmental practitioners and project development managers (i.e. planning, design, legal, and technical specialists) involved in the NEPA and transportation decisionmaking process. We encourage a mix of experienced staff from FHWA, State DOTs, resource and permitting agencies, and local governments, as well as consultants.

Training Level: Accomplished

Fee: 2021: $385 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142060

Course Title

Practical Conflict Management Skills for Environmental Issues

This course is designed to teach basic conflict management skills, including interest-based negotiation, communication, and facilitation skills, as well as leadership behaviors and to examine opportunities for applying these collaborative skills in the context of transportation decisionmaking where there are environmental issues. The purpose of the course is to help transportation and environmental agencies, Tribes, and stakeholders bridge their different agency mandates and diverse interests and offers opportunities for participants to share their varied perspectives on important issues and resources. The course models how to participate in meaningful discussions and demonstrates how to maintain a positive and constructive dialogue, arrive at integrative decisions, make good use of limited time and personnel resources, achieve streamlined processes, and make decisions that serve the public.

Outcomes

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

- Use interpersonal skills to engage productively with individuals within their agency
- Use interpersonal skills to work productively with other agencies, organizations, Tribes, and the general public
- Analyze agency roles and decisionmaking processes with respect to potential conflict
- Apply conflict management strategies to planning, project development, and project implementation
- Apply conflict management strategies to increase the effectiveness of inter-agency and intra-agency working relationships and programmatic initiatives

Target Audience

This training program is intended for Federal, State, Metropolitan Planning Organization, Local Public Agency, and Tribal representatives who are involved in Federally-funded transportation projects. The target audience may include environmental protection specialists; transportation planners, project managers, design engineers, and transportation/environmental liaisons; legal counsel, and Federal, Tribal, and State resource agency staff who review and implement transportation projects and are involved in transportation planning as well as environmental consultants and non-governmental organizational representatives. Participants should have a working knowledge of the National Environmental Protection Act (NEPA) and the transportation planning and project development processes.

Training Level: Basic

Fee: 2021: $445 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.9 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142069

WBT

Course Title

Air Quality Planning: SIP and TCM Requirements and Policies - WEB-BASED

This course covers the different types of SIPs and key CAA SIP requirements general to all SIPs and specific to ozone, CO and PM SIPs; discusses how the EPA processes SIPs; explores the key features of EPA SIP policies and how they differ from CAA requirements; and explains RACM and how it applies to TCMs.

This is the second in a future series of air quality Web-based trainings (WBTs):

142068: Clear Air Act Overview

142069: SIP and TCM Requirements and Policies

142070: SIP Development Process

142071: Transportation Conformity

Outcomes

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

- Define SIP
- List different types of SIPs and their purposes
- Identify SIP requirements in Title I of the Clean Air Act
- Describe TCM requirements
- Describe what is meant by Reasonably Available Control Measure, or RACM, and how this applies to TCMs

Target Audience

The target audience for the Air Quality Series is transportation and air quality planners and engineers from State and local departments of transportation (DOT), metropolitan planning organizations (MPO), transit agencies, Federal agencies (Federal Highway Administration, Federal Transit Administration, U.S. Environmental Protection Agency, U.S. 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.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142073

Course Title

Applying Section 4(f): Putting Policy into Practice

NHI 142073 Applying Section 4(f): Putting Policy into Practice is a 2-day interactive course that explains the history, purpose, and application of Section 4(f) within the context of the transportation project development process. Lessons include identifying Section 4(f) properties; explanations on types of use; an overview of Section 4(f) approval options; requirements for De Minimis determinations, individual 4(f) evaluations, and nationwide programmatic evaluations; selecting the appropriate approval option; and the relationship of Section 4(f) with NEPA and other environment laws and regulations.

Outcomes

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

- · Explain the history and purpose of Section 4(f)
- · Identify the agencies subject to Section 4(f) compliance
- · Describe the applicability criteria for Section 4(f) properties
- · Describe the relationship among Section 4(f), NEPA project development, and other environmental requirements
- · Differentiate the roles and responsibilities of participants in the Section 4(f) process
- · Apply the Section 4(f) decision-making process within transportation project development
- · Describe what is necessary to document Section 4(f) compliance

Target Audience

State Departments of TransportationFHWA Headquarters and Field staff, including Federal LandsConsultantsOfficials with jurisdiction of affected Section 4(f) resources, e.g. State Historic Preservation Offices, Tribal Historic Preservation Offices, park owners, etc.Other Federal agencies involved with environmental resourcesLocal agencies, including project sponsors and transit agenciesPublic/Special interest groups or Non-Governmental Organizations (NGOs) Transportation Planning PartnersTribes

Training Level: Basic

Fee: 2021: $270 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142075

Course Title

Environmental Justice Analysis

Environmental Justice Analysis is a 2-day Instructor-led Training (ILT) course offered by NHI, the authoritative source in transportation training. The goal of this course is to increase knowledge and skills pertaining to the analysis associated with identifying and addressing disproportionately high and adverse effects of transportation programs, plans, projects, and activities on minority populations and low-income populations. This course provides participants with the information, tools, and data resources to perform EJ analysis activities to help ensure equitable transportation decision making and compliance with transportation planning regulations and NEPA. By accurately identifying communities, practitioners can better address potential adverse impacts to EJ communities and populations, and ensure they are meaningfully involved early and continually throughout the transportation decision-making process. This course provides participants with the procedural concepts, resources, and information to identify EJ populations; recognize potentially adverse impacts and/or benefits; develop and evaluate mitigation measures to address disproportionately high and adverse effects; and approaches for documenting findings and process. This course also provides participants with analysis tools and techniques to identify and address disproportionately high and adverse effects on minority populations and low-income populations during transportation planning and project development.

Throughout the course, participants will have opportunities to use scenarios and data to do the following: estimate spatial scope and magnitude of potential impacts; identify benefits of proposed actions; determine equitable distribution of benefits and burdens; and determine how to communicate findings and document methodology, results, and findings.

Last content update: Spring 2019

Outcomes

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

- Identify the basis and importance of EJ analysis to improving decision-making processes.
- Describe how to perform an EJ analysis during transportation planning and project development using the EJ analysis framework and available data sources, tools, and strategies.
- Develop EJ analysis findings that ensure equitable transportation decision-making during transportation planning.
- Develop EJ analysis findings in the context of an environmental review to ensure compliance with EJ Executive Order 12898, U.S.DOT and FHWA EJ orders, and all other requirements relevant to the NEPA process.
- Identify emerging issues that may impact the analysis of EJ populations as part of transportation decision-making.

Target Audience

The target audience for this instructor-led training course includes transportation practitioners (entry-level, mid-level, and senior-level) who are employed at a range of organizations, including State Departments of Transportation (State DOTs), Metropolitan Planning Organizations (MPOs), local public agencies, and consulting firms. Participants should have at least a college-level education or higher and may hold the following professional roles: data analyst, planner, engineer, project development specialist, environmental specialist, civil rights specialist, consultant, or any other job function that may require knowledge of Environmental Justice (EJ) and transportation. Lastly, participants should have a basic understanding of EJ and transportation planning and project development.

Training Level: Intermediate

Fee: 2021: $700 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142077

WBT

Course Title

Basics of Public Involvement in Transportation Decision Making

Basics of Public Involvement in Transportation Decision Making is a 4-hour Web-based Training course offered by NHI, the authoritative source in transportation training.

Effectively engaging the public in transportation decisions can help build support for the project, which can promote cost savings by reducing project delays and improving the project delivery process. NHI-142077 Basics of Public Involvement in Transportation Decision Making provides transportation practitioners with the knowledge and tools needed to better engage the public in transportation decisions as well as meet Federal requirements for public involvement.

In this course, participants will discover the importance of public involvement in transportation decision making and become familiar with the broad range of strategies and techniques transportation practitioners can use to identify and engage the public in a meaningful way.

This course explores the relationship between public involvement and transportation decision making. It presents participants with an overview of Federal public involvement regulations and directives for transportation planning, programming, and project development, as well as a framework for engaging the public using a variety of approaches.

Outcomes

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

- Identify the importance of public involvement
- Recall the background of public involvement
- Recall the requirements of public involvement
- Recognize the purpose and importance of participation and public engagement during the planning and NEPA processes
- Recall which members of the public are potential participants in the transportation decision-making process
- Choose how to tailor public involvement communication to engage a variety of constituents
- Identify effective public involvement techniques appropriate to a variety of situations
- Identify strategies for promoting participant interaction
- Identify how to solicit and use public feedback to inform transportation decision making
- Select evaluation strategies and methods that are suitable for determining the effectiveness of a public engagement plan
- Identify emerging trends and innovative approaches to public involvement

Target Audience

The target audience for this WBT course includes transportation practitioners from Federal, State, regional, and local agencies, particularly data analysts, planners, engineers, project development specialists, environmental specialists, civil rights specialists, consultants, and other professionals whose job function may require knowledge of public involvement to support transportation decision making.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 4 HOURS (CEU: .4 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142078

New Training

Course Title

Planning and Environment Linkages (PEL)

Planning and Environment Linkages (PEL) is a 2-day instructor-led training course offered by NHI, the authoritative source in transportation training.

Integrating PEL into the transportation planning and environment review processes promotes more informed decision-making and accelerated project delivery. Furthermore, several policies and authorities encourage the implementation of PEL.

The course emphasizes the following benefits of PEL: accelerate project delivery, development of purpose and need early in the planning process, elimination of unreasonable alternatives during the planning process, early and improved coordination with resource agencies and stakeholders, improved program and informed project decisions, less duplication and improve documentation, promotion of efficient and cost-effective solutions, earlier consideration of potential environmental effects, and enhanced consultation, coordination, and public involvement.

As a participant, you will learn and discuss why PEL has been a successful practice, the benefits of PEL, the points of interface between planning and environmental review processes, PEL approaches using authorities associated with planning and environmental review, informing, using, or adopting planning information in the environmental review process, general considerations for using any PEL approach, the processes for developing purpose and need during planning that can be used in NEPA, the process for screening and eliminating unreasonable alternatives during planning, the role of Consultation, Coordination, and Public Involvement in PEL, documentation in a PEL approach, and action strategies to advance PEL in your State or region.

Outcomes

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

- Identify why PEL has been a successful practice for transportation practitioners.
- Describe how planning and environment review processes interface.
- Summarize how specific authorities and their requirements influence how States and MPOs approach PEL.
- Identify different approaches for PEL, their related flexibilities and how to transition this information into NEPA.
- Summarize how applying PEL in planning supports development of purpose and need for the environmental review process.
- Summarize how to use PEL in screening and eliminating unreasonable alternatives during planning.
- Describe how public involvement supports PEL.
- Summarize how documentation is essential to a PEL approach.
- Identify strategies to implement PEL and accelerate project delivery.

Target Audience

The target audience includes transportation practitioners employed at State Departments of Transportation (State DOTs), Resource Agencies, Metropolitan Planning Organizations (MPOs), and local public agencies, as well as the Federal Highway Administration (FHWA), Federal Transit Administration (FTA) and regulatory agencies with a role in NEPA permitting, approving, or mitigating potential impacts from transportation projects.Typical course participants have a college degree and work as an analyst, planner, project development specialist, environmental specialist, public involvement specialist, civil rights specialist, consultant, or any other position requiring knowledge of PEL.

TRAINING LEVEL: Intermediate

FEE: 2021: $300 Per Person; 2022: N/A

LENGTH: 2 DAYS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142078A

New Training

Course Title

Planning and Environment Linkages (PEL), without Implement PEL Activity

This course is a slightly shorter version of the 2-day instructor-led course, NHI-142078 Planning and Environment Linkages (PEL). Both courses are offered by NHI, the authoritative source in transportation training, and both focus on the integration of PEL into the transportation planning and environmental review process. However, NHI-142078 includes an additional activity to help practitioners identify strategies implement PEL in their State or region which is omitted in this course.

Integrating PEL into the transportation planning and environmental review process promotes more informed decision-making and accelerated project delivery. Furthermore, several policies and authorities encourage the implementation of PEL.

The course emphasizes the following benefits of PEL: accelerate project delivery, development of purpose and need early in the planning process, elimination of unreasonable alternatives during the planning process, early and improved coordination with resource agencies and stakeholders, improved program and informed project decisions, less duplication and improve documentation, promotion of efficient and cost-effective solutions, earlier consideration of potential environmental effects, and enhanced consultation, coordination, and public involvement.

As a participant you will learn and discuss why PEL has been a successful practice; the benefits of PEL; the points of interface between planning and environmental review processes; PEL approaches using authorities associated with planning and environmental review; informing, using, or adopting planning information in the environmental review process; general considerations for using any PEL approach; the processes for developing purpose and need during planning that can be used in NEPA; the process for screening and eliminating unreasonable alternatives during planning; the role of consultation, coordination, and public involvement in PEL; and documentation in a PEL approach.

Outcomes

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

- Identify why PEL has been a successful practice for transportation practitioners.
- Describe how planning and environmental review processes interface.
- Summarize how specific authorities and their requirements influence how States and MPOs approach PEL.
- Identify different approaches for PEL, their related flexibilities and how to transition this information into NEPA.
- Summarize how applying PEL in planning supports development of purpose and need for the environmental review process.
- Summarize how to use PEL in screening and eliminating unreasonable alternatives during planning.
- Describe how public involvement supports PEL.
- Summarize how documentation is essential to a PEL approach.

Target Audience

The target audience includes transportation practitioners employed at State Departments of Transportation (State DOTs), Resource Agencies, Metropolitan Planning Organizations (MPOs), and local public agencies, as well as the Federal Highway Administration (FHWA), Federal Transit Administration (FTA) and regulatory agencies with a role in NEPA permitting, approving, or mitigating potential impacts from transportation projects.Typical course participants have a college degree and work as an analyst, planner, project development specialist, environmental specialist, public involvement specialist, civil rights specialist, consultant, or any other position requiring knowledge of PEL.

TRAINING LEVEL: Intermediate

FEE: 2021: $300 Per Person; 2022: N/A

LENGTH: 16 HOURS (CEU: 1 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142078V

Course Title

Planning and Environment Linkages (PEL) (VIRTUAL DELIVERY)

Planning and Environment Linkages (PEL) is a 2-day instructor-led training course offered by NHI, the authoritative source in transportation training.

Integrating PEL into the transportation planning and environment review processes promotes more informed decision-making and accelerated project delivery. Furthermore, several policies and authorities encourage the implementation of PEL.

The course emphasizes the following benefits of PEL: accelerate project delivery, development of purpose and need early in the planning process, elimination of unreasonable alternatives during the planning process, early and improved coordination with resource agencies and stakeholders, improved program and informed project decisions, less duplication and improve documentation, promotion of efficient and cost-effective solutions, earlier consideration of potential environmental effects, and enhanced consultation, coordination, and public involvement.

As a participant, you will learn and discuss why PEL has been a successful practice, the benefits of PEL, the points of interface between planning and environmental review processes, PEL approaches using authorities associated with planning and environmental review, informing, using, or adopting planning information in the environmental review process, general considerations for using any PEL approach, the processes for developing purpose and need during planning that can be used in NEPA, the process for screening and eliminating unreasonable alternatives during planning, the role of Consultation, Coordination, and Public Involvement in PEL, documentation in a PEL approach, and action strategies to advance PEL in your State or region.

Outcomes

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

- Identify why PEL has been a successful practice for transportation practitioners.
- Describe how planning and environment review processes interface.
- Summarize how specific authorities and their requirements influence how States and MPOs approach PEL.
- Identify different approaches for PEL, their related flexibilities and how to transition this information into NEPA.
- Summarize how applying PEL in planning supports development of purpose and need for the environmental review process.
- Summarize how to use PEL in screening and eliminating unreasonable alternatives during planning.
- Describe how public involvement supports PEL.
- Summarize how documentation is essential to a PEL approach.
- Identify strategies to implement PEL and accelerate project delivery.

Target Audience

The target audience includes transportation practitioners employed at State Departments of Transportation (State DOTs), Resource Agencies, Metropolitan Planning Organizations (MPOs), and local public agencies, as well as the Federal Highway Administration (FHWA), Federal Transit Administration (FTA) and regulatory agencies with a role in NEPA permitting, approving, or mitigating potential impacts from transportation projects.Typical course participants have a college degree and work as an analyst, planner, project development specialist, environmental specialist, public involvement specialist, civil rights specialist, consultant, or any other position requiring knowledge of PEL.

TRAINING LEVEL: Intermediate

FEE: 2021: $300 Per Person; 2022: N/A

LENGTH: 12 HOURS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142080

New Training WBT

Course Title

Bicycle Facility Design

This course has been approved by the American Planning Association for 0.8 credits toward American Institute of Certified Planners (AICP) maintenance.

Bicycle Facility Design is a Web-based Training course offered by NHI, the authoritative source in transportation training.

To plan, design, and implement multimodal projects that improve safety for everyone, meet the needs of bicyclists of all ages and abilities, and contribute to the development of safe, comfortable, and connected bicycle networks, practitioners need a comprehensive understanding of bikeway design concepts and considerations.

This course helps practitioners deliver high-quality, safe, multimodal projects efficiently and effectively by delivering critical planning and design information.

This course covers principles of bicyclist safety, comfort, and connectivity, selection of bikeway type and associated design considerations, and national planning and design resources.

Outcomes

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

- Reference existing national planning and design resources that inform the planning, design, and implementation of multimodal transportation projects.
- Identify principles of bicyclist safety, comfort, and connectivity as part of the transportation planning process.
- Select the appropriate bikeway type based on, and in context of, various factors.
- Identify key design considerations for each facility type.

Target Audience

Primary audiences include practitioners at State Departments of Transportation (DOTs), local governments, and Metropolitan Planning Organizations that are planning, designing, and implementing transportation projects. This includes, but is not limited to, practitioners that focus on bicycle planning and design, for example State DOT Pedestrian and Bicycle Coordinators and FHWA Pedestrian and Bicycle Points of Contact.Secondary audiences include general transportation planners, advocates, and other stakeholders that are engaged in the transportation planning process and that need a baseline of bicycle design information to make informed decisions.

Training Level: Intermediate

Fee: 2021: $0 Per Person; 2022: N/A

Length: 8 HOURS (CEU: .8 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-151050

Course Title

Traffic Monitoring Programs: Guidance and Procedures

Participants are encouraged to bring their own copy of the FHWA Traffic Monitoring Guide 2016 and a calculator. The training room must be large enough to allow for group exercises, as well as room to display local traffic data collection equipment.

Additionally, the FHWA Office of Highway Policy Information offers a complimentary presentation of the Travel Monitoring Analysis System (TMAS) in conjunction with this training course. Please contact Steven Jessberger (Steven.Jessberger@dot.gov) for more information.

Developed in conjunction with the 5th revision of the FHWA Traffic Monitoring Guide (TMG 2016), this course replaces NHI 151018 and offers guidance on how to manage a successful traffic monitoring program. The training begins with an overview of Federal traffic monitoring regulations and a presentation of the host State's traffic monitoring program. Subsequent lessons introduce federal guidance, best practices, and recommended procedures for developing a data collection framework for traffic volume, speed, classification, weight, and non-motorized programs. The course also incorporates related traffic monitoring elements of transportation management and operations, traffic data needs and uses, traffic data submittal requirements, and relevant traffic monitoring research. The critical importance of quality data collection is emphasized to support project planning, programming, design, and maintenance decisions-- all of which affect the Nation's transportation network.

Outcomes

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

- Describe the appropriate use of the TMG
- Describe the TMG procedures for obtaining traffic monitoring data for Federal and State programs
- Explain how to apply traffic monitoring data to answer specific questions on Federal and State issues
- Explain traffic data reporting requirements
- Explain the value of cooperative and multi-disciplinary approaches to traffic monitoring programs

Target Audience

This Instructor-led training (ILT) course is designed for transportation professionals involved in traffic monitoring programs. Primarily intended for FHWA and State DOT staff, this training is also relevant to regional and local government staff, as well as others whose roles include development and/or oversight of traffic monitoring programs. There are no course pre-requisites or assumed pre-training competencies.

Training Level: Basic

Fee: 2021: $200 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138006A

Course Title

Transportation Performance Management for Safety - Essentials

This course will be delivered for free to Metropolitan Planning Organizations and State DOTs. The reduced price is being provided by the FHWA Office of Infrastructure. Prior to taking this course, participants are encouraged to take the Transportation Performance Management Overview for the MAP-21 and FAST Acts Instructor-led Training course NHI-138004, or have a foundational knowledge of transportation performance management. YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138006executivesummary/ A web-based version of this course is also available: NHI-138005.

'Transportation Performance Management (TPM) for Safety - Essentials' is a one-day Instructor-led Training course offered by NHI.

This course explains the safety performance measures and noteworthy practices necessary for States to comply with the MAP-21 and FAST Act requirements. The course recommends an evidence-based and data-driven methodology for setting safety targets and provides participants with an understanding of the safety data needed to meet the safety TPM requirements. The course helps improve the ability of States to coordinate target setting between the State Departments of Transportation (State DOTs) and the State Highway Safety Office (SHSO), as well as between the State DOT and the State's Metropolitan Planning Organizations (MPOs).

This Instructor-led Training course provides hands-on exercises with reviewing crash data trends and establishing safety targets based on planned safety programs, external factors, and countermeasure deployment. The course also includes a written assessment.

The course is organized into the following lessons:

+ Introduction

+ Safety Performance Management and Performance-Based Planning

+ Safety Performance Measures and Related Data

+ Performance-Based Safety Target Setting

+ Resource Allocation in Safety Performance Management

+ Safety Performance Reporting, Accountability, and Transparency

This course was condensed from a two-day version (#138006) in August of 2018.

To enroll in this Instructor-led Training course, select the 'View Sessions' button and select 'Add To Cart' next to your session choice. If there are no upcoming sessions, select 'Sign Up for Session Alerts.'

Outcomes

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

- Describe the planning process as it applies to safety
- List legislative and regulatory requirements
- List data sources for safety performance measures and targets
- Describe the coordination and collaboration processes for target setting between the State DOT and the SHSO and the State DOT and the MPOs in the State
- Describe the process and methods for setting evidence-based safety targets
- Identify considerations for making safety-related resource allocation decisions
- Define approaches for safety performance reporting, accountability, and transparency

Target Audience

The target audience for this Instructor-led Training course primarily includes State DOT safety specialists, planners, and others involved in the safety performance-based planning process; SHSO planners and decision makers; and MPO planners, safety experts, and decision makers. FHWA, the National Highway Traffic Safety Administration (NHTSA), Strategic Highway Safety Plan (SHSP) stakeholders, Rural Transportation Planning Organizations, and senior decision-

makers make up a secondary audience.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138007

Course Title

Performance-based Planning and Programming

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138007executivesummary/

'Performance-based Planning and Programming' is a two-day Instructor-led Training course offered by NHI, the authoritative source in transportation training.

As recent economic, political, and social trends have placed greater emphasis on public sector accountability and cost-effectiveness, many transportation agencies across the country have begun to shift towards a performance-based approach to plan, manage, and operate their systems. This course will familiarize transportation agencies with the key elements of a performance-based planning and programming (PBPP) framework, the relationship of these elements within existing planning and programming processes, and the connection of these elements to Transportation Performance Management (TPM) requirements initiated by legislation, including the Moving Ahead for Progress in the 21st Century (MAP-21) Act and continued under the Fixing America's Surface Transportation (FAST) Act and the Statewide and Nonmetropolitan Transportation Planning; Metropolitan Transportation Planning Final Rule, which was published in the Federal Register on May 27, 2016.

This course begins by providing an overview of PBPP and then walks the participants through each element of the US Department of Transportation (USDOT) PBPP framework, providing examples of alternative approaches and real-world applications.

Participants in the course will gain insight on several key learning points, including:

+ How to apply performance management principles within the planning and programming process to achieve desired agency goals and performance outcomes

+ How to connect PBPP with other performance management activities, plans, and products

+ How to assess and learn from transferable planning and programming practices in use across the US, including examples of how agencies are moving towards implementing PBPP

This course includes a written assessment. The course content was last updated in July 2017.

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL:

https://connectdot.connectsolutions.com/nhi138007executivesummary/

To enroll in this Instructor-led Training course, select the 'View Sessions' button and select 'Add To Cart' next to your session choice. If there are no upcoming sessions, select 'Sign Up for Session Alerts.'

Any organization can host this course. To host this course and bring training to your organization, click the 'Host this Course' button.

Outcomes

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

- Describe requirements for performance-based planning and programming.
- Describe the elements of the performance-based planning and programming framework.
- Describe how the performance-based planning and programming framework relates to the TPM requirements.
- Describe opportunities to engage the public in a performance-based planning and programming process.
- Explain how to integrate various performance-based plans using data and information contained within those plans.
- Recognize the role of coordination in developing performance-based plans.

Target Audience

The target audience for this Instructor-led Training course primarily includes transportation professionals responsible for developing and implementing performance-based plans and programs, and those responsible for integration and linkage of other requirements, under performance-based legislation initiated by MAP-21 and continued under FAST. This includes a broad audience of State DOTs, MPOs, regional planning organizations (RPOs), transit agencies, and USDOT staff. Participants should have knowledge of the planning process.

Training Level: Basic

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138012

Course Title

Effective Target Setting for Transportation Performance Management

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138012executivesummary/

'Effective Target Setting for Transportation Performance Management' is a 2-day Instructor-led Training (ILT) course offered by NHI, the authoritative source in transportation training.

Transportation agencies have been moving toward a performance-based management approach for over a decade. The passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21) Act further emphasized the importance of target setting within a performance management context. MAP-21 requires State Departments of Transportation (State DOTs), Metropolitan Planning Organizations (MPOs), and public transit providers to set performance targets for the United States Department of Transportation's (USDOT's) established national performance measures.

It is anticipated that performance management principles will carry forward in subsequent legislation as it has been shown to be good business practice and has been supported by the United States Government Accountability Office (GAO). While FHWA and most State DOTs and MPOs have experience with developing performance measures and reporting on condition/performance, experience is much more limited in setting performance targets and reporting on the achievement (or not) of those targets. Understanding and applying targets within a Transportation Performance Management (TPM) program is a critical component of TPM.

This course will provide the information needed on how to establish and use performance targets. The course will answer these broad questions: What is a target?, Why should I set targets?, How do I set targets?, How do I use targets? The focus of this training will be at the State/MPO level. Federal employees will learn about their role in the context of States/MPOs going through the target setting steps.

This course includes a written assessment. The course content was last updated in October 2017.

YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL:

https://connectdot.connectsolutions.com/nhi138012executivesummary/

To enroll in this Instructor-led Training course, click the 'View Sessions' button and click 'Add To Cart' next to your session choice. If there are no upcoming sessions, click 'Sign Up for Session Alerts.'

Any organization can host this course. To host this course and bring training to your organization, click the 'Host this Course' button.

Outcomes

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

- Explain the value of setting appropriate and effective targets as part of performance management and within the context of current legislation
- Describe what a target is and the importance of establishing a baseline
- Explain the importance of collaboration in the target setting process and in the context of current legislation
- Explain the key steps to set an effective target
- Explain the factors involved in setting targets
- Explain how trade-offs should be considered in determining targets between system performance areas
- Set a target
- Identify coordination needs in target setting
- Identify key stakeholder roles
- Identify key components of effective condition/performance tracking and progress assessment
- Identify strategies to communicate target data and information effectively
- Identify mitigation strategies for challenges related to target setting

Target Audience

The target audience for this Instructor-led Training course includes the following: + Technical roles responsible for setting targets + Planning/programming staff who develop the Statewide Transportation Improvement Plan (STIP) and Regional Transportation Improvement Plans (RTIPs) + Staff dedicated to performance management + Individuals who will be involved in coordination/collaboration of target setting + Federal Highway Administration/Division Office employees and FTA employees who provide oversight for and assistance with target setting, including Performance and Management Analysts (PMAs) and subject area specialists who will assist their state and local partners A secondary target audience for this training includes higher-level decision makers who will ultimately decide on which targets to use.

Training Level: Basic

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-141052

Course Title

Successful Acquisition under the Uniform Act

This course will provide the knowledge and skills that a public agency negotiator needs to complete acquisitions that comply with the Uniform Act.

Outcomes

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

- Explain the legal basis for land acquisition by a governmental entity
- Identify the pre-acquisition materials necessary for property acquisition
- Explain the basics of the valuation process
- Describe the acquisition process under the Uniform Act
- Formulate effective negotiation skills, using best practices
- Discuss legal aspects of real property acquisition
- Discuss the role and limitations of consultants in the acquisition process

Target Audience

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

Training Level: Basic

Fee: 2021: $215 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@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. It involves creative thinking as well as the willingness and ability to interact openly and sensitively to the public's preferred forms of communication and participation. Public involvement is about reaching out to and involving the public in transportation decisionmaking. The public should have a role in every phase of decisionmaking, including the design of the participation plan itself. Successful public involvement addresses the public's procedural, psychological, and substantive needs while gathering useful information. 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:

- Describe U.S. DOT transportation decisionmaking processes, including those that trigger the National Environmental Policy Act
- Describe the relationship between public involvement and decisionmaking
- Develop a public involvement plan with stakeholder assistance that includes attention to non-traditional populations as an evaluation component
- Describe interest-based problem solving and the values that underlie it
- Identify ways to enhance public involvement plans

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.

Training Level: Basic

Fee: 2021: $425 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142069

WBT

Course Title

Air Quality Planning: SIP and TCM Requirements and Policies - WEB-BASED

This course covers the different types of SIPs and key CAA SIP requirements general to all SIPs and specific to ozone, CO and PM SIPs; discusses how the EPA processes SIPs; explores the key features of EPA SIP policies and how they differ from CAA requirements; and explains RACM and how it applies to TCMs.

This is the second in a future series of air quality Web-based trainings (WBTs):

142068: Clear Air Act Overview

142069: SIP and TCM Requirements and Policies

142070: SIP Development Process

142071: Transportation Conformity

Outcomes

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

- Define SIP
- List different types of SIPs and their purposes
- Identify SIP requirements in Title I of the Clean Air Act
- Describe TCM requirements
- Describe what is meant by Reasonably Available Control Measure, or RACM, and how this applies to TCMs

Target Audience

The target audience for the Air Quality Series is transportation and air quality planners and engineers from State and local departments of transportation (DOT), metropolitan planning organizations (MPO), transit agencies, Federal agencies (Federal Highway Administration, Federal Transit Administration, U.S. Environmental Protection Agency, U.S. 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.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 1; MAXIMUM: 1

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142073

Course Title

Applying Section 4(f): Putting Policy into Practice

NHI 142073 Applying Section 4(f): Putting Policy into Practice is a 2-day interactive course that explains the history, purpose, and application of Section 4(f) within the context of the transportation project development process. Lessons include identifying Section 4(f) properties; explanations on types of use; an overview of Section 4(f) approval options; requirements for De Minimis determinations, individual 4(f) evaluations, and nationwide programmatic evaluations; selecting the appropriate approval option; and the relationship of Section 4(f) with NEPA and other environment laws and regulations.

Outcomes

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

- · Explain the history and purpose of Section 4(f)
- · Identify the agencies subject to Section 4(f) compliance
- · Describe the applicability criteria for Section 4(f) properties
- · Describe the relationship among Section 4(f), NEPA project development, and other environmental requirements
- · Differentiate the roles and responsibilities of participants in the Section 4(f) process
- · Apply the Section 4(f) decision-making process within transportation project development
- · Describe what is necessary to document Section 4(f) compliance

Target Audience

State Departments of TransportationFHWA Headquarters and Field staff, including Federal LandsConsultantsOfficials with jurisdiction of affected Section 4(f) resources, e.g. State Historic Preservation Offices, Tribal Historic Preservation Offices, park owners, etc.Other Federal agencies involved with environmental resourcesLocal agencies, including project sponsors and transit agenciesPublic/Special interest groups or Non-Governmental Organizations (NGOs) Transportation Planning PartnersTribes

Training Level: Basic

Fee: 2021: $270 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142075

Course Title

Environmental Justice Analysis

Environmental Justice Analysis is a 2-day Instructor-led Training (ILT) course offered by NHI, the authoritative source in transportation training. The goal of this course is to increase knowledge and skills pertaining to the analysis associated with identifying and addressing disproportionately high and adverse effects of transportation programs, plans, projects, and activities on minority populations and low-income populations. This course provides participants with the information, tools, and data resources to perform EJ analysis activities to help ensure equitable transportation decision making and compliance with transportation planning regulations and NEPA. By accurately identifying communities, practitioners can better address potential adverse impacts to EJ communities and populations, and ensure they are meaningfully involved early and continually throughout the transportation decision-making process. This course provides participants with the procedural concepts, resources, and information to identify EJ populations; recognize potentially adverse impacts and/or benefits; develop and evaluate mitigation measures to address disproportionately high and adverse effects; and approaches for documenting findings and process. This course also provides participants with analysis tools and techniques to identify and address disproportionately high and adverse effects on minority populations and low-income populations during transportation planning and project development.

Throughout the course, participants will have opportunities to use scenarios and data to do the following: estimate spatial scope and magnitude of potential impacts; identify benefits of proposed actions; determine equitable distribution of benefits and burdens; and determine how to communicate findings and document methodology, results, and findings.

Last content update: Spring 2019

Outcomes

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

- Identify the basis and importance of EJ analysis to improving decision-making processes.
- Describe how to perform an EJ analysis during transportation planning and project development using the EJ analysis framework and available data sources, tools, and strategies.
- Develop EJ analysis findings that ensure equitable transportation decision-making during transportation planning.
- Develop EJ analysis findings in the context of an environmental review to ensure compliance with EJ Executive Order 12898, U.S.DOT and FHWA EJ orders, and all other requirements relevant to the NEPA process.
- Identify emerging issues that may impact the analysis of EJ populations as part of transportation decision-making.

Target Audience

The target audience for this instructor-led training course includes transportation practitioners (entry-level, mid-level, and senior-level) who are employed at a range of organizations, including State Departments of Transportation (State DOTs), Metropolitan Planning Organizations (MPOs), local public agencies, and consulting firms. Participants should have at least a college-level education or higher and may hold the following professional roles: data analyst, planner, engineer, project development specialist, environmental specialist, civil rights specialist, consultant, or any other job function that may require knowledge of Environmental Justice (EJ) and transportation. Lastly, participants should have a basic understanding of EJ and transportation planning and project development.

Training Level: Intermediate

Fee: 2021: $700 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142077

WBT

Course Title

Basics of Public Involvement in Transportation Decision Making

Basics of Public Involvement in Transportation Decision Making is a 4-hour Web-based Training course offered by NHI, the authoritative source in transportation training.

Effectively engaging the public in transportation decisions can help build support for the project, which can promote cost savings by reducing project delays and improving the project delivery process. NHI-142077 Basics of Public Involvement in Transportation Decision Making provides transportation practitioners with the knowledge and tools needed to better engage the public in transportation decisions as well as meet Federal requirements for public involvement.

In this course, participants will discover the importance of public involvement in transportation decision making and become familiar with the broad range of strategies and techniques transportation practitioners can use to identify and engage the public in a meaningful way.

This course explores the relationship between public involvement and transportation decision making. It presents participants with an overview of Federal public involvement regulations and directives for transportation planning, programming, and project development, as well as a framework for engaging the public using a variety of approaches.

Outcomes

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

- Identify the importance of public involvement
- Recall the background of public involvement
- Recall the requirements of public involvement
- Recognize the purpose and importance of participation and public engagement during the planning and NEPA processes
- Recall which members of the public are potential participants in the transportation decision-making process
- Choose how to tailor public involvement communication to engage a variety of constituents
- Identify effective public involvement techniques appropriate to a variety of situations
- Identify strategies for promoting participant interaction
- Identify how to solicit and use public feedback to inform transportation decision making
- Select evaluation strategies and methods that are suitable for determining the effectiveness of a public engagement plan
- Identify emerging trends and innovative approaches to public involvement

Target Audience

The target audience for this WBT course includes transportation practitioners from Federal, State, regional, and local agencies, particularly data analysts, planners, engineers, project development specialists, environmental specialists, civil rights specialists, consultants, and other professionals whose job function may require knowledge of public involvement to support transportation decision making.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 4 HOURS (CEU: .4 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142078

New Training

Course Title

Planning and Environment Linkages (PEL)

Planning and Environment Linkages (PEL) is a 2-day instructor-led training course offered by NHI, the authoritative source in transportation training.

Integrating PEL into the transportation planning and environment review processes promotes more informed decision-making and accelerated project delivery. Furthermore, several policies and authorities encourage the implementation of PEL.

The course emphasizes the following benefits of PEL: accelerate project delivery, development of purpose and need early in the planning process, elimination of unreasonable alternatives during the planning process, early and improved coordination with resource agencies and stakeholders, improved program and informed project decisions, less duplication and improve documentation, promotion of efficient and cost-effective solutions, earlier consideration of potential environmental effects, and enhanced consultation, coordination, and public involvement.

As a participant, you will learn and discuss why PEL has been a successful practice, the benefits of PEL, the points of interface between planning and environmental review processes, PEL approaches using authorities associated with planning and environmental review, informing, using, or adopting planning information in the environmental review process, general considerations for using any PEL approach, the processes for developing purpose and need during planning that can be used in NEPA, the process for screening and eliminating unreasonable alternatives during planning, the role of Consultation, Coordination, and Public Involvement in PEL, documentation in a PEL approach, and action strategies to advance PEL in your State or region.

Outcomes

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

- Identify why PEL has been a successful practice for transportation practitioners.
- Describe how planning and environment review processes interface.
- Summarize how specific authorities and their requirements influence how States and MPOs approach PEL.
- Identify different approaches for PEL, their related flexibilities and how to transition this information into NEPA.
- Summarize how applying PEL in planning supports development of purpose and need for the environmental review process.
- Summarize how to use PEL in screening and eliminating unreasonable alternatives during planning.
- Describe how public involvement supports PEL.
- Summarize how documentation is essential to a PEL approach.
- Identify strategies to implement PEL and accelerate project delivery.

Target Audience

The target audience includes transportation practitioners employed at State Departments of Transportation (State DOTs), Resource Agencies, Metropolitan Planning Organizations (MPOs), and local public agencies, as well as the Federal Highway Administration (FHWA), Federal Transit Administration (FTA) and regulatory agencies with a role in NEPA permitting, approving, or mitigating potential impacts from transportation projects.Typical course participants have a college degree and work as an analyst, planner, project development specialist, environmental specialist, public involvement specialist, civil rights specialist, consultant, or any other position requiring knowledge of PEL.

TRAINING LEVEL: Intermediate

FEE: 2021: $300 Per Person; 2022: N/A

LENGTH: 2 DAYS (CEU: 1.2 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142078A

New Training

Course Title

Planning and Environment Linkages (PEL), without Implement PEL Activity

This course is a slightly shorter version of the 2-day instructor-led course, NHI-142078 Planning and Environment Linkages (PEL). Both courses are offered by NHI, the authoritative source in transportation training, and both focus on the integration of PEL into the transportation planning and environmental review process. However, NHI-142078 includes an additional activity to help practitioners identify strategies implement PEL in their State or region which is omitted in this course.

Integrating PEL into the transportation planning and environmental review process promotes more informed decision-making and accelerated project delivery. Furthermore, several policies and authorities encourage the implementation of PEL.

The course emphasizes the following benefits of PEL: accelerate project delivery, development of purpose and need early in the planning process, elimination of unreasonable alternatives during the planning process, early and improved coordination with resource agencies and stakeholders, improved program and informed project decisions, less duplication and improve documentation, promotion of efficient and cost-effective solutions, earlier consideration of potential environmental effects, and enhanced consultation, coordination, and public involvement.

As a participant you will learn and discuss why PEL has been a successful practice; the benefits of PEL; the points of interface between planning and environmental review processes; PEL approaches using authorities associated with planning and environmental review; informing, using, or adopting planning information in the environmental review process; general considerations for using any PEL approach; the processes for developing purpose and need during planning that can be used in NEPA; the process for screening and eliminating unreasonable alternatives during planning; the role of consultation, coordination, and public involvement in PEL; and documentation in a PEL approach.

Outcomes

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

- Identify why PEL has been a successful practice for transportation practitioners.
- Describe how planning and environmental review processes interface.
- Summarize how specific authorities and their requirements influence how States and MPOs approach PEL.
- Identify different approaches for PEL, their related flexibilities and how to transition this information into NEPA.
- Summarize how applying PEL in planning supports development of purpose and need for the environmental review process.
- Summarize how to use PEL in screening and eliminating unreasonable alternatives during planning.
- Describe how public involvement supports PEL.
- Summarize how documentation is essential to a PEL approach.

Target Audience

The target audience includes transportation practitioners employed at State Departments of Transportation (State DOTs), Resource Agencies, Metropolitan Planning Organizations (MPOs), and local public agencies, as well as the Federal Highway Administration (FHWA), Federal Transit Administration (FTA) and regulatory agencies with a role in NEPA permitting, approving, or mitigating potential impacts from transportation projects.Typical course participants have a college degree and work as an analyst, planner, project development specialist, environmental specialist, public involvement specialist, civil rights specialist, consultant, or any other position requiring knowledge of PEL.

TRAINING LEVEL: Intermediate

FEE: 2021: $300 Per Person; 2022: N/A

LENGTH: 16 HOURS (CEU: 1 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142078V

Course Title

Planning and Environment Linkages (PEL) (VIRTUAL DELIVERY)

Planning and Environment Linkages (PEL) is a 2-day instructor-led training course offered by NHI, the authoritative source in transportation training.

Integrating PEL into the transportation planning and environment review processes promotes more informed decision-making and accelerated project delivery. Furthermore, several policies and authorities encourage the implementation of PEL.

The course emphasizes the following benefits of PEL: accelerate project delivery, development of purpose and need early in the planning process, elimination of unreasonable alternatives during the planning process, early and improved coordination with resource agencies and stakeholders, improved program and informed project decisions, less duplication and improve documentation, promotion of efficient and cost-effective solutions, earlier consideration of potential environmental effects, and enhanced consultation, coordination, and public involvement.

As a participant, you will learn and discuss why PEL has been a successful practice, the benefits of PEL, the points of interface between planning and environmental review processes, PEL approaches using authorities associated with planning and environmental review, informing, using, or adopting planning information in the environmental review process, general considerations for using any PEL approach, the processes for developing purpose and need during planning that can be used in NEPA, the process for screening and eliminating unreasonable alternatives during planning, the role of Consultation, Coordination, and Public Involvement in PEL, documentation in a PEL approach, and action strategies to advance PEL in your State or region.

Outcomes

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

- Identify why PEL has been a successful practice for transportation practitioners.
- Describe how planning and environment review processes interface.
- Summarize how specific authorities and their requirements influence how States and MPOs approach PEL.
- Identify different approaches for PEL, their related flexibilities and how to transition this information into NEPA.
- Summarize how applying PEL in planning supports development of purpose and need for the environmental review process.
- Summarize how to use PEL in screening and eliminating unreasonable alternatives during planning.
- Describe how public involvement supports PEL.
- Summarize how documentation is essential to a PEL approach.
- Identify strategies to implement PEL and accelerate project delivery.

Target Audience

The target audience includes transportation practitioners employed at State Departments of Transportation (State DOTs), Resource Agencies, Metropolitan Planning Organizations (MPOs), and local public agencies, as well as the Federal Highway Administration (FHWA), Federal Transit Administration (FTA) and regulatory agencies with a role in NEPA permitting, approving, or mitigating potential impacts from transportation projects.Typical course participants have a college degree and work as an analyst, planner, project development specialist, environmental specialist, public involvement specialist, civil rights specialist, consultant, or any other position requiring knowledge of PEL.

Training Level: Intermediate

Fee: 2021: $300 Per Person; 2022: N/A

Length: 12 HOURS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-151050

Course Title

Traffic Monitoring Programs: Guidance and Procedures

Participants are encouraged to bring their own copy of the FHWA Traffic Monitoring Guide 2016 and a calculator. The training room must be large enough to allow for group exercises, as well as room to display local traffic data collection equipment.

Additionally, the FHWA Office of Highway Policy Information offers a complimentary presentation of the Travel Monitoring Analysis System (TMAS) in conjunction with this training course. Please contact Steven Jessberger (Steven.Jessberger@dot.gov) for more information.

Developed in conjunction with the 5th revision of the FHWA Traffic Monitoring Guide (TMG 2016), this course replaces NHI 151018 and offers guidance on how to manage a successful traffic monitoring program. The training begins with an overview of Federal traffic monitoring regulations and a presentation of the host State's traffic monitoring program. Subsequent lessons introduce federal guidance, best practices, and recommended procedures for developing a data collection framework for traffic volume, speed, classification, weight, and non-motorized programs. The course also incorporates related traffic monitoring elements of transportation management and operations, traffic data needs and uses, traffic data submittal requirements, and relevant traffic monitoring research. The critical importance of quality data collection is emphasized to support project planning, programming, design, and maintenance decisions-- all of which affect the Nation's transportation network.

Outcomes

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

- Describe the appropriate use of the TMG
- Describe the TMG procedures for obtaining traffic monitoring data for Federal and State programs
- Explain how to apply traffic monitoring data to answer specific questions on Federal and State issues
- Explain traffic data reporting requirements
- Explain the value of cooperative and multi-disciplinary approaches to traffic monitoring programs

Target Audience

This Instructor-led training (ILT) course is designed for transportation professionals involved in traffic monitoring programs. Primarily intended for FHWA and State DOT staff, this training is also relevant to regional and local government staff, as well as others whose roles include development and/or oversight of traffic monitoring programs. There are no course pre-requisites or assumed pre-training competencies.

Training Level: Basic

Fee: 2021: $200 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-151053

Course Title

Transportation Planning Process

Transportation Planning Process(course number FHWA-NHI-151053) gives participants the opportunity to explore,discuss and practice what they learned in the FHWA-NHI-151052, Basics ofTransportation Planning web-based training where participants received anoverview of the metropolitan and statewide transportation planning process. This course underscores transportationplanning's relationship to informed decision-making and the required planningprocess. This course expands knowledge of transportation planning practicefundamentals and the ability to convey the relationship of these principles tothe Federal planning program requirements. Participants gain knowledge andunderstanding of planning practice fundamentals through the use of engaginginteractive activities.

This instructor-led training reflects the current laws, regulations andissues relevant to the transportation planning process. This consolidatedcourse is jointly developed by the Federal Transit Administration (FTA) and theFederal Highway Administration (FHWA) in concert with their respective trainingbranches NTI and NHI.

PLEASE NOTE: Participants are expected to complete NHI-151052 Basics of Transportation Planning as a prerequisite to this course. NHI-151052 Basics of Transportation Planning is a free 4-hour web-based training course.

Outcomes

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

- Explain the legislative requirements for States and MPOs to conduct the transportation planning process.
- Describe the content and purpose of statewide and metropolitan transportation plans and programs.
- Identify the steps and activities in a performance-based approach to planning and programming supported by public engagement and intergovernmental cooperation.
- Explain the relationship between the transportation planning process and other community planning processes.
- Identify participants and their roles and responsibilities in planning.
- Differentiate appropriate levels of consultation, cooperation, and engagement among stakeholders and the public.

Target Audience

Metropolitan Planning Organizations (MPOs) Regional Planning Organizations or affected non-metropolitan transportation officials with responsibility for transportation planning State Departments of Transportation Planning, Transportation Planning, Programming, or Project Development staff working or participating in the Statewide or Metropolitan Transportation Planning Process Transit Agencies and/or Providers, Federal Highway Administration and Federal Transit Administration. If you have questions about this NHI training, please contact NHI at nhicustomerservice@dot.gov or 877.558.6873.

Training Level: Intermediate

Fee: 2021: $315 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-151055

Course Title

Statewide and Metropolitan Transportation Programming

Statewide and Metropolitan Transportation Programming is a Web-based Training (WBT) course offered by NHI, the authoritative source in transportation training.

This web-based course is intended to provide introductory-level information for transportation planning and programming staffs on the process and requirements for developing and implementing metropolitan Transportation Improvement Programs (TIPs) and Statewide Transportation Improvement Programs (STIPs). The course highlights the FHWA/FTA requirements for statewide, non-metropolitan, and metropolitan transportation planning and programming processes; as well as describes the relationships, roles, and responsibilities of key partners and stakeholders in informed transportation decision-making.

Learners will explore the connections between long-range transportation planning and how projects are prioritized for funding and subsequent implementation within metropolitan TIPs and STIPs as part of an informed transportation decision-making process.

The course provides an overview of the process and requirements for developing and implementing metropolitan TIPs and STIPs, including connections to public involvement, financial planning/fiscal constraint, performance-based planning and programming (PBPP), TIP/STIP administrative modifications and amendments, and FHWA/FTA review and approval of responsibilities/actions.

Outcomes

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

- Recall terms, concepts, and acronyms.
- Recognize how metropolitan areas and States reach decisions on transportation policies, plans, and programs.
- Identify major funding sources and the flexibility to use funds in addressing metropolitan and statewide transportation needs.
- Recognize the relationship between transportation planning and public involvement.
- Identify the role of key documents in transportation decision making.
- Define the concept of fiscal constraint in relation to financial planning and programming.
- Identify how projects are selected and programmed in the STIP/TIP.
- Identify processes related to transportation program approval and implementation.

Target Audience

The target audience for this course consists of Metropolitan Planning Organizations (MPOs), State Departments of Transportation (State DOTs), transit agencies, Regional Transportation Planning Organizations (RTPOs) or affected metropolitan transportation officials with responsibility for transportation planning, Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) planning staffs, and transportation planning/programming/project development staff working or participating in the statewide or metropolitan transportation planning process.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 3 HOURS (CEU: .3 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-151056

Course Title

Highway Performance Monitoring System (HPMS): Concepts, Data Collection & Reporting Requirements

The National Highway Institute (NHI) workshop titled, Highway Performance Monitoring System (HPMS): Concepts, Data Collection & Reporting Requirements, is a two-day workshop intended to provide advanced, in-depth, hands-on understanding of data collection and reporting requirements for HPMS. The workshop is designed to cover:

HPMS Program Background

The HPMS 2010+ Data Model

HPMS Data Collection and Reporting Requirements

Statistical Sampling Requirements; and

The HPMS Submittal Process

Outcomes

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

- Upon completion of the workshop, participants will be able to:
- Describe the Scope of HPMS
- Describe the Background of HPMS
- Describe the structure of the HPMS Data Model, in terms of the various catalogs and datasets that comprise the model
- Describe the various HPMS datasets
- Differentiate between the datasets that are to be developed/submitted by the States, and the datasets that will be developed/maintained by FHWA
- Explain how geo-referencing is performed in HPMS for analysis and reporting purposes
- Describe the structure of the Sections and Sample Panel Identification datasets
- Explain the relationship between the Sections and Sample Panel Identification datasets and how these are used for sampling purposes
- Interpret the data collection, coding, and reporting requirements for the Sections dataset
- Describe the Sampling Framework that is used within the context of the Highway Performance Monitoring System (HPMS)
- Discuss the way in which AADT Volume Groups and Precision Levels are used for sampling purposes in HPMS
- Explain the Sample Size Estimation procedure and how it is used in HPMS
- Discuss the importance of Sample Adequacy and Sample Maintenance in HPMS
- Describe the steps involved in the annual submittal of the various HPMS datasets

Target Audience

This two‐day workshop is intended for State DOT HPMS staff, including: Staff responsible for data collection, processing, analysis, and production of the annual HPMS submittal.While primarily targeted for those responsible for the assembling the annual HPMS submittal, others who can benefit from this training are:GIS staff responsible for developing/providing HPMS‐related dataTraffic data providersPavement data providersRoad Inventory data providersMPO Staff who provide HPMS‐related data to State DOTsLocal agency staff that provides HPMS‐related data to their State DOTThis workshop is designed for those individuals seeking to obtain an understanding or expand their basic knowledge of the annual data collection and reporting requirements for HPMS. The material covered in this workshop is primarily based on requirements which were a product of the 2010+ Reassessment.

Training Level: Basic

Fee: 2021: $115 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-151057

WBT

Course Title

FHWA Planning and Research Grants: Program Administration (23 CFR Part 420)

This course is the first in a series of Web-based training courses updated in 2018. The course series covers the background of FHWA planning grants through the audit process after the grant has been completed. +FHWA Planning and Research Grants: Program Administration (23 CFR Part 420) (FHWA-NHI-151057); +FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 1 (FHWA-NHI-151058); +FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 2 (FHW-NHI-151509)

'FHWA Planning and Research Grants: Program Administration (23 CFR Part 420)' is a 2-hour Web-based Training course offered by NHI, the authoritative source in transportation training.

Recent legislation has introduced changes to the requirements around the administration of FHWA planning and research grants. This course is the first of a series of Web-based Training courses on this topic and provides an introduction to the series. Learners will gain familiarity with terms and general concepts around grants. They will also learn the requirements of 23 CFR Part 420--the regulation that implements the Federal-Aid highway planning program outlined in Title 23 and contains the specific FHWA grant policies and procedures that need to be followed.

The course consists of three lessons:

Lesson 1 (Overview) covers key terms associated with and guidelines and legislation that govern the administration of FHWA planning and research grants, distribution of FHWA planning and research funds, and the steps of the grants funding process.

Lesson 2 (23 CFR Part 420 Subpart A) covers the purpose, terminology, and requirements of grants administration outlined in 23 CFR Part 420 Subpart A.

Lesson 3 (23 CFR Part 420 Subpart B) covers the purpose, terminology, and requirements of grants administration outlined in 23 CFR Part 420 Subpart B.

This course series was revised and republished in April 2018 in response to the Office of Management and Budget's promulgation of 2 CFR 200 (Unified Administrative Requirements, Cost Principles and Audit for Federal Awards; also referred to as the "Uniform Guidance" or "Supercircular") and the enactment of the MAP-21 and FAST Acts. The course includes direct links to the full text of the regulations, as they are discussed throughout the course.

The course includes an assessment, which learners must pass at 70% to receive credit for the course.

To enroll in this Web-based Training course, click 'Add To Cart.'

Outcomes

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

- Define key terms associated with FHWA planningand research grants
- Describe various guidelines and legislation thatgovern the administration of FHWA planning and research grants
- Discuss the distribution of FHWA planning andresearch funds
- Define the steps of the grants funding process
- Explain the purpose of 23 CFR Part 420
- Describe the requirements of 23 CFR Part 420

Target Audience

The target audience for this Web-based Training course includes FHWA, FTA, State Department of Transportation (State DOTs), Metropolitan Planning Organization (MPOs), and other agency staff that expend or administer Federal-aid funds--including planning, engineering, and fiscal staff.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 2 HOURS (CEU: .2 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-151058

WBT

Course Title

FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 1

This course is the second in a series of Web-based training courses updated in 2018. The course series covers the background of FHWA planning grants through the audit process after the grant has been completed.

FHWA Planning and Research Grants: Program Administration (23 CFR Part 420) (FHWA-NHI-151057)

--> FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 1 (FHWA-NHI-151058)

FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 2 (FHWA-NHI-151059)

'FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 1' is a 1.5-hour Web-based Training course offered by NHI, the authoritative source in transportation training.

Recent legislation has introduced changes to the requirements around the administration of FHWA planning and research grants. This course is the second in a series of Web-based Training courses on this topic and introduces 2 CFR Part 200, the Uniform Guidance. Learners will gain familiarity with the history and overview of the Uniform Guidance, and will get into detail on Subparts A through D.

The course consists of three lessons:

Lesson 1 (History and Overview) covers a brief history of the Uniform Guidance, the responsibilities of the States, and the flow of requirements to state and local governments.

Lesson 2 (Definitions, General Provisions, and Pre-Award Requirements) covers key terms, general provisions, and pre-award requirements, as presented in Subparts A through C of the Uniform Guidance.

Lesson 3 (Post Federal Award Requirements) covers Post Federal Award Requirements, which are presented in Subpart D of the Uniform Guidance.

This course series was revised and republished in April 2018 in response to the Office of Management and Budget's promulgation of 2 CFR Part 200 (Unified Administrative Requirements, Cost Principles and Audit for Federal Awards; also referred to as the "Uniform Guidance" or "Supercircular") and the enactment of the MAP-21 and FAST Acts. The course includes direct links to the full text of the regulations, as they are discussed throughout the course.

The course includes an assessment, which learners must pass at 70% to receive credit for the course.

To enroll in this Web-based Training course, click 'Add To Cart.'

Outcomes

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

- Discuss a brief history of the Uniform Guidance
- Describe the responsibilities of the States, in relation to grants management
- Explain the flow of requirements to state and local governments
- Define key terms in the Uniform Guidance (Subpart A)
- Discuss general provisions of the Uniform Guidance (Subpart B)
- Identify pre-award requirements (Subpart C)
- Discuss post-award requirements (Subpart D)

Target Audience

The target audience for this Web-based Training course includes FHWA, FTA, State Department of Transportation (State DOTs), Metropolitan Planning Organization (MPOs), and other agency staff that expend or administer Federal-aid funds--

including planning, engineering, and fiscal staff.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 1.5 HOURS (CEU: .2 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-151059

WBT

Course Title

FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 2

This course is the third in a series of Web-based training courses updated in 2018. The course series covers the background of FHWA planning grants through the audit process after the grant has been completed.

FHWA Planning and Research Grants: Program Administration (23 CFR Part 420) (FHWA-NHI-151057)

FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 1 (FHWA-NHI-151058)

--> FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 2 (FHWA-NHI-151059)

'FHWA Planning and Research Grants: The Uniform Guidance (2 CFR Part 200) - Part 2' is a 2-hour Web-based Training course offered by NHI, the authoritative source in transportation training.

Recent legislation has introduced changes to the requirements around the administration of FHWA planning and research grants. This course is the third in a seriesof Web-based Training courses on this topic and completes the discussion of 2 CFR 200, the Uniform Guidance (started in course 151058). Learners will explore the last two subparts of the Uniform Guidance, which are Subpart E on Cost Principles and Subpart F on Audit Requirements.

The course consists of four lessons:

Lesson 1 (Cost Principles - Part 1) covers the first few subject groups of Subpart E, which are General Provisions; Basic Considerations; Direct and Indirect Costs; and Special Considerations for States, Local Governments, and Indian Tribes.

Lesson 2 (Cost Principles - Part 2) covers the last subject group of Subpart E--the General Provisions for Selected Items of Cost, which explains which costs are allowable and which are unallowable.

Lesson 3 (Audit Terms & Requirements) covers key terms and basic requirements for the audit of Federal awards.

Lesson 4 (Audit Roles & Responsibilities) covers the roles and responsibilities associated with the audit of Federal awards.

This course series was revised and republished in April 2018 in response to the Office of Management and Budget's promulgation of 2 CFR 200 (Unified Administrative Requirements, Cost Principles and Audit for Federal Awards; also referred to as the "Uniform Guidance" or "Supercircular") and the enactment of the MAP-21 and FAST Acts. The course includes direct links to the full text of the regulations, as they are discussed throughout the course.

The course includes an assessment, which learners must pass at 70% to receive credit for the course.

To enroll in this Web-based Training course, click 'Add To Cart.'

Outcomes

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

- Define general terms related to cost principles
- Discuss the General Provisions of Subpart E
- Explain key terms and concepts covered in Basic Considerations of Subpart E
- Discuss Direct and Indirect (F&A) Costs
- Discuss key terms, allocation methods, and related procedures for indirect cost proposals
- Identify costs that are allowable and unallowable under Subpart E
- Define key terms associated with audits
- Discuss the audit requirements for federal awards
- Distinguish between a subrecipient and a contractor
- Discuss the roles and responsibilities of auditees, federal agencies, and auditors

• Identify online resources related to audits

Target Audience

The target audience for this Web-based Training course includes FHWA, FTA, State Department of Transportation (State DOTs), Metropolitan Planning Organization (MPOs), and other agency staff that expend or administer Federal-aid funds--including planning, engineering, and fiscal staff.

Training Level: Basic

Fee: 2021: $25 Per Person; 2022: N/A

Length: 2 HOURS (CEU: .2 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-152054

Course Title

Introduction to Urban Travel Demand Forecasting

Through classroom lectures and interactive workshops, this introductory course covers the traditional four-step modeling process of trip generation, trip distribution, mode choice, and trip assignment. The course includes presentations on land use inputs, network and zone structures, time of day factoring, and reasonableness checking.

In order to ensure that participants have a basic overview of travel demand forecasting, each registered participant will receive a Self-Instructional CD--entitled Introduction to Travel Forecasting--in advance of a scheduled session. To ensure that these CDs are shipped, we request that the Host provide the instructor coordinator with names and mailing addresses of their registrants. Participants are expected to complete the CD in advance of the session

A half day computer lab exercise is included to reinforce the concepts presented in the classroom. The hosting organization is responsible for providing MS Windows microcomputers with color graphics, color monitors, and at least 10 megabytes of hard disk space. There should be no more than two participants per computer station.

Prerequisites: Computer experience and an understanding of college-level algebra. Participants must bring scientific calculators to the session.

Outcomes

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

- Describe the role of travel forecasting within transportation planning
- Explain the principles of the four-step model: trip generation, trip distribution, mode choice, and trip assignment
- Demonstrate how input data is used in each step of the four-step model
- Identify reasonableness checks for model inputs, outputs, and equations
- Interpret the outputs from each step

Target Audience

Federal, State, local planners, and engineers, and consultants who wish to gain a better understanding of the principles and applications of travel demand forecasting models.

Training Level: Intermediate

Fee: 2021: $445 Per Person; 2022: N/A

Length: 4 DAYS (CEU: 2.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-152072

Course Title

Highway Program Funding

Please note the 152072 course title has changed to more accurately reflect the curriculum materials.

This instructor-led training provides an overview of the Federal-aid Highway Program, focusing on various aspects of highway program funding unique to the Federal Highway Administration (FHWA). Topics include: the operation of the Highway Trust Fund and its significance to the funding level of the Federal-aid Highway Program; the content and policy implications of authorizing and appropriating legislation; the FHWA apportionment process; discussion of obligation limitation, allocations, deductions, earmarking, and transferability; and the effect of policy and budget considerations on the use of Federal-aid funds. The course has been updated to complement the new Federal-aid authorization bill.

Outcomes

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

- Describe the flow of Federal highway funding from authorization to outlay
- 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

This training is intended for Federal, State, regional and local government employees; Congressional staff; consultants; and others interested in the process by which Congress authorizes the Federal-aid Highway program and the FHWA distributes Federal-aid highway funding. NHI encourages a mix of participants at each session.

Training Level: Basic

Fee: 2021: $100 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: .9 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 40

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-152072

Course Title

Highway Program Funding

Please note the 152072 course title has changed to more accurately reflect the curriculum materials.

This instructor-led training provides an overview of the Federal-aid Highway Program, focusing on various aspects of highway program funding unique to the Federal Highway Administration (FHWA). Topics include: the operation of the Highway Trust Fund and its significance to the funding level of the Federal-aid Highway Program; the content and policy implications of authorizing and appropriating legislation; the FHWA apportionment process; discussion of obligation limitation, allocations, deductions, earmarking, and transferability; and the effect of policy and budget considerations on the use of Federal-aid funds. The course has been updated to complement the new Federal-aid authorization bill.

Outcomes

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

- Describe the flow of Federal highway funding from authorization to outlay
- 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

This training is intended for Federal, State, regional and local government employees; Congressional staff; consultants; and others interested in the process by which Congress authorizes the Federal-aid Highway program and the FHWA distributes Federal-aid highway funding. NHI encourages a mix of participants at each session.

Training Level: Basic

Fee: 2021: $100 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: .9 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 40

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-231028

Course Title

Using the AASHTO Audit Guide for the Procurement and Administration of A/E Contracts

Updated in 2019!

Using the AASHTO Audit Guide for the Procurement and Administration of A/E Contracts course is a one-day introductory course of interest to a wide variety of practitioners whose jobs require that they work with Architectural and Engineering (A/E) contracts. The course incorporates small- and large group discussions, case study activities, and both a scored and unscored assessment to reinforce learning.

The course begins with an overview of government contracting for A/E services and the related roles and responsibilities. Participants learn about the A/E Project Cycle and discuss cost components common to A/E contracts.

Next, participants learn about important regulations and standards applicable to the administration of A/E contracts and the role of each. Key cost principles are covered so that participants can learn to distinguish between direct and indirect costs and to differentiate between the concepts of allowability, allocability, and reasonableness.

The importance of internal controls is emphasized as participants are taught to recognize risk factors and indicators of control deficiencies. In a discussion of key areas of costs, participants learn to use the AASHTO Uniform Audit & Accounting Guide to better understand directly associated costs and whether specific indirect costs are allowable. A case study helps participants to practice the application of these principles.

After an overview of A/E firm audits and related roles and responsibilities, participants review a sample cost proposal and related contract wording in order to begin linking audit information, cost proposals, and contracts. The course ends with a discussion of cognizance and the risk management framework followed by a review of select tools and resources that support the administration of A/E contracts.

Outcomes

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

- Explain the Federal and State laws, regulations, policies and procedures that relate to the procurement and administration of A/E contracts.
- Explain how to use audit information in the procurement and administration of A/E contracts.
- Identify and discuss concepts of direct and indirect, allowable and unallowable costs in A/E contracts.
- Locate selected tools and resources to assist in the procurement and administration of A/E contracts.

Target Audience

This course is particularly suited for practitioners associated with procurement, audit, and the administration of A/E contracts.

Training Level: Basic

Fee: 2021: $150 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-231029

Course Title

Using the AASHTO Audit Guide for the Development of A/E Consultant Indirect Cost Rates

NOTE: This course was updated in 2019 and reflects the updated references of 23 CFR 172, 2 CFR 200, 2016 AASHTO Audit Guide, and the 2018 National Compensation Matrix.

This two-day advanced course is of interest to a wide variety of practitioners who want to be able to apply the AASHTO Audit Guide in the development and administration of A/E design consultant direct and indirect costs and rates. This course is written for both prime A/E consultants and subconsultants.

Outcomes

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

- Employ appropriate requirements, concepts, and tools necessary to develop and apply indirect cost rates to A/E contracts.
- Describe the required components of compliant internal controls.
- Prepare an appropriate analysis necessary to demonstrate the reasonableness of compensation.
- Interpret and apply Federal and State laws, regulations, policies and procedures.
- Explain various components of the external oversight framework including ethics, dispute resolution, and the FHWA function.
- Compare and distinguish between contract types and implications on account costing and billing.

Target Audience

This course is intended for those who perform one or more of the following roles: o Performing indirect cost rate audits for A/E Design firmso Ensuring compliance with the AASHTO Audit Guideo Administering contracts or subcontracts and procuring services o Managing contracts or subcontractso Ensuring compliance of contracts or subcontractso Providing oversight of local contracts or subcontractso Building and reviewing cost proposalso Approving the payment of A/E design consultant invoiceso Auditing indirect cost and contract proposalso Closing out and performing final reconciliations of contracts o Designing and enforcing internal control systemso Reviewing RFPs and contracts for government projectso Sell A/E design services to State DOTs

Training Level: Intermediate

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-231030

Course Title

Using the AASHTO Audit Guide for the Auditing and Oversight of A/E Consultant Indirect Cost Rates

SPECIAL NOTE ON REQUIRED PREREQUISITE: NHI-231029 AASHTO Uniform Audit and Accounting Guide Part 1 is a prerequisite for this course. Participants that have not successfully completed NHI-231029 will be turned away.

NOTE: This course was updated in 2019 and reflects the updated references of 23 CFR 172, 2 CFR 200, 2016 AASHTO Audit Guide, and the 2018 National Compensation Matrix.

This two-day advanced course is of interest to A/E design firms; State DOT and local government auditors; CPAs; and FHWA, State DOT, and A/E design firm financial and/or consultant services management who perform the audit or audit compliance review function in accordance with the AASHTO Uniform Audit & Accounting Guide (AASHTO Audit Guide). The course focuses primarily on audit requirements and procedures designed to develop reasonable assurance that indirect cost rates are developed in accordance with applicable Federal regulations and guidance. The course incorporates small- and large-group discussions, document reviews, case study activities, un-scored self-assessments, and a scored final assessment to reinforce learning.

Outcomes

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

- Perform audit functions related to the planning, performance, or oversight of A/E consultant indirect cost rate audits.
- Determine and attest to A/E consultant compliance with applicable guidance and/or requirements.
- Discuss how State DOTs will use the CPA Workpaper Review Program (AASHTO Audit Guide Appendix A) to evaluate audits performed by CPAs.
- Identify and apply appropriate audit tools and techniques as specified in the AASHTO Audit Guide.
- Describe the components of a complete audit report and how to evaluate the report presentation.
- Describe various components of the State DOT's oversight and risk management framework.
- Describe at a high level the FHWA's roles and responsibilities in its stewardship and oversight of Federal-Aid funds related to procurement of A/E design services and administration of related agreements.

Target Audience

This course is primarily for those who perform one or more of the following functions:o Perform indirect cost rate audits for A/E design firmso Ensure consistency with the AASHTO Audit Guideo Ensure compliance of contracts or subcontractso Provide oversight of local agency contracts or subcontractso Review cost proposalso Audit indirect cost and contract proposalso Close out and perform final reconciliation of contractso Design and enforce internal control systemso Review RFPs and contracts for government projectso Evaluate the effectiveness of the State DOT oversight and risk management framework

Training Level: Accomplished

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.4 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-231033

Course Title

Public-Private Partnerships

COURSE RUNS FROM 1/2 DAY TO 3 DAYS DEPENDING UPON MODULES CHOSEN BY THE HOST. This course is available for all levels of learners: from basic to advanced knowledge in the subject area. The modular approach allows participants to benefit from a customized learning experience. Hosts may choose the basic course, the basic plus some intermediate or advanced lessons, or only more advanced topics--the choice is made to meet the needs of each agency with its own unique requirements! NOTE: The host must provide the classroom with computers, especially if an evaluation case study using P3-VALUE 2.0 is included in the host's selection of modules. Please contact NHI for further information. NOTE: Minimum for basic or intermediate training is 20 participants; minimum for advanced training is 5 participants. Potential hosts should discuss maximum participation numbers with the instructor.

The FHWA Center for Innovative Finance Support has developed a series of training modules to provide information and tools that help participants improve their understanding of how to evaluate potential P3 proposals.

An FHWA-sponsored instructor will present in-person training at your site. The training is tailored to address the needs of each requesting agency. The agenda and training modules presented will be determined through a discussion with FHWA staff and an evaluation of needs. Depending upon the options selected, the training duration runs from 1/2 day to 3 full instructional days. The intent is to fit the training content and schedule to best meet the needs of an individual agency.

Available modules include:

Introductory Workshop Modules

1. Overview of P3

2. Successful Practices for P3

Intermediate Workshop Modules

3. Risk Allocation

4. P3 Project Financing

5. Evaluation Overview

6. P3 Model Contracts

7. Overview of the P3 Procurement Process: (A) Preparing for a P3 Procurement; (B) Key P3 Procurement Structuring Themes; and (C) Key Procurement Steps

8. Tolling and Pricing

Advanced Workshop Modules

9. Financial Viability Assessment

10. Value for Money Analysis

11. Project Delivery Benefit-Cost Analysis

12. Risk Assessment and Exercise

13. Comprehensive Exercise (Custom)

The training is a mix of presentations, class discussions, and hands-on computer training using the P3-VALUE 2.0 tool, an Excel-based set of spreadsheets that provide a better way to understand the development and evaluation of P3 bids from the public and private sector perspectives.

Outcomes

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

- better understand P3s and how to evaluate potential P3 proposals.
- explain the process for developing, procuring and implementing P3s.

Target Audience

State, regional, and local transportation officials may host this course for invited attendees.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 5; MAXIMUM: 40

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-231033V

Course Title

Public-Private Partnerships (Virtual Delivery of 231033)

COURSE RUNS FROM 1/2 DAY TO 3 DAYS DEPENDING UPON MODULES CHOSEN BY THE HOST. This course is available for all levels of learners: from basic to advanced knowledge in the subject area. The modular approach allows participants to benefit from a customized learning experience. Hosts may choose the basic course, the basic plus some intermediate or advanced lessons, or only more advanced topics--the choice is made to meet the needs of each agency with its own unique requirements! NOTE: The host must provide the classroom with computers, especially if an evaluation case study using P3-VALUE 2.0 is included in the host's selection of modules. Please contact NHI for further information. NOTE: Minimum for basic or intermediate training is 20 participants; minimum for advanced training is 5 participants. Potential hosts should discuss maximum participation numbers with the instructor.

The FHWA Center for Innovative Finance Support has developed a series of training modules to provide information and tools that help participants improve their understanding of how to evaluate potential P3 proposals.

An FHWA-sponsored instructor will present in-person training at your site. The training is tailored to address the needs of each requesting agency. The agenda and training modules presented will be determined through a discussion with FHWA staff and an evaluation of needs. Depending upon the options selected, the training duration runs from 1/2 day to 3 full instructional days. The intent is to fit the training content and schedule to best meet the needs of an individual agency.

Available modules include:

Introductory Workshop Modules

1. Overview of P3

2. Successful Practices for P3

Intermediate Workshop Modules

3. Risk Allocation

4. P3 Project Financing

5. Evaluation Overview

6. P3 Model Contracts

7. Overview of the P3 Procurement Process: (A) Preparing for a P3 Procurement; (B) Key P3 Procurement Structuring Themes; and (C) Key Procurement Steps

8. Tolling and Pricing

Advanced Workshop Modules

9. Financial Viability Assessment

10. Value for Money Analysis

11. Project Delivery Benefit-Cost Analysis

12. Risk Assessment and Exercise

13. Comprehensive Exercise (Custom)

The training is a mix of presentations, class discussions, and hands-on computer training using the P3-VALUE 2.0 tool, an Excel-based set of spreadsheets that provide a better way to understand the development and evaluation of P3 bids from the public and private sector perspectives.

Outcomes

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

- better understand P3s and how to evaluate potential P3 proposals.
- explain the process for developing, procuring and implementing P3s.

Target Audience

State, regional, and local transportation officials may host this course for invited attendees.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 8 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 5; MAXIMUM: 40

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134037A

Updated Training

Course Title

Managing Highway Contract Claims: Analysis and Avoidance

Construction contract claims are the result of the owner and the contractor being unable to come to agreement regarding an alleged change. Reducing or eliminating claims requires (1) a reduction in the number of potential changes, and (2) the implementation of practices that increase the likelihood of an owner and contractor resolving a dispute. This course provides the basic tools to address both elements of reducing or eliminating contract claims and has been updated to include an increased focus on claims avoidance with improved examples and additional best practices with state-specific activity.

In this course, participants first walk step-by-step through the evaluation of a contract claim, looking at each component. Separate course modules are devoted to these three components of a claim: entitlement, impact, and cost. The "Entitlement" module focuses on the contract and the proper interpretation of common contract clauses. The "Impacts" module focuses on delay and inefficiency--the two most difficult impacts to measure and, consequently, most difficult to resolve. The "Cost" module explores costs that can prove difficult for the project team to resolve.

Next, the participants identify and review best practices associated with successful dispute resolution. In addition, there is a module devoted solely to claims avoidance techniques and dispute resolution processes.

By completing this course, participants will have the opportunity to master techniques that can help them manage and avoid claims.

Outcomes

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

- Define "claim"
- List the three parts of a claim
- Describe the difference between a directed and constructive change
- List examples of directed and constructive changes
- List basic contract principles and rules of contract interpretation
- List the contract clauses most relevant to the evaluation of claims
- Define essential scheduling terms
- Explain the differences among the six types of delays
- List five methods for analyzing delays
- Explain how to perform a contemporaneous schedule analysis
- List five methods for measuring productivity/inefficiency
- Explain how to perform a measured mile analysis
- Describe how to avoid constructive acceleration
- List five methods for calculating costs
- List the four assumptions upon which a total cost calculation is based
- Identify project costs that are affected by delays
- Calculate extended home office overhead costs by the Eichleay and Canadian methods
- Identify acceleration costs
- Identify inefficiency costs
- Identify common miscellaneous costs
- Explain the key steps necessary to evaluate claims
- Describe the False Claims Act
- Demonstrate an ability to evaluate a contractor's claim

- Describe FHWA policy regarding participation in paying damages for contractor claims
- Explain the importance of a claims avoidance system
- Describe a claims avoidance and dispute resolution system
- Explain the strengths and weaknesses of dispute review board

Target Audience

This an intermediate level course.It is designed specifically for State DOTs, but is also appropriate for LPOs and MPOs. It is a valuable course for contractors, design consultants, project managers, and attorneys involved in the evaluation, management, and resolution of disputes on highway construction projects.

Training Level: Intermediate

Fee: 2021: $225 Per Person; 2022: N/A

Length: 2.5 DAYS (CEU: 1.5 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136065

Course Title

Risk Management

Managing transportation networks--including agency management, program development, and project delivery--is extremely complex and fraught with uncertainty. Any agency can use risk management as the Federal Highway Administration (FHWA) does: to focus limited resources; strengthen its ability to prioritize; and improve communication and foster transparent leadership.

In this 2-day, instructor-led class, participants are exposed to the principles, tools, and techniques used to identify, prioritize, respond to, and monitor risk. They learn to apply these risk management tools and techniques at any level of an organization (enterprise, program, project, or activity). Throughout the course, participants answer the following questions.

1. What is risk?

2. Why should programs be risk-based?

3. What should program managers know about the results of risk analysis, risk statements and responses, strategies, and tracking of implementation?

4. How can risks be measured?

5. How is risk management tied to strategic planning (especially with performance measures)?

This training event combines limited instructor presentations with robust group discussions and multiple team-based exercises. Course material is based on FHWA generally accepted risk management principles and practice. Teams of participants work on agency-specified objectives to identify and manage risks. They leave class with work products including a risk register template and other tools for identifying, prioritizing, and responding to risk.

NOTE: Participants use tools and methods from each step of the risk management framework in a series of exercises that provide realistic, job-relevant practice in applying the risk management process. In order to maximize the impact of the training and increase the likelihood of participants' mastery of the risk management process, the agency can select active agency issues (project, program, or network) for use during the exercises. In addition, the agency can provide problem statements and pre-select the teams for the exercises.

Outcomes

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

- Recognize the connection between effective risk management and achieving organizational objectives.
- Follow the steps of the risk management process to identify and develop risk strategies.
- Apply the risk management process to one's own level of decision-making within an organization.

Target Audience

The target audience for this course includes Federal, State and local highway employees who are responsible for directing and managing any aspects of highway-related programs and projects such as planning, environment, project development, design, construction, operations, maintenance, and finance. Asset management practitioners may also find this course content helpful as they develop their asset management plans. Audience experience, background, knowledge, skills and abilities will vary. No previous experience with risk management is required.

Training Level: Basic

Fee: 2021: $250 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136065A

Course Title

Risk Management Executive Summary

This 1-day training is an overview of FHWA-NHI-134065 and covers principles of risk management.

Outcomes

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

- Explain the overall organizational context, importance of risk management, and risk framework to others
- Follow a consistent process for managing risk
- Utilize standard risk terminology, tools and methods
- Implement appropriate risk identification techniques
- Write an effective and meaningful risk statement
- Accurately estimate likelihood and impact of each risk event
- Create a consistent matrix to prioritize risk

Target Audience

The target audience for this course includes Federal, State and local highway managers and executives who are responsible for directing and managing all aspects of highway related programs/projects such as planning, environment, project development, design, construction, operations, maintenance, and finance.

Training Level: Basic

Fee: 2021: $100 Per Person; 2022: N/A

Length: 3 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 18; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136106A

Course Title

Introduction to Transportation Asset Management with Workshop

"An Introduction to Transportation Asset Management" was updated in Fall of 2017 to reflect the Asset Management Rule (23 CFR part 515) and includes a summary of specific provisions related to asset management. Whether your agency is focused on meeting current requirements or planning for future enhancements and implementation, this course can help you meet those challenges!

Stakeholders today demand transparency in the transportation agency's decision process; meanwhile, the agency faces higher expectations for customer service with fewer available resources. Transportation asset management (TAM) is a strategic approach to managing physical transportation infrastructure. The TAM environment promotes effective use of funding and can provide a method for defending the need for additional resources because it uses reliable data and a clear set of expected performance metrics to guide investment decisions and identify required resources.

NHI 136106A is a 1.5-day course that covers the principles of TAM and introduces the core questions every agency should be able to answer about its assets. Join this class to participate in a series of workshops that help you apply asset management principles to real-life situations. You'll also find an agency assessment tool that can be used to identify gaps between the desired and actual use of TAM principles. Other topics introduced in this course include: asset management principles; performance management; long-term financial planning; risk assessment; and implementation.

This course is a prerequisite for NHI 136106B "Development of a Transportation Asset Management Plan." You may also be interested in NHI 136106C "Introduction to Transportation Asset Management Plans," which is a Web-based training. See the NHI website for additional information on each of these courses.

Outcomes

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

- Champion the use of asset management principles and concepts within the organization
- Define their role in supporting the agency's asset management efforts
- Identify the strengths and weaknesses of your agency's asset management program
- Identify strategies for advancing your agency's use of asset management principles

Target Audience

This training is designed for 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. Participants should represent a number of organizational units, including (but not limited to) planning, engineering (e.g., facility management, design, construction), capital programming, maintenance and operations, financial management, traffic and safety engineering, system operation and management, and information technology. The course is also intended for individuals who manage or provide critical information to senior managers, or who have direct responsibility for meeting specific transportation system performance or program delivery targets.

Training Level: Basic

Fee: 2021: $270 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136106B

Course Title

Developing a Transportation Asset Management Plan

"Developing a Transportation Asset Management Plan" was updated in Fall of 2017 to reflect the Asset Management Rule (23 CFR part 515) and incorporate recent FHWA guidance on risk management, life-cycle planning, and financial planning.

The class combines a brief (1-hour) Web-based training prerequisite with a 1.5-day instructor-led session to introduce the role of the Transportation Asset Management Plan (TAMP) as a planning, communication, and accountability tool. You will encounter lessons focusing on three primary components to the TAMP, including strategic performance management, risk assessment, and financial management. The workshops throughout the course allow you to work through real-life examples and practice skills, such as setting strategies. You'll find a variety of resources, tools, and guidelines for use in developing a TAMP.

This course is the second in a series of courses on transportation asset management. All participants registering for this course must have completed the prerequisite NHI 136106A An Introduction to Transportation Asset Management or have demonstrated a solid background in transportation asset management principles and planning. In any event, all participants must successfully complete the Web-based training 136106C. The Web-based training is available at no additional charge and can be accessed via the NHI website.

Outcomes

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

- Describe the role of a Transportation Asset Management Plan in a transportation agency.
- Identify strategies for incorporating risk into investment decisions.
- Explain how to determine whether an agency is making sustainable, long-term investments in its assets.
- Develop a Transportation Asset Management Plan that matches the amount of data and the sophistication of the analysis tools available.

Target Audience

The course is intended for senior-level and mid-level managers from State departments of transportation and other transportation agencies, who have the responsibility for decision-making in one or more areas addressed by transportation asset management. Course participants should represent a broad range of organizational units, such as (but not limited to) planning, engineering (facility management, design, and construction), capital programming, maintenance and operations, financial management, traffic and safety engineering, system operation and management, and information technology. If the agency has an Asset Management Steering Committee, its members would benefit from this course. In addition, individuals who manage individual assets or provide critical information to senior managers, or who have direct responsibility for meeting specific transportation system performance or program delivery targets, are also excellent candidates for attending the course.

Training Level: Intermediate

Fee: 2021: $270 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: 1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136106V

Course Title

Introduction to Transportation Asset Management with Workshop (Virtual Delivery of 136106A)

"An Introduction to Transportation Asset Management" was updated in Fall of 2017 to reflect the Asset Management Rule (23 CFR part 515) and includes a summary of specific provisions related to asset management. Whether your agency is focused on meeting current requirements or planning for future enhancements and implementation, this course can help you meet those challenges!

Stakeholders today demand transparency in the transportation agency's decision process; meanwhile, the agency faces higher expectations for customer service with fewer available resources. Transportation asset management (TAM) is a strategic approach to managing physical transportation infrastructure. The TAM environment promotes effective use of funding and can provide a method for defending the need for additional resources because it uses reliable data and a clear set of expected performance metrics to guide investment decisions and identify required resources.

NHI 136106A is a 1.5-day course that covers the principles of TAM and introduces the core questions every agency should be able to answer about its assets. Join this class to participate in a series of workshops that help you apply asset management principles to real-life situations. You'll also find an agency assessment tool that can be used to identify gaps between the desired and actual use of TAM principles. Other topics introduced in this course include: asset management principles; performance management; long-term financial planning; risk assessment; and implementation.

This course is a prerequisite for NHI 136106B "Development of a Transportation Asset Management Plan." You may also be interested in NHI 136106C "Introduction to Transportation Asset Management Plans," which is a Web-based training. See the NHI website for additional information on each of these courses.

NHI-136106A- Introduction to Transportation Asset Management with Workshop is now offered on-line as a virtual course. A virtual instructor-led training provides 100% remote learning while ensuring participants have access to expert instructors, workshop activities, and engaging peer-to-peer discussions.

Register today to learn the principles of Transportation Asset Management in the convenience of your home and/or office anywhere in the country, remotely.

Outcomes

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

- Champion the use of asset management principles and concepts within the organization.
- Define their role in supporting the agency's asset management efforts
- Identify the strengths and weaknesses of your agency's asset management program
- Identify strategies for advancing your agency's use of asset management principles

Target Audience

This training is intended for 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. Participants should represent a number of organizational units, including (but not limited to) planning, engineering (e.g., facility management, design, construction), capital programming, maintenance and operations, financial management, traffic and safety engineering, system operation and management, and information technology. The course is also intended for individuals who manage or provide critical information to senior managers, or who have direct responsibility for meeting specific transportation system performance or program delivery targets.

Training Level: Basic

Fee: 2021: $270 Per Person; 2022: N/A

Length: 12 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-136106W

Course Title

Developing a Transportation Asset Management Plan (Virtual Delivery of 136106B)

"Developing a Transportation Asset Management Plan" was updated in Fall of 2017 to reflect the Asset Management Rule (23 CFR part 515) and incorporate recent FHWA guidance on risk management, life-cycle planning, and financial planning.

The class combines a brief (1-hour) Web-based training prerequisite with a 1.5-day online instructor-led session to introduce the role of the Transportation Asset Management Plan (TAMP) as a planning, communication, and accountability tool. You will encounter lessons focusing on three primary components to the TAMP, including strategic performance management, risk assessment, and financial management. The workshops throughout the course allow you to work through real-life examples and practice skills, such as setting strategies. You'll find a variety of resources, tools, and guidelines for use in developing a TAMP.

This course is the second in a series of courses on transportation asset management. All participants registering for this course must have completed the prerequisite NHI-136106A or NHI-136106V - An Introduction to Transportation Asset Management or have demonstrated a solid background in transportation asset management principles and planning. In any event, all participants must successfully complete the Web-based training 136106C. The Web-based training is available at no additional charge and can be accessed via the NHI website.

Register today to attend this course in the convenience of your home and/or office anywhere in the country, remotely.

Outcomes

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

- Describe the role of a Transportation Asset Management Plan in a transportation agency.
- Identify strategies for incorporating risk into investment decisions.
- Explain how to determine whether an agency is making sustainable, long-term investments in its assets.
- Develop a Transportation Asset Management Plan that matches the amount of data and the sophistication of the analysis tools available.

Target Audience

The course is intended for senior-level and mid-level managers from State departments of transportation and other transportation agencies, who have the responsibility for decision-making in one or more areas addressed by transportation asset management. Course participants should represent a broad range of organizational units, such as (but not limited to) planning, engineering (facility management, design, and construction), capital programming, maintenance and operations, financial management, traffic and safety engineering, system operation and management, and information technology. If the agency has an Asset Management Steering Committee, its members would benefit from this course. In addition, individuals who manage individual assets or provide critical information to senior managers, or who have direct responsibility for meeting specific transportation system performance or program delivery targets, are also excellent candidates for attending the course.

Training Level: Intermediate

Fee: 2021: $270 Per Person; 2022: N/A

Length: 12 HOURS (CEU: 1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-310109

Course Title

Federal-Aid 101

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 elements and project milestones of the Federal-Aid Highway program.
- Describe the financial aspects and requirements of the Federal-Aid Highway program.
- Describe how the Federal-Aid Highway program fits with other laws (23 U.S.C and other laws that affect the Federal-Aid Highway program).
- Identify the requirements for using Federal-Aid Highway funding.
- Identify how FHWA initiatives such as civil rights, safety, and innovative financing impact the Federal-Aid Highway program.
- Explain the risk-based stewardship and oversight approach,
- Identify key responsibilities or elements of the risk-based stewardship and oversight approach.
- Identify the flexibility inherent in the Federal-Aid Highway program.

Target Audience

New/mid career hires from all disciplines (i.e., planners, engineers, environmental specialists, financial specialists or managers).

Training Level: Intermediate

Fee: 2021: $220 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 2.1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-310110V

Updated Training

Course Title

Federal-Aid Highways - 101 (State Version) (VIRTUAL DELIVERY)

Course Goal

The purpose of this course is to introduce the participants to the Federal-aid Highway Program (FAHP) and to give them a basic understanding of the major aspects of the program. While some of this information may not be new to all participants, this course will focus on using the presented KSA's (knowledge, skills and abilities) to enable the participants to perform their job more effectively and to make more informed decisions regarding the FAHP.

This update of Federal-aid 101 for States includes supplemental information on the impacts of the Fixing America's Surface Transportation Act, or "FAST Act." On December 4, 2015, the President signed the first Federal law in over ten years to provide long-term funding certainty for surface transportation. The FAST Act authorizes $305 billion over fiscal years 2016 through 2020 for the highway and motor vehicle safety, public transportation, motor carrier safety, hazardous materials safety, rail, and research, technology, and statistics programs. With its enactment, States and local governments could now move forward with critical transportation projects, like new highways and transit lines, with the confidence that they would have a Federal partner over the long term.

Outcomes

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

- Identify the elements and project development phases of the Federal-aid Highway Program
- Describe the financial aspects and requirements of the Federal-aid Highway Program
- Describe how the Federal-aid Highway Program fits with other laws (23 U.S.C. and other laws that affect the Federal-aid Highway Program)
- Identify the requirements and key approval points for using Federal-aid Highway funding
- Identify how Federal initiatives such as civil rights, safety, and innovative financing impact the Federal-aid Highway Program
- Explain the function of the Stewardship & Oversight Agreement
- Identify the flexibility inherent in the Federal-aid Highway Program

Target Audience

The two target audiences for Federal-aid 101 for States are:State highway officials (new hires and new-to-role personnel, among others) andLocal Public Agency (LPA) highway officials (public works directors, finance department personnel, and counterparts to State participants, among others).

Training Level: Intermediate

Fee: 2021: $425 Per Person; 2022: N/A

Length: 12 HOURS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-310119

Course Title

Writing Effective Program Review Reports: Moving People to Action

The ability to provide clear communication is vital to the business of FHWA and good writing skills are a key element in the communication process. FHWA uses program reviews as tools to fulfill its stewardship and oversight responsibilities, manage program risk, and identify process improvements for the Federal-aid program. Each year, FHWA conducts approximately 200 program reviews. The product of these reviews is usually a review that details the observations and recommendations of the review team in an effort to improve a process or product. The review's effectiveness is largely determined by how well the review is communicated to the target audience.

The goal of this course is to improve the writing skills of FHWA's employees. Improved writing skills should lead to higher quality review reviews, which in turn should increase FHWA's ability to motivate the reading audience to act upon the review's recommendations. Action on the part of the reader will ultimately lead to improved effectiveness in delivering FHWA programs by reducing costs, accelerating project delivery, and improving stewardship and oversight. Throughout this course, you will learn that effective writing is more than proper punctuation and using spell-check. It's learning how to write for your audience, the busy reader. You will also learn writing skills that will aid in motivating your readers to action.

Outcomes

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

- write an executive summary that informs the audience about potential problems and persuades them to act on your recommendations or solution;
- write recommendations that motivate the audience to take corrective action;
- discuss usefulness and readability;
- describe how review content is generated by questions;
- develop and answer review objectives;
- evaluate the logical link of review objectives, observations, and recommendations;
- focus on the relevant elements of an observation finding to create convincing support;
- use the deductive message-first structure throughout reviews;
- design/organize reviews to benefit the busy reader;
- control paragraph unity (one main topic) and coherence (flow);
- avoid information overload within sentences;
- control common sentence problems; and
- develop objective criteria for writing and reviewing reviews.

Target Audience

This course is primarily intended for FHWA personnel who are responsible for writing program reviews. It is anticipated that participants may not have in-depth writing background. More knowledgeable persons may be expected to attend and will add to the overall effectiveness of the training through their active participation.

Training Level: Intermediate

Fee: 2021: $185 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 22; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-310119V

Course Title

Writing Effective Program Review Reports: Moving People to Action (Virtual Delivery)

This course is delivered as a virtual delivery.

The ability to provide clear communication is vital to the business of FHWA and good writing skills are a key element in the communication process. FHWA uses program reviews as tools to fulfill its stewardship and oversight responsibilities, manage program risk, and identify process improvements for the Federal-aid program. Each year, FHWA conducts approximately 200 program reviews. The product of these reviews is usually a review that details the observations and recommendations of the review team in an effort to improve a process or product. The review's effectiveness is largely determined by how well the review is communicated to the target audience.

The goal of this course is to improve the writing skills of FHWA's employees. Improved writing skills should lead to higher quality review reviews, which in turn should increase FHWA's ability to motivate the reading audience to act upon the review's recommendations. Action on the part of the reader will ultimately lead to improved effectiveness in delivering FHWA programs by reducing costs, accelerating project delivery, and improving stewardship and oversight. Throughout this course, you will learn that effective writing is more than proper punctuation and using spell-check. It's learning how to write for your audience, the busy reader. You will also learn writing skills that will aid in motivating your readers to action.

Outcomes

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

- write an executive summary that informs the audience about potential problems and persuades them to act on your recommendations or solution;
- write recommendations that motivate the audience to take corrective action;
- discuss usefulness and readability;
- describe how review content is generated by questions;
- develop and answer review objectives;
- evaluate the logical link of review objectives, observations, and recommendations;
- focus on the relevant elements of an observation finding to create convincing support;
- use the deductive message-first structure throughout reviews;
- design/organize reviews to benefit the busy reader;
- control paragraph unity (one main topic) and coherence (flow);
- avoid information overload within sentences;
- control common sentence problems; and
- develop objective criteria for writing and reviewing reviews.

Target Audience

This course is primarily intended for FHWA personnel who are responsible for writing program reviews. It is anticipated that participants may not have in-depth writing background. More knowledgeable persons may be expected to attend and will add to the overall effectiveness of the training through their active participation.

Training Level: Intermediate

Fee: 2021: $200 Per Person; 2022: N/A

Length: 6 HOURS (CEU: .9 UNITS)

Class Size: MINIMUM: 22; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-310120

Course Title

Conducting Effective Program Reviews

This course was substantially updated in November 2017 to provide a more focused step-based approach to the program review process.

'Conducting Effective Program Reviews ' is a 2-Day Instructor-led Training (ILT) course offered by NHI, the authoritative source in transportation training.

To accomplish FHWA's Stewardship Mission, units at every level and in every program area need the expertise to (often jointly with partners) plan, design, and carry out 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 Program Reviews, Process Reviews, and Continuous Process Improvement Reviews, this two-day workshop provides instruction, consultation, and hands-on assistance in the methodology and tools for conducting program reviews that get results.

The course is organized around seven main lessons, which follow the seven steps of the program review process: 1) Establish Objectives, 2) Plan the Review, 3) Collect Data, 4) Analyze Data, 5) Develop Observations and Recommendations, 6) Write the Report and Communicate Results, and 7) Monitor Implementation of Recommendations.

This course was substantially updated in November 2017 to provide a more focused step-based approach to the program review process.

This course combines instructor presentation with group discussions and group activities. Participants take a written assessment at the end of the course.

Participants will take home a participant workbook containing ample background notes, plus the "Program Review Process Primer," which recaps the main points of each review process step.

To enroll in this Instructor-led Training course, click the 'View Sessions' button and click 'Add To Cart' next to your session choice. If there are no upcoming sessions, click 'Sign Up for Session Alerts.'

Any organization can host this course. To host this course and bring training to your organization, click the 'Host this Course' button.

Outcomes

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

- Discuss the purpose of program reviews
- Develop a Charter, including review objectives
- Develop a Review Plan, including the steps for data collection
- Collect and document the appropriate review data
- Select and employ data analysis tools to interpret and present review data
- Develop an effective observation and link it to an objective and recommendation
- Write a program Review Report and conduct an effective close-out meeting
- Use the Review Response Tracker to monitor the implementation of recommendations

Target Audience

The target audience for this Instructor-led Training course includes FHWA staff who participate in and/or lead program or process reviews. As such, the target staff will primarily come from the division offices, but may include staff from FHWA headquarters, State DOTs, or the Resource Centers (RC).

Training Level: Basic

Fee: 2021: $225 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-310123

Course Title

FHWA Basic Contracting Officers Representative (COR) Training

Contracting Officer's Representatives (COR) are integral to the acquisition process and perform critical acquisition functions; FHWA relies on CORs to help the Contracting Officer (CO) monitor work conducted under contracts in order to meet the Agency mission. Because of this important role, FHWA needs to develop the knowledge of their new and mid-career hires in the area of acquisition management.

The overall course goal is to address the essential core competencies, outlined by the Office of Federal Procurement Policy (OFPP), required for CORs to effectively monitor Federal Government contracts. The class is tailored to meet the specific needs of FHWA CORs with examples and content directed to common contract types and issues faced by FHWA and Federal Lands Programs.

Participants who successfully complete the course will earn 40 Continuous Learning Points in support of a Level II FAC-COR certification.

Outcomes

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

- Explain the duties and responsibilities of the Contracting Officer's Representative (COR)
- Discuss COR best practices
- Define key acquisition terminology
- Associate the importance of professional business skills with effectively monitoring the work under the contract
- Determine the elements of contract monitoring appropriate for a given contract
- Describe the process leading up to contract award
- Appropriately respond to legal and ethical issues that may arise

Target Audience

New/mid-career hires who anticipate being appointed as a COR. Agreement Officer's Technical Representatives, persons monitoring task orders under an Indefinite Delivery/Indefinite Quantity contract, and anyone desiring Basic COR Training.

Training Level: Basic

Fee: 2021: $290 Per Person; 2022: N/A

Length: 5 DAYS (CEU: 3 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-310123V

Course Title

FHWA Basic Contracting Officers Representative (COR) Training (VIRTUAL DELIVERY)

Contracting Officer's Representatives (COR) are integral to the acquisition process and perform critical acquisition functions; FHWA relies on CORs to help the Contracting Officer (CO) monitor work conducted under contracts in order to meet the Agency mission. Because of this important role, FHWA needs to develop the knowledge of their new and mid-career hires in the area of acquisition management.

The overall course goal is to address the essential core competencies, outlined by the Office of Federal Procurement Policy (OFPP), required for CORs to effectively monitor Federal Government contracts. The class is tailored to meet the specific needs of FHWA CORs with examples and content directed to common contract types and issues faced by FHWA and Federal Lands Programs.

Participants who successfully complete the course will earn 40 Continuous Learning Points in support of a Level II FAC-COR certification.

Outcomes

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

- Explain the duties and responsibilities of the Contracting Officer's Representative (COR)
- Discuss COR best practices
- Define key acquisition terminology
- Associate the importance of professional business skills with effectively monitoring the work under the contract
- Determine the elements of contract monitoring appropriate for a given contract
- Describe the process leading up to contract award
- Appropriately respond to legal and ethical issues that may arise

Target Audience

New/mid-career hires who anticipate being appointed as a COR. Agreement Officer's Technical Representatives, persons monitoring task orders under an Indefinite Delivery/Indefinite Quantity contract, and anyone desiring Basic COR Training.

Training Level: Basic

Fee: 2021: $290 Per Person; 2022: N/A

Length: 40 HOURS (CEU: 3 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-310124A

WBT

Course Title

Highway Research 101: Administering the FHWA Highway Research Program

In advancing Federal highway research goals, collaboration between FHWA, grant recipients, and sub-recipients is critical. The Highway Research 101: Administering the FHWA Highway Research Program Web-based Training (WBT) is intended to highlight the responsibilities of FHWA Division Office staff members responsible for research oversight and to acquaint them with the key aspects of regulation and practice that satisfy the agency's responsibility, as well as expose them to FHWA R&T priorities and programs to help them advance agency goals.

Implementation of RD&T programs is highly contextual, as is implementation of the overall federally assisted, State-administered programs. Those considered among the best are developed and executed to meet the unique priorities and needs of each FHWA partner. Thus, the emphasis of this course is not to communicate the one best way to administer programs using specific professional disciplines. Instead, it communicates the basics of sound project and program management, ranging from practices that lay a framework for optimizing return on investment and provide for accountability to stimulating innovation and improvements to the state of the practice. Formal case studies are available in this course to illustrate the concepts.

Outcomes

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

- Define FHWA's Research Development and Technology (RD&T) policy
- Explain the Research Program Management Process
- Describe how to administer the requirements for SP&R Subpart B work programs
- Explain how to determine what costs are eligible
- Define a peer exchange program
- Identify the RD&T Coordinator's role in determining state highway problems and RD&T needs
- Identify how national programs and organizations impact/complement SP&R Part B

Target Audience

The target audience for this course is the staff person deployed in each FHWA Division Office to carry out research oversight. Responsibility for the research portion of SP&R is normally only one of several functional programs administered by this individual. This course is applicable to FHWA research coordinators and other FHWA staff who need training and knowledge to administer the research portion of the SP&R program and support the development and execution of State research programs.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 4 HOURS (CEU: .4 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-310125

Course Title

Risk-Based Stewardship and Oversight (Federal Version)

This Instructor-led Training (ILT) course will expand participants' understanding of the risk-based processes, roles and responsibilities that Federal Highway Administration (FHWA) Division and Program Office personnel are using to help optimize the effective and efficient delivery of the Federal-aid Highway Program (FAHP), and to help ensure its compliance with Federal laws and regulations. This approach, as it is being implemented, is commonly known as the Risk-based Stewardship and Oversight (RBSO) approach and builds upon the risk management foundation in the agency's strategic and performance planning processes. The RBSO model is designed to identify risk-based S&O actions and initiatives at both the national and Division levels for both programs and projects.

Outcomes

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

- Describe the FHWA vision and rationale for using Risk-Based Stewardship and Oversight (RBSO), built on four core principles, to optimize the successful delivery of the Federal Highway Program and ensure compliance with Federal law and regulations
- Explain how RBSO integrates strategic and performance planning to allocate limited resources in order to achieve stewardship and oversight objectives
- Explain how FHWA/State DOT Stewardship and Oversight (S&O) Agreements are used to ensure respective S&O responsibilities and expectations are set
- Demonstrate how RBSO integrates the FHWA risk management process to identify program and project risks, and develop the appropriate S&O response strategies to effectively manage those risks
- Explain how program involvement optimizes successful program and project delivery and helps ensure compliance with Federal requirements
- Explain how project involvement optimizes successful program and project delivery and helps ensure compliance with Federal requirements
- Demonstrate the RBSO tools FHWA uses to provide a reasonable level of assurance of both project and program compliance, while also informing other S&O strategies and actions
- Demonstrate how Divisions use risk-based project level S&O activities to: (1) manage project level risks, and (2) provide value-added stewardship to help optimize successful project and program delivery
- Demonstrate how the various RBSO tools work together to optimize the successful delivery of the Federal Highway Program

Target Audience

Since every member of FHWA is either directly or indirectly engaged in carrying out the agency's role of stewardship and oversight on a routine basis, the target audience for this course includes FHWA personnel at all levels and in all disciplines, in both Division and Program Offices. State DOT management officials, and other DOT staff involved in the delivery of the FAHP, would also benefit from taking this course.

Training Level: Basic

Fee: 2021: $255 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-310126

Course Title

Risk-Based Stewardship and Oversight (State Version)

The Federal Highway Administration (FHWA) is implementing a risk-based framework to optimize the effective and efficient delivery of the Federal-aid Highway Program and to help ensure its compliance with Federal laws and regulations. The framework is known as the Risk-based Stewardship and Oversight (RBSO) approach, and builds upon the risk management foundation in the agency's strategic and performance planning processes. The RBSO model is designed to identify risk-based stewardship and oversight (S&O) actions and initiatives for both programs and projects. This Instructor-led Training (ILT) course will provide participants with a working knowledge of the RBSO approach and a basic understanding of its key components: the Stewardship and Oversight Agreement between an FHWA Division and the State DOT, the role of risk management in developing stewardship and oversight strategies, the data-driven Compliance Assessment Program (CAP), and risk-based stewardship and oversight involvement in Projects of Division Interest (PoDIs), including Major Projects. State DOTs will benefit from understanding how and why FHWA is implementing its new RBSO approach. State DOTs will learn the basis upon which they can assume greater responsibilities for various project types as envisioned by Congress in 23 USC 106(c) and their oversight responsibilities under Section 106(g). The training will provide the State DOTs and local public agencies (LPAs) with tools to help them manage risk and focus resources when assuming project actions traditionally handled by FHWA. The course presents opportunities where State DOTs can discuss how they can partner with their FHWA counterparts in various elements of the RBSO framework for successful implementation.

Outcomes

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

- Describe the vision and foundation for Risk-Based Stewardship and Oversight (RBSO).
- Explain how FHWA and State DOT roles and responsibilities are documented within the Stewardship and Oversight Agreement.
- Relate how the RBSO framework integrates risk management practices in partnership with State DOTs.
- Describe how FHWA is increasingly using program involvement, rather than project involvement, to support States in optimizing the effective delivery of the FAHP.
- Identify those project actions and approvals that FHWA Divisions are still responsible for under 23 U.S.C. Section 106.
- Explain how FHWA identifies Projects of Division Interest (PoDIs) and develops supporting plans.
- Describe how FHWA will use project data gathering tools for assessing program compliance.

Target Audience

State DOT program managers, project managers, engineers, planners, and other transportation specialists involved in the delivery of projects under the Federal-aid Highway Program. In addition to State DOT staff, their counterparts at Local Public Agencies, as well as those at other State and regional agencies that deliver Federal-aid highway projects, would also benefit from taking this course.

Training Level: Basic

Fee: 2021: $160 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-361031A

WBT

Course Title

DBE/ACDBE Certification Presentation

On November 3, 2014, the Department of Transportation issued a final rule amending its disadvantaged business enterprise program at 49 CFR Part 26. This final rule contains amendments to various certification provisions that are not reflected in the 9-module DBE/ACDBE Certification Training series (FHWA-NHI-361031). We are working to update the 9 modules to reflect the changes. In the meantime, we recommend that upon completion of training you watch a recorded presentation of the final rule amendments available at the Departmental Office of Civil Rights website here: http://www.civilrights.dot.gov/disadvantaged-business-enterprise

-- This presentation is provided to you at no cost by the Office of the Secretary of Transportation (OST) --

This informative presentation will help you become aware of the skills necessary to perform a full review and analysis of Disadvantaged Business Enterprise (DBE) and Airport Concession Disadvantaged Business Enterprise (ACDBE) certification eligibility. This material is delivered through approximately 12 hours of web-based presentations consisting of 9 critical module segments. This material helps expose persons responsible for determining whether or not a firm qualifies as a DBE or ACDBE, as well as those who have general DBE/ACDBE program responsibilities, are knowledgeable concerning all requirements for eligibility, and that the interpretation and application of requirements are consistent throughout the country.

This is presently an informative presentation as new updates are being developed and should available mid-2021.

Outcomes

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

- Identify and understand the historical foundation of the DBE/ACDBE program, its objectives, and the overall program operation
- Identify basic certification eligibility requirements according to the regulation 49 CFR Part 26
- Assess whether applicant firms and existing DBE/ACDBEs meet the small business size requirements of the regulation
- Assess ownership/control requirements according to the regulation
- Determine how applicant owners can make an individual showing of social and economic disadvantage according to 49 CFR Part 26 and Appendix E
- Assess whether firm owners meet the economic disadvantage requirements of the regulation
- Perform on-site reviews and collect necessary data
- Properly deny applicant firms entry into the program or remove existing firms' DBE/ACDBE certification
- Properly apply the interstate certification provisions of the regulation
- Understand fraud and fraud prevention strategies applicable to the DBE/ACDBE program
- Identify and understand DBE/ACDBE certification requirements

Target Audience

All persons responsible for determining whether a firm qualifies as a DBE or ACDBE should view this presentation, including certifiers and DBE Liaison Officers. Certifiers are required to be knowledgeable concerning all requirements for eligibility and that the interpretation and application of the regulatory requirements are applied consistently nationwide. Ensuring that individuals processing DBE certifications apply the same measure of scrutiny and subjectivity is integral to maintaining the integrity of the program.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 10 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133078

Course Title

Access Management: Fundamental Principles and Application

This two-day course is designed to provide those who plan, operate, design, construct, or administer surface transportation or land use systems with a basic understanding of access management concepts and tools (e.g., permits, governance, practicality) available to them, the benefits of successful access management, and the costs, consequences, and even potential liabilities of unsuccessful access management.

Outcomes

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

- Define key concepts of access management and understand the symbiotic relationship of driveways, local streets, collectors, arterials and highways.
- List the benefits of good access management. Understand the consequences of poor access management.
- State the impacts of either favoring access or through traffic on the safety, operations, and sustainability of surface transportation systems for all users.
- Explain the importance of access management to complete streets and transportation (all modes) systems.
- Describe access-related challenges as they pertain to public rights-of-way and private property.
- Choose access management techniques or combinations of techniques that meet intended precepts to move traffic, or provide access, with attention to enhancing safety and operations for all users.
- Identify and address legal, political, and jurisdictional challenges to implementation of access management.

Target Audience

This course is intended for both technical and non-technical professionals working in, or having a strong interest in, transportation or land use planning, operations, design, maintenance, and development review in the public and private sectors.

Training Level: Basic

Fee: 2021: $325 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-133078A

Course Title

Access Management: Fundamental Principles, Application and Computation

This course is designed to provide those who plan, operate, design, construct, or administer surface transportation or land use systems with a basic understanding of the concepts and tools available to them, the benefits of successful access management, and the costs of unsuccessful access management.

This three-day course provides more in-depth content targeted for technical professionals. This course is intended to attract participants beyond traditional state and local agency technical staff, including: planners, engineers, permit specialists, legal counsel, and project managers associated with transportation planning, operations, design, maintenance, and development review. The third day of this three-day class is designed to provide additional and more advanced instruction to participants than the FHWA-NHI133078 (two-day) course and is for those who desire to deepen their understanding of access management through more computationally-driven applications of the course materials.

Outcomes

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

- Determine the impacts of signalized and unsignalized access connections on a given corridor in terms of safety, capacity, and business market area
- Describe optimum connectivity for a given land use
- Calculate needed turn lane lengths, given a set of data
- Describe the interactions of access management treatments with both motorized and non-motorized users
- Select appropriate median access management techniques for a given application
- Select appropriate margin access management techniques for a given application

Target Audience

Technical professionals who are responsible for the engineering and planning applications necessary to support the development and administration of policies, planning, and design of transportation facilities and programs regarding access management.

Training Level: Intermediate

Fee: 2021: $400 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-138006A

Course Title

Transportation Performance Management for Safety - Essentials

This course will be delivered for free to Metropolitan Planning Organizations and State DOTs. The reduced price is being provided by the FHWA Office of Infrastructure. Prior to taking this course, participants are encouraged to take the Transportation Performance Management Overview for the MAP-21 and FAST Acts Instructor-led Training course NHI-138004, or have a foundational knowledge of transportation performance management. YOU CAN PREVIEW A SUMMARY OF THIS COURSE BY COPYING AND PASTING THE FOLLOWING URL: https://connectdot.connectsolutions.com/nhi138006executivesummary/ A web-based version of this course is also available: NHI-138005.

'Transportation Performance Management (TPM) for Safety - Essentials' is a one-day Instructor-led Training course offered by NHI.

This course explains the safety performance measures and noteworthy practices necessary for States to comply with the MAP-21 and FAST Act requirements. The course recommends an evidence-based and data-driven methodology for setting safety targets and provides participants with an understanding of the safety data needed to meet the safety TPM requirements. The course helps improve the ability of States to coordinate target setting between the State Departments of Transportation (State DOTs) and the State Highway Safety Office (SHSO), as well as between the State DOT and the State's Metropolitan Planning Organizations (MPOs).

This Instructor-led Training course provides hands-on exercises with reviewing crash data trends and establishing safety targets based on planned safety programs, external factors, and countermeasure deployment. The course also includes a written assessment.

The course is organized into the following lessons:

+ Introduction
+ Safety Performance Management and Performance-Based Planning
+ Safety Performance Measures and Related Data
+ Performance-Based Safety Target Setting
+ Resource Allocation in Safety Performance Management
+ Safety Performance Reporting, Accountability, and Transparency

This course was condensed from a two-day version (#138006) in August of 2018.

To enroll in this Instructor-led Training course, select the 'View Sessions' button and select 'Add To Cart' next to your session choice. If there are no upcoming sessions, select 'Sign Up for Session Alerts.'

Outcomes

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

- Describe the planning process as it applies to safety
- List legislative and regulatory requirements
- List data sources for safety performance measures and targets
- Describe the coordination and collaboration processes for target setting between the State DOT and the SHSO and the State DOT and the MPOs in the State
- Describe the process and methods for setting evidence-based safety targets
- Identify considerations for making safety-related resource allocation decisions
- Define approaches for safety performance reporting, accountability, and transparency

Target Audience

The target audience for this Instructor-led Training course primarily includes State DOT safety specialists, planners, and others involved in the safety performance-based planning process; SHSO planners and decision makers; and MPO planners, safety experts, and decision makers. FHWA, the National Highway Traffic Safety Administration (NHTSA), Strategic Highway Safety Plan (SHSP) stakeholders, Rural Transportation Planning Organizations, and senior decision-

makers make up a secondary audience.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142045

Course Title

Pedestrian Facility Design

To emphasize the importance of planning for pedestrians, the course focuses on case examples involving corridor and 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. This training was developed to provide information and application opportunities to 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 by people with disabilities, and accessibility improvements need to be implemented for existing facilities.

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
- 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, disability and orientation specialists, transportation planners, architects, landscape architects, as well as decisionmakers at the project planning level.

Training Level: Intermediate

Fee: 2021: $190 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: .9 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-142046

Course Title

Bicycle Facility Design

This training will assist planners and designers in learning how to apply the existing standards and how to deal with other technical issues involved. 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 bicycling (and shared use) facilities being planned and built. Although there are no Federal design standards for bicycle facilities, the AASHTO Guide for the Development of Bicycle Facilities, or a modification thereof, serves as a design guide. As with most guides, the AASHTO guide cannot address every possible scenario so designers often need to apply engineering judgment where specific information is not provided. The training fee includes a copy of the AASHTO Guide for the Development of Bicycle Facilities.

Outcomes

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

- List the needs of bicyclists as transportation 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 decisionmakers at the project planning level.

Training Level: Accomplished

Fee: 2021: $220 Per Person; 2022: N/A

Length: 1.5 DAYS (CEU: 1 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

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:

- Describe Active and Passive Devices used in connection with at-grade crossings
- Identify techniques and engineering principles used for at-grade crossings
- Appraise existing at-grade crossings
- Develop alternate methods to improve railroad-highway grade 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.

Training Level: Accomplished

Fee: 2021: $210 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380032A

Course Title

Roadside Safety Design (3-Day)

This course provides an overview of the AASHTO Roadside Design Guide. At the end of the course, you 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; and apply other highway hardware core competencies.

This course is intended for experienced safety and design engineers.

Outcomes

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

- Apply the clear zone concept to all classes of roadway
- Warrant roadside and median barriers
- Design roadside barriers
- Select the most appropriate end treatment
- Select the most appropriate safety hardware
- Correctly locate safety hardware
- Describe the elements of economic analysis

Target Audience

Experienced Federal, State, and local highway engineers involved in the formulation and/or application of policies and standards relating to the design of safe roadside hardware.

Training Level: Accomplished

Fee: 2021: $225 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380069

Course Title

Road Safety Audits/Assessments

Performing effective road safety audits/assessments, (RSAs), improves safety and demonstrates to the public an agency's dedication to crash reduction. An RSA is a formal safety performance examination of an existing or future road or intersection by an independent audit team. The RSA training provides practical information on how to conduct an RSA, select a location, and build an independent, multi-disciplinary team. The costs, time, benefits, and common myths and concerns surrounding RSAs will be discussed. Participants learn how to improve transportation safety by applying a new proactive approach. Emphasis is placed on using low cost safety improvements as well as understanding the interaction between the highway and all road users.

The training includes hands-on application of the training materials, which includes information on each stage of a road safety audit and easy-to-use-prompt lists. A copy of "FHWA Road Safety Audit Guidelines" is provided.

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 local or statewide basis

Target Audience

Personnel who are likely to serve on a road safety audit team including Federal, State, local transportation personnel, first responders and consultants who conduct highway safety studies should also attend.

Training Level: Accomplished

Fee: 2021: $205 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380070

Course Title

Highway Safety Manual Practitioners Guide for Geometric Design Features

This course includes both 2-lane and multi-lane highways and provides a proven methodology for the safety performance of geometric design decisions in a like manner to that of predicting capacity and level of service based upon large scale definitive research. The crash prediction models for total crashes and cross-section related crashes based upon lane width, shoulder width, roadside hazard, traffic volume (exposure) and other characteristics are presented. Examples of safety performance prediction are presented for highway segments and intersections.

Discussion of research and the interactive effects of lane and shoulder widths, hazard rating, and access density (driveways) on safety performance are presented. Each student receives a copy of the "Safety Effects of Highway Design Features" manual.

IMPORTANT: Participants should bring a scientific notation calculator as the course involves calculating decimal value to decimal power for crash prediction values.

Outcomes

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

- Recognize the safety effects of geometric design features
- Predict the safety performance of geometric design features
- 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 both two-lane rural and/or multilane highways.

Training Level: Accomplished

Fee: 2021: $180 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380070A

Course Title

Highway Safety Manual Practitioners Guide for Two-Lane Rural Highways

This course provides a proven methodology for the safety performance of geometric design decisions in a like manner to that of predicting capacity and level of service based upon large scale definitive research. The crash prediction models for total crashes and cross-section related crashes based upon lane width, shoulder width, roadside hazard, traffic volume (exposure) and other characteristics are presented. Examples of safety performance prediction are presented for highway segments and intersections.

Discussion of research and the interactive effects of lane and shoulder widths, hazard rating, and access density (driveways) on safety performance are presented. Each student receives a copy of the "Safety Effects of Highway Design Features for Two-Lane Rural Highways" manual.

IMPORTANT: Participants should bring a scientific notation calculator as the course involves calculating decimal value to decimal power for crash prediction values.

Outcomes

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

- Recognize the safety effects of geometric design features
- Predict the safety performance of geometric design features
- 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.

Training Level: Accomplished

Fee: 2021: $185 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380070B

Course Title

Highway Safety Manual Practitioners Guide for Multilane Highways

This course provides proven methodology for the safety performance of geometric design decisions for multilane highways in a like manner to that of predicting capacity and level of service based upon large scale definitive research. The crash prediction models for total crashes based upon lane width, shoulder width, roadside hazard, traffic volume (exposure) and other characteristics are presented. Examples of safety performance prediction are presented for highway segments and intersections.

Discussion of research and the interactive effects on safety performance for median width and barriers, of access (driveways) and side streets and intersection turning lanes are presented. Each student receives a copy of the "Safety Effects of Highway Design Features" manual.

IMPORTANT: Participants should bring a scientific notation calculator as the course involves calculating decimal value to decimal power for crash prediction values.

Outcomes

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

- Recognize the safety effects of geometric design features
- Predict the safety performance of geometric design features
- 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 multilane highways.

Training Level: Accomplished

Fee: 2021: $185 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380071

Course Title

Interactive Highway Safety Design Model

This course instructs highway design project managers, planners, designers, and traffic and safety reviewers in the application of the Interactive Highway Safety Design Model (IHSDM) software and provides 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

https://highways.dot.gov/safety/interactive-highway-safety-design-model/interactive-highway-safety-design-model-ihsdm

Participants gain hands-on experience with the software. Therefore, the training facility must be equipped with computers. There should be no more than two participants per computer. Minimum system specifications for the computers are as follows: Operating System - Microsoft Vista, Windows XP or Windows 2000 Professional; HTML Browser - Microsoft Internet Explorer, Netscape Navigator, or Foxfire; Spreadsheet Program, Microsoft Excel or equivalent; Hardware - At least 450 MHz Pentium III (or equivalent) CPU, 256 MB RAM or greater desirable, 800x600 high colors (16 bit) display; and 300 MB free disk space

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.

Training Level: Accomplished

Fee: 2021: $215 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380076

Course Title

Low-Cost Safety Improvements Workshop

This course provides a comprehensive presentation of low-cost, ready-to-use improvements that enhance the safety of highways. The course covers a synthesis of countermeasures and their associated crash reduction factors as identified in the "AASHTO Strategic Highway Safety Plan -- NCHRP 500 Guidebooks." Countermeasures for specific areas of highway safety, including roadside hazards; signing, markings, and lighting; traffic control devices; intersections; traffic signals; and railroad grade crossings are discussed. The course also introduces recent low-cost safety improvements that have been developed by States and local engineers. Through exercises, participants learn how to analyze highway safety situations and apply appropriate countermeasures to those situations.

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 elect 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 crashes.

Training Level: Accomplished

Fee: 2021: $155 Per Person; 2022: N/A

Length: 1 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380077

Course Title

Intersection Safety Workshop

Beginning with an introduction to intersection and crash characteristics, this course provides information on ready-to-use, direct-application safety measures for rural unsignalized and signalized intersections. Participants are presented with a synthesis of countermeasures and their associated crash reduction factors as identified in the "AASHTO Strategic Highway Safety Plan - NCHRP 500 Guidebooks." The course focuses on the application of these countermeasures and design and safety operations best practices for substantive improvements to intersection safety. During the course, participants have the opportunity to present intersection safety situations that they are currently facing and discuss appropriate countermeasures and best practices to address those situations.

Outcomes

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

- Apply models (equations) to predict the 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.

Training Level: Accomplished

Fee: 2021: $120 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380077V

Course Title

Intersection Safety Workshop (VIRTUAL DELIVERY)

Beginning with an introduction to intersection and crash characteristics, this course provides information on ready-to-use, direct-application safety measures for rural unsignalized and signalized intersections. Participants are presented with a synthesis of countermeasures and their associated crash reduction factors as identified in the "AASHTO Strategic Highway Safety Plan - NCHRP 500 Guidebooks." The course focuses on the application of these countermeasures and design and safety operations best practices for substantive improvements to intersection safety. During the course, participants have the opportunity to present intersection safety situations that they are currently facing and discuss appropriate countermeasures and best practices to address those situations.

Outcomes

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

- Apply models (equations) to predict the 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.

Training Level: Accomplished

Fee: 2021: $120 Per Person; 2022: N/A

Length: 6 HOURS (CEU: .6 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380078

Course Title

Signalized Intersection Guidebook Workshop

This course provides a holistic approach to signalized intersections and considers the safety and operational implications of a particular treatment on all system users, including motorists, pedestrians, bicyclists, and transit users. Using the guide, participants learn to make insightful intersection assessments, understand the tradeoffs of potential improvement measures, and apply guidebook measures and best practices to reduce the incidence of intersection crashes.

Practitioners will find the tools and information necessary to make insightful intersection assessments and to understand the impacts of potential improvement measures. The information in this guide is based on the latest research available and includes examples of novel treatments as well as best practices in use by jurisdictions across the United States and other countries. Additional resources and references are mentioned for the practitioner who wishes to learn more about a particular subject.

This guide upon which this workshop is based is not intended to replicate or replace traditional traffic engineering documents such as the Manual on Uniform Traffic Control Devices (MUTCD), the Highway Capacity Manual (HCM) 2010 or the American Association of State Highway and Transportation Officials' (AASHTO) A Policy on Geometric Design of Highways and Streets, nor is it intended to serve as a standard or policy document. Rather, it provides a synthesis of the best practices and treatments intended to help practitioners make informed, thoughtful decisions.

Outcomes

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

- Describe the process for selecting traffic signal locations
- Explain various traffic signal parameters, left turn phasing options, and detection
- Explain the relationship between safety and operations
- Identify and describe performance and safety impacts of traffic signal treatments

Target Audience

Professionals responsible for design, management, or operation of traffic signals. This includes design engineers, operations engineers and technicians (advanced) of state/local agencies, consultants, and FHWA Operations staff.

Training Level: Intermediate

Fee: 2021: $130 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380078V

Course Title

Signalized Intersection Guidebook Workshop (VIRTUAL DELIVERY)

This course provides a holistic approach to signalized intersections and considers the safety and operational implications of a particular treatment on all system users, including motorists, pedestrians, bicyclists, and transit users. Using the guide, participants learn to make insightful intersection assessments, understand the tradeoffs of potential improvement measures, and apply guidebook measures and best practices to reduce the incidence of intersection crashes.

Practitioners will find the tools and information necessary to make insightful intersection assessments and to understand the impacts of potential improvement measures. The information in this guide is based on the latest research available and includes examples of novel treatments as well as best practices in use by jurisdictions across the United States and other countries. Additional resources and references are mentioned for the practitioner who wishes to learn more about a particular subject.

This guide upon which this workshop is based is not intended to replicate or replace traditional traffic engineering documents such as the Manual on Uniform Traffic Control Devices (MUTCD), the Highway Capacity Manual (HCM) 2010 or the American Association of State Highway and Transportation Officials' (AASHTO) A Policy on Geometric Design of Highways and Streets, nor is it intended to serve as a standard or policy document. Rather, it provides a synthesis of the best practices and treatments intended to help practitioners make informed, thoughtful decisions.

Outcomes

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

- Describe the process for selecting traffic signal locations
- Explain various traffic signal parameters, left turn phasing options, and detection
- Explain the relationship between safety and operations
- Identify and describe performance and safety impacts of traffic signal treatments

Target Audience

Professionals responsible for design, management, or operation of traffic signals. This includes design engineers, operations engineers and technicians (advanced) of state/local agencies, consultants, and FHWA Operations staff.

Training Level: Intermediate

Fee: 2021: $130 Per Person; 2022: N/A

Length: 6 HOURS (CEU: .6 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380089

Course Title

Designing for Pedestrian Safety

The Designing for Pedestrian Safety course is intended to help state and local transportation engineering professionals address pedestrian safety issues through design and engineering solutions. The training course includes a field exercise in the application of the principles, concepts, and strategies covered in the course. Also the participants will share and prioritize potential policies, programs, and strategies.

Outcomes

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

- Describe the influence of planning factors: land use, street connectivity, access management, site design, and level of service.
- Describe how pedestrians should be considered and provided for during the planning, design, work zone, maintenance, and operations phases.
- Describe how human behavior affects the interaction between pedestrians and drivers
- Identify good practices and effective solutions to enhance pedestrian safety and accessibility.

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 shall include: Engineers, planners, traffic safety and enforcement professionals, public health and injury prevention professionals, and decision-makers who have the responsibility of improving pedestrian safety at the state or local level.

Training Level: Basic

Fee: 2021: $175 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380089V

Course Title

Designing for Pedestrian Safety (VIRTUAL DELIVERY)

The Designing for Pedestrian Safety course is intended to help state and local transportation engineering professionals address pedestrian safety issues through design and engineering solutions. The training course includes a field exercise in the application of the principles, concepts, and strategies covered in the course. Also the participants will share and prioritize potential policies, programs, and strategies.

Outcomes

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

- Describe the influence of planning factors: land use, street connectivity, access management, site design, and level of service.
- Describe how pedestrians should be considered and provided for during the planning, design, work zone, maintenance, and operations phases.
- Describe how human behavior affects the interaction between pedestrians and drivers
- Identify good practices and effective solutions to enhance pedestrian safety and accessibility.

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 shall include: Engineers, planners, traffic safety and enforcement professionals, public health and injury prevention professionals, and decision-makers who have the responsibility of improving pedestrian safety at the state or local level.

Training Level: Basic

Fee: 2021: $175 Per Person; 2022: N/A

Length: 12 HOURS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380090

Course Title

Developing a Pedestrian Safety Action Plan

The Developing a Pedestrian Safety Action Plan course is designed to help state and local officials learn "HOW TO" address pedestrian safety issues in the development of a pedestrian safety action plan, program, and activities tailored to their community. It is also intended to assist agencies in the further enhancement of their existing pedestrian safety plan, programs, and activities, including involving partners and stakeholders, collecting and analyzing data and information, prioritizing issues and concerns, selecting and implementing an optimal combination of education, enforcement, engineering strategies. The training course includes a field exercise in the application of the principles, concepts, and strategies covered in the course. Also the participants will share and prioritize potential policies, programs, and strategies.

Outcomes

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

- Develop and implement a Pedestrian Safety Action Plan addressing your specific issues, problems, needs and resources
- Describe how pedestrians should be considered and provided for during the planning, design, work zone, maintenance, and operations phases.
- Describe how human behavior affects the interaction between pedestrians and drivers
- Identify good practices and effective solutions to enhance pedestrian safety and accessibility.

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 shall include: Engineers, planners, traffic safety and enforcement professionals, public health and injury prevention professionals, and decision-makers who have the responsibility of improving pedestrian safety at the state or local level.

Training Level: Basic

Fee: 2021: $190 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380090V

Course Title

Developing a Pedestrian Safety Action Plan (VIRTUAL DELIVERY)

The Developing a Pedestrian Safety Action Plan course is designed to help state and local officials learn "HOW TO" address pedestrian safety issues in the development of a pedestrian safety action plan, program, and activities tailored to their community. It is also intended to assist agencies in the further enhancement of their existing pedestrian safety plan, programs, and activities, including involving partners and stakeholders, collecting and analyzing data and information, prioritizing issues and concerns, selecting and implementing an optimal combination of education, enforcement, engineering strategies. The training course includes a field exercise in the application of the principles, concepts, and strategies covered in the course. Also the participants will share and prioritize potential policies, programs, and strategies.

Outcomes

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

- Develop and implement a Pedestrian Safety Action Plan addressing your specific issues, problems, needs and resources
- Describe how pedestrians should be considered and provided for during the planning, design, work zone, maintenance, and operations phases.
- Describe how human behavior affects the interaction between pedestrians and drivers
- Identify good practices and effective solutions to enhance pedestrian safety and accessibility.

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 shall include: Engineers, planners, traffic safety and enforcement professionals, public health and injury prevention professionals, and decision-makers who have the responsibility of improving pedestrian safety at the state or local level.

Training Level: Basic

Fee: 2021: $190 Per Person; 2022: N/A

Length: 12 HOURS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380091

Course Title

Planning and Designing for Pedestrian Safety

The Planning and Designing for Pedestrian Safety is a combination of the information from the 2-day "Developing a Pedestrian Safety Action Plan" (NHI-380089) and 2-day "Designing for Pedestrian Safety" (NHI-380090) course. This comprehensive course is designed to help state and local officials learn "HOW TO" address pedestrian safety issues in the development of a pedestrian safety action plan, and specific programs and activities tailored to their community. It is also intended to assist agencies in the further enhancement of their existing pedestrian safety plan, programs, and activities, including involving partners and stakeholders, collecting and analyzing data and information, prioritizing issues and concerns, selecting and implementing an optimal combination of education, enforcement, engineering strategies. This course goes into more detail on engineering strategies than the "Developing a Pedestrian Safety Action Plan" (NHI-380089) course. This course includes two field exercises in the application of the principles, concepts, and strategies covered in the course. Also the participants will share and prioritize potential policies, programs, and strategies.

Outcomes

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

- Describe the role that planning and street design play in pedestrian safety.
- Demonstrate how pedestrians should be considered and provided for during the planning, design, work zone maintenance, and operations phases of the pedestrian safety action plan.
- Describe how human behavior issues related to pedestrians and drivers interacting safely and common pedestrian crash types.
- Identify good practices and effective solutions to enhance pedestrian safety and accessibility.
- Explain the significance of land-use, street connectivity, and site design in helping to make a safer pedestrian environment.
- Recognize human behavior issues related to pedestrians and drivers interacting safely and common pedestrian crash types.
- Collect and analyze data in a meaningful way to identify safety deficiencies and priorities for improvement.
- Employ commonly used and effective pedestrian crash countermeasures
- Effectively involve stakeholders to create publicly supported and trusted policies, programs, and projects.

Target Audience

Engineers, planners, traffic safety and enforcement professionals, public health and injury prevention professionals, and decision-makers who have the responsibility of improving pedestrian safety at the state or local level.

Training Level: Basic

Fee: 2021: $205 Per Person; 2022: N/A

Length: 3 DAYS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380091V

Course Title

Planning and Designing for Pedestrian Safety (VIRTUAL DELIVERY)

The Planning and Designing for Pedestrian Safety is a combination of the information from the 2-day "Developing a Pedestrian Safety Action Plan" (NHI-380089) and 2-day "Designing for Pedestrian Safety" (NHI-380090) course. This comprehensive course is designed to help state and local officials learn "HOW TO" address pedestrian safety issues in the development of a pedestrian safety action plan, and specific programs and activities tailored to their community. It is also intended to assist agencies in the further enhancement of their existing pedestrian safety plan, programs, and activities, including involving partners and stakeholders, collecting and analyzing data and information, prioritizing issues and concerns, selecting and implementing an optimal combination of education, enforcement, engineering strategies. This course goes into more detail on engineering strategies than the "Developing a Pedestrian Safety Action Plan" (NHI-380089) course. This course includes two field exercises in the application of the principles, concepts, and strategies covered in the course. Also the participants will share and prioritize potential policies, programs, and strategies.

Outcomes

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

- Describe the role that planning and street design play in pedestrian safety.
- Demonstrate how pedestrians should be considered and provided for during the planning, design, work zone maintenance, and operations phases of the pedestrian safety action plan.
- Describe how human behavior issues related to pedestrians and drivers interacting safely and common pedestrian crash types.
- Identify good practices and effective solutions to enhance pedestrian safety and accessibility.
- Explain the significance of land-use, street connectivity, and site design in helping to make a safer pedestrian environment.
- Recognize human behavior issues related to pedestrians and drivers interacting safely and common pedestrian crash types.
- Collect and analyze data in a meaningful way to identify safety deficiencies and priorities for improvement.
- Employ commonly used and effective pedestrian crash countermeasures
- Effectively involve stakeholders to create publicly supported and trusted policies, programs, and projects.

Target Audience

Engineers, planners, traffic safety and enforcement professionals, public health and injury prevention professionals, and decision-makers who have the responsibility of improving pedestrian safety at the state or local level.

Training Level: Basic

Fee: 2021: $205 Per Person; 2022: N/A

Length: 18 HOURS (CEU: 1.8 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380095

Course Title

Geometric Design: Applying Flexibility and Risk Management

Highway designers often face complex trade-offs when developing projects. A "quality" design may be thought of as satisfying the needs of a wide variety of users while balancing the often competing interests of cost, safety, mobility, social and environmental impacts. Applying flexibility and risk management in highway design requires more than simply assembling geometric elements from the available tables, charts and equations of design criteria. This transportation training provides participants with knowledge of the functional basis of critical design criteria to enable informed decisions when applying engineering judgment and flexibility. The training exercises and case studies provide practical applications of current knowledge from research and experience of safety and operational effects for various design elements.

Outcomes

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

- Explain the relationships and inherent flexibility among design criteria, guidelines, standards, and policies.
- Explain key concepts and assumptions of design "rules" as a basis for judging risks and making tradeoffs.
- Apply FHWA's Controlling Criteria and justify Design Exceptions.
- Identify available tools and techniques to quantify safety and operational effects and manage risks.
- Recognize opportunities to use performance analysis in decision-making
- Demonstrate confidence to make design choices that are flexible, for which risks are understood, leading to better outcomes in implementing projects.

Target Audience

This training targets transportation engineers responsible for selection of roadway design criteria in the development of street and highway projects. This training will be most advantageous for practicing engineers from state highway agencies, local agencies, engineering design consultants and FHWA field offices.
We encourage participation from diverse agencies in this transportation training. A mixture of professional backgrounds will facilitate conversations regarding opportunities to apply design flexibilities on actual projects involving multiple stakeholders at the state and local levels.

Training Level: Accomplished

Fee: 2021: $215 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380096

Course Title

Modern Roundabouts: Intersections Designed for Safety

The modern roundabout is a proven strategy for improving the safety and operations of intersections. The physical characteristics of a well-designed modern roundabout reduce the frequency and severity of intersection crashes for all users including pedestrians and bicyclists. This course highlights the benefits of modern roundabouts and gives participants the fundamental knowledge needed to plan and consider applying roundabout intersection projects in their area. This course is an introductory level course with a blend of technical and non-technical planning, design and operations considerations.

Outcomes

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

- Distinguish a modern roundabout from other types of circular intersections
- Describe the safety advantages of roundabouts
- Describe the operational advantages roundabouts provide
- Identify what type of locations roundabouts may be appropriate
- Describe strategies to overcome common barriers to implementation of roundabouts, such as negative public perceptions
- Describe the key considerations when planning an area's first roundabout
- Apply basic traffic operational models and capacity calculations for roundabouts
- Describe key geometric design principles of a modern roundabout
- Apply signing and marking suggested practices
- Apply design strategies for pedestrians and bicyclists

Target Audience

Transportation professionals with at least one year of working experience

Training Level: Basic

Fee: 2021: $120 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380096V

New Training

Course Title

Modern Roundabouts: Intersections Designed for Safety (VIRTUAL DELIVERY)

The modern roundabout is a proven strategy for improving the safety and operations of intersections. The physical characteristics of a well-designed modern roundabout reduce the frequency and severity of intersection crashes for all users including pedestrians and bicyclists. This course highlights the benefits of modern roundabouts and gives participants the fundamental knowledge needed to plan and consider applying roundabout intersection projects in their area. This course is an introductory level course with a blend of technical and non-technical planning, design and operations considerations.

Outcomes

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

- Distinguish a modern roundabout from other types of circular intersections
- Describe the safety advantages of roundabouts
- Describe the operational advantages roundabouts provide
- Identify what type of locations roundabouts may be appropriate
- Describe strategies to overcome common barriers to implementation of roundabouts, such as negative public perceptions
- Describe the key considerations when planning an area's first roundabout
- Apply basic traffic operational models and capacity calculations for roundabouts
- Describe key geometric design principles of a modern roundabout
- Apply signing and marking suggested practices
- Apply design strategies for pedestrians and bicyclists

Target Audience

Transportation professionals with at least one year of working experience

Training Level: Basic

Fee: 2021: $120 Per Person; 2022: N/A

Length: 6 HOURS (CEU: .6 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380105

Course Title

Highway Safety Manual Practitioners Guide for Intersections

The new Highway Safety Manual is the state of the art "toolbox" for the "science of safety" for the analysis and prediction of crash frequency for highways and streets. The HSM reflects the evolution in safety analysis from descriptive methods to quantitative, predictive analyses.

The Highway Safety Manual (HSM) provides analytical tools and techniques for quantifying the potential effects on crashes as a result of decisions made in planning, design, operations, and maintenance. A universal objective is to reduce the number and severity of crashes within the limits of available resources, science, and technology, while meeting legislatively mandated priorities. The information in the HSM is provided to assist agencies in their effort to integrate safety into their decision-making processes. The HSM is intended to be a resource document that is used nationwide to help transportation professionals conduct safety analyses in a technically sound and consistent manner thereby improving decisions made based on safety performance.

This course introduces practitioners at the state, county, metropolitan planning organization (MPO), or local level to the new techniques and knowledge in the HSM. The users and professionals described above include, but are not limited to transportation planners, highway designers, traffic engineers, and other transportation professionals who make discretionary road planning, design and operational decisions.

Outcomes

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

- Recognize the Highway Safety Manual purpose, structure, and benefits
- Describe and apply Safety Performance Functions and Crash Modification Factors to analyze and predict crash frequency performance of highways, streets, and intersections

Target Audience

The course is intended practitioners at the state, county, metropolitan planning organization (MPO), or local level.

Training Level: Basic

Fee: 2021: $155 Per Person; 2022: N/A

Length: 1 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380109

Course Title

Innovative Intersections and Interchanges

Motorists, pedestrians, and bicyclists face greater mobility challenges and safety risks at intersections as traffic volumes grow and congestion worsens. Agencies need safer, more balanced designs that keep people moving. Innovative intersection designs offer many safety and operational benefits, and are being built more often because they can deliver more for less. The Federal Highway Administration (FHWA) launched the Every Day Counts (EDC) state-based initiative to identify and rapidly deploy proven but underutilized innovations aimed at reducing project delivery time, enhancing roadway safety, reducing congestion, and improving environmental sustainability. In 2012, Intersection & Interchange Geometrics (IIG) was selected as a featured innovative technology in EDC Round-2. IIG consists of a family of innovative intersection designs that improve intersection safety while also reducing delay, and at lower cost and with fewer impacts than comparable traditional solutions.

In continuing effort to advance the deployment of innovative intersection designs, NHI is pleased to offer this training workshop to assist transportation professionals in better understanding these intersections and the potential benefits they can provide when correctly implemented.

Outcomes

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

- Describe the principal features of the innovative geometric designs presented including key design and operational features
- List the advantages and disadvantages of their use
- Assess what innovative designs would be applicable at a given location given the conditions and constraints
- Identify resources to acquire additional information on these designs and their implementations

Target Audience

The target audience for this training includes state and local transportation agency personnel, and/or consultants having responsibilities for developing and designing elements pertaining to intersections and interchanges.

Training Level: Intermediate

Fee: 2021: $125 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380109V

Course Title

Innovative Intersections and Interchanges (VIRTUAL DELIVERY)

The NHI-380109 - Innovative Intersections and Interchanges is now offered as a virtual course. A virtual instructor-led training provides 100% remote learning while ensuring participants have access to expert instructors, workshop activities, and engaging peer-to-peer discussions. Register today and learn the principles of tunnel inspection in the convenience of your home and/or office anywhere in the country, remotely.

Motorists, pedestrians, and bicyclists face greater mobility challenges and safety risks at intersections as traffic volumes grow and congestion worsens. Agencies need safer, more balanced designs that keep people moving. Innovative intersection designs offer many safety and operational benefits, and are being built more often because they can deliver more for less. The Federal Highway Administration (FHWA) launched the Every Day Counts (EDC) state-based initiative to identify and rapidly deploy proven but underutilized innovations aimed at reducing project delivery time, enhancing roadway safety, reducing congestion, and improving environmental sustainability. In 2012, Intersection & Interchange Geometrics (IIG) was selected as a featured innovative technology in EDC Round-2. IIG consists of a family of innovative intersection designs that improve intersection safety while also reducing delay, and at lower cost and with fewer impacts than comparable traditional solutions.

In continuing effort to advance the deployment of innovative intersection designs, NHI is pleased to offer this training workshop to assist transportation professionals in better understanding these intersections and the potential benefits they can provide when correctly implemented.

Outcomes

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

- Describe the principal features of the innovative geometric designs presented including key design and operational features
- List the advantages and disadvantages of their use
- Assess what innovative designs would be applicable at a given location given the conditions and constraints
- Identify resources to acquire additional information on these designs and their implementations

Target Audience

The target audience for this training includes state and local transportation agency personnel, and/or consultants having responsibilities for developing and designing elements pertaining to intersections and interchanges.

Training Level: Intermediate

Fee: 2021: $125 Per Person; 2022: N/A

Length: 6 HOURS (CEU: .6 UNITS)

Class Size: MINIMUM: 15; MAXIMUM: 20

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380116

Course Title

Speed Management

The negative consequences of speeding impact more than just one type of crash, person or place. The causes and effects of speeding-related crashes are often cross-cutting and preventative safety measures should be addressed in a comprehensive speed management program. In this transportation training, participants learn lifesaving countermeasures that shape speed management programs and how these can help communities combat speeding-related injuries and deaths.

This 1-day Instructor-led training emphasizes how state and local governments can improve community safety by integrating speed management principles into three critical safety focus areas: roadway departures, intersections, and pedestrians and bicyclists.

Training participants will discuss:

What percentage of roadway departure crashes are speeding-related?

Which types of intersections have the most speeding-related crashes?

What vehicle speed is hazardous for pedestrians and bicyclists?

Participants who complete this transportation training will be able to appropriately apply safety strategies and countermeasures to reduce traffic fatalities from speeding as part of a comprehensive speed management program.

Outcomes

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

- Describe the three safety focus areas identified by the Federal Highway Administration (FHWA) to target with a speed management program.
- Identify speeding-related safety problems in the three safety focus areas
- Explain how engineering, enforcement, and education efforts can be coordinated to effectively manage speed
- Identify and apply appropriate safety strategies and countermeasures for each of the three focus areas
- Identify approaches for evaluating road segments and posting appropriate speed limits

Target Audience

The target audience of the FHWA Speed Management training includes Federal, State, tribal, and local transportation professionals, as well as law enforcement and other public safety advocates who are interested in having safer roadways through the application of speed management principles. This course is designed for learners at a basic or intermediate training level.

Training Level: Basic

Fee: 2021: $135 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380117

Course Title

Combating Roadway Departures

This course provides participants with some tools for addressing roadway departure crashes. Topics covered in this course include a discussion of engineering countermeasures as well as implementation strategies.

Outcomes

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

- Describe the Roadway Departure crash problem
- Discuss countermeasures to:
- - Reduce potential for leaving the roadway
- - Reduce potential for a crash if a vehicle does leave the roadway
- - Minimize severity if a crash does occur
- Compare methods for deploying countermeasures

Target Audience

The target audience for the course includes Federal, State and local highway engineers, consulting highway design engineers, and maintenance workers. This training program is intended for individuals that have the responsibility for identifying, recommending, selecting, installing and/or maintaining appropriate countermeasures to help improve highway safety.

Training Level: Basic

Fee: 2021: $130 Per Person; 2022: N/A

Length: 1 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380118

Course Title

Signing and Markings for Complex Freeway Interchanges

Most practitioners agree, we need a well-defined process for developing an effective guide-sign design plan. This course provides a systematic approach for developing and evaluating designs that inform highway users how to safely navigate complex freeway interchanges. This course reviews applicable standards and policies, as well as relevant principles from AASHTO--A Policy on Geometric Design (Chapter 10), NCHRP 600 Series (Human Factors), Chapters 18-21, and the MUTCD (Chapters 2D & 2E and Part 3)--to illustrate and help you identify the degree of flexibility you may have in the development and design process.

This course introduces you to the three fundamental building blocks of effective guide sign designs, Sign Design Group (SDG), Sign Type (ST) and Sign Design Layouts. You will learn how lane geometry principles such as exit lane elimination, auxiliary lanes, and lane balance can impact signing and marking layouts. You will gain a better understanding of option lane signing flexibility provided by the Manual on Uniform Traffic Control Devices (MUTCD). You will interact with various complex interchanges to identify and discuss current and potential interchange guide signing and markings with the goal of consistency, maintaining motorists' expectations, and corridor management of guide sign designs.

Before beginning this course, participants are strongly encouraged to review four 15-minute pre-recorded PowerPoint lessons covering definitions and foundations concepts. Participants will build upon these lessons during the workshop.

Outcomes

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

- Identify key human factors that influence the effectiveness of roadway signing and markings
- Describe key geometric concepts of interchange exit, including lane configurations and elimination methods
- Summarize the resultant effects of geometric decisions upon signing and marking
- State the relationship and factors which influence Sign Design Group, Sign Type, and Sign Design Layout
- Apply the process for designing the appropriate signing and markings layouts for optimum driver understanding and action execution

Target Audience

Engineers,engineering practitioners, technologists, involved in freeway and expresswaydesign, construction, and operations. The target audience for this course shouldalso include personnel and consultants in Roadway Design, Traffic Engineering,and other state District/Division offices or anyone who is responsible for developmentand planning, design and review of TCDs (signing and markings).

Training Level: Intermediate

Fee: 2021: $120 Per Person; 2022: N/A

Length: 1 DAYS (CEU: .6 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380120

Course Title

Introducing Human Factors in Roadway Design and Operations

This course, Implementing Human Factors into Roadway Design: A Workshop on How to Use and Apply the Human Factors Guidelines (HFG) for Road Systems, helps participants gain an understanding of the HFG and how they can apply the principles to road system design and operational decisions. This course provides an overview of human factors as they relate to the roadway environment and describes why it is necessary to incorporate human factors in the design and operation of roadways as a complement to existing standards and manuals for roadway design and operation. Finally, the course offers a review of specific guidelines, as well as scenario-based case studies that allow attendees to apply the HFG to real roadway situations.

Outcomes

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

- Describe basic human characteristics relevant to being a road user.
- List ways in which the vehicle, road user, and roadway elements interact to influence operations and safety outcomes.
- Identify how individual characteristics impact a road user's experience of the road environment.
- Describe the HFG and list its intended usage.
- Describe how the HFG relates to reference sources such as the HSM, MUTCD, and AASHTO's Policy on Geometric Design of Highways and Streets.
- Select and apply specific HFG guidelines for roadway location or design engineering elements to common scenarios.
- Select and apply specific HFG guidelines for traffic engineering elements to common scenarios.
- Analyze case studies, identify critical human factors issues associated with these case studies, and select applicable guidance from the HFG.

Target Audience

The primary audience for the HFG course is composed of the following:Engineers (state departments of transportation (DOT), metropolitan planning organizations (MPO), counties, local municipalities, and consultants to the public agencies)Safety EngineersTraffic EngineersDesign EngineersSafety (non-engineers) Professionals (state DOTs, MPOs, counties, local municipalities, and consultants to the public agencies)Planners (state DOTs, MPOs, counties, local municipalities, and consultants to the public agencies)

Training Level: Basic

Fee: 2021: $160 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380122A

WBT

Course Title

Safety Data and Analysis Fundamentals Training for Data Analysts

This web based training (WBT) is tailored to the participant's individual goal and/or role within an organization. Individual learning tracks are provided for Data Analysts, Data Collectors, Project/Program Mangers and Safety Advocates. Participants enroll in one of these four tracks that most closely matches their personal goals and responsibilities. Refer to the "Target Audience" section for more information

NHI's Safety Data and Analysis Fundamentals course helps transportation professionals understand safety data and collection methods, including how to interpret safety data and use it to support key decision-making efforts. It's important for data collection practices to keep up with the latest safety data analysis tools and methodologies, to accurately forecast trends. Accurate forecasts help identify optimal times for project deployment and help improve program results.

This web based training (WBT) provides the knowledge necessary to identify weaknesses in current practices and strengthen the way safety data is used in transportation programs, projects, and communities. Course participants learn about key safety data types and terms, as well as sources and collection methods. Participants study the data analysis process and several methods of data analysis, and also explore and interpret various examples throughout the training. They leave the training with the skills and knowledge necessary to evaluate data and to enhance data collection and storage methods, with awareness of the potential, as well as the limitations of these methods.

Outcomes

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

- Use data to support decision-making, with respect to identifying safety issues, selecting countermeasures to mitigate safety issues, and evaluating the success of those countermeasures.
- Identify basic terms and concepts related to safety data and analysis, enabling participants to communicate effectively on safety-related data projects.
- Identify types, sources, strengths, and weaknesses of transportation safety data.
- Explain various methods used to analyze safety data, including their application and limitations.

Target Audience

DATA ANALYSTS - 7 hours (0.7 CEUs) - For professionals in charge of integrating and analyzing datasets, including highway safety engineers, specialists, traffic engineers, highway designers, and technical analysts. Emphasizes the applicability, uses, strengths, limitations, and requirements of safety data and collection methods.Recommended for anyone whose responsibility is to analyze safety data to identify causes and potential patterns that contribute to crashes and other systemic safety issues.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 7 HOURS (CEU: .7 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380122B

WBT

Course Title

Safety Data and Analysis Fundamentals Training for Data Collectors/Stewards

This web-based training is tailored to the participant's individual goal and/or role within an organization. Individual learning tracks are provided for Data Analysts, Data Collectors, Project/Program Mangers and Safety Advocates. Participants enroll in one of these four tracks that most closely matches their personal goals and responsibilities. Refer to the "Target Audience" section for more information

NHI's Safety Data and Analysis Fundamentals course helps transportation professionals understand safety data and collection methods, including how to interpret safety data and use it to support key decision-making efforts. It's important for data collection practices to keep up with the latest safety data analysis tools and methodologies, to accurately forecast trends. Accurate forecasts help identify optimal times for project deployment and help improve program results.

This web-based training provides the knowledge necessary to identify weaknesses in current practices and strengthen the way safety data is used in transportation programs, projects, and communities. Course participants learn about key safety data types and terms, as well as sources and collection methods. Participants study the data analysis process and several methods of data analysis, and also explore and interpret various examples throughout the training. They leave the training with the skills and knowledge necessary to evaluate data and to enhance data collection and storage methods, with awareness of the potential, as well as the limitations of these methods.

Outcomes

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

- Use data to support decision-making, with respect to identifying safety issues, selecting countermeasures to mitigate safety issues, and evaluating the success of those countermeasures.
- Identify basic terms and concepts related to safety data and analysis, enabling participants to communicate effectively on safety-related data projects.
- Identify types, sources, strengths, and weaknesses of transportation safety data.
- Explain various methods used to analyze safety data, including their application and limitations.

Target Audience

DATA COLLECTORS/STEWARDS - 4 hours (0.4 CEUs) - For professionals who are responsible for collecting, coding, and managing data to support safety analysis and decision-making.Emphasizes ways data collectors meet the needs of data analysts and helps collectors understand how managers use data to make strategic, informed decisions about safety priorities.Recommended for law enforcement officers, emergency medical service providers, trauma registrars, driver and vehicle service clerks, roadway data collectors, and anyone responsible for collecting crash, traffic, roadway, behavioral, injury, or other safety data.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 4 HOURS (CEU: .4 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380122C

WBT

Course Title

Safety Data and Analysis Fundamentals Training for Project and Program Managers

This web-based training is tailored to the participant's individual goal and/or role within an organization. Individual learning tracks are provided for Data Analysts, Data Collectors, Project/Program Mangers and Safety Advocates. Participants enroll in one of these four tracks that most closely matches their personal goals and responsibilities. Refer to the "Target Audience" section for more information

NHI's Safety Data and Analysis Fundamentals course helps transportation professionals understand safety data and collection methods, including how to interpret safety data and use it to support key decision-making efforts. It's important for data collection practices to keep up with the latest safety data analysis tools and methodologies, to accurately forecast trends. Accurate forecasts help identify optimal times for project deployment and help improve program results.

This web-based training provides the knowledge necessary to identify weaknesses in current practices and strengthen the way safety data is used in transportation programs, projects, and communities. Course participants learn about key safety data types and terms, as well as sources and collection methods. Participants study the data analysis process and several methods of data analysis, and also explore and interpret various examples throughout the training. They leave the training with the skills and knowledge necessary to evaluate data and to enhance data collection and storage methods, with awareness of the potential, as well as the limitations of these methods.

Outcomes

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

- Use data to support decision-making, with respect to identifying safety issues, selecting countermeasures to mitigate safety issues, and evaluating the success of those countermeasures.
- Identify basic terms and concepts related to safety data and analysis, enabling participants to communicate effectively on safety-related data projects.
- Identify types, sources, strengths, and weaknesses of transportation safety data.
- Explain various methods used to analyze safety data, including their application and limitations.

Target Audience

PROJECT and PROGRAM MANAGERS - 5 hours (0.5 CEUs) - For transportation professionals responsible for using safety analytics to identify and prioritize safety issues, develop and implement safety countermeasures, and evaluate project/program effectiveness. Emphasis on the trade-offs of project alternatives in terms of cost and benefits, including the safety impacts of the project/program as well as the individual components. Recommended for transportation planners, traffic records coordinating committee members, highway safety online directors, and State and local mid-level managers such as division and district program managers in highway safety, design, traffic engineering, enforcement, and public health.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 5 HOURS (CEU: .5 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380122D

WBT

Course Title

Safety Data and Analysis Fundamentals Training for Senior Managers and Safety Advocates

This web-based training is tailored to the participant's individual goal and/or role within an organization. Individual learning tracks are provided for Data Analysts, Data Collectors, Project/Program Mangers and Safety Advocates. Participants enroll in one of these four tracks that most closely matches their personal goals and responsibilities. Refer to the "Target Audience" section for more information

NHI's Safety Data and Analysis Fundamentals course helps transportation professionals understand safety data and collection methods, including how to interpret safety data and use it to support key decision-making efforts. It's important for data collection practices to keep up with the latest safety data analysis tools and methodologies, to accurately forecast trends. Accurate forecasts help identify optimal times for project deployment and help improve program results.

This web-based training provides the knowledge necessary to identify weaknesses in current practices and strengthen the way safety data is used in transportation programs, projects, and communities. Course participants learn about key safety data types and terms, as well as sources and collection methods. Participants study the data analysis process and several methods of data analysis, and also explore and interpret various examples throughout the training. They leave the training with the skills and knowledge necessary to evaluate data and to enhance data collection and storage methods, with awareness of the potential, as well as the limitations of these methods.

Outcomes

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

- Use data to support decision-making, with respect to identifying safety issues, selecting countermeasures to mitigate safety issues, and evaluating the success of those countermeasures.
- Identify basic terms and concepts related to safety data and analysis, enabling participants to communicate effectively on safety-related data projects.
- Identify types, sources, strengths, and weaknesses of transportation safety data.
- Explain various methods used to analyze safety data, including their application and limitations.

Target Audience

SENIOR MANAGERS & SAFETY ADVOCATES - 5 hours (0.5 CEUs) - For anyone looking to bridge the gap between the public and practitioners, and who are responsible for developing or influencing policies, practices, setting budgets, allocating resources, and making safety investments. Emphasis on understanding the needs of data collectors, data managers, and data analysts in terms of equipment, human resources, and organizational structure. Recommended for State and local senior managers, such as division heads/chief of transportation, planning, civil engineering, and public health.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 5 HOURS (CEU: .5 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-134063E

WCT

Course Title

Maintenance Leadership Academy - Module E Weather-Related Operations (VIRTUAL DELIVERY-EXAM ONLY)

The Maintenance Leadership Academy is a training program for individuals who hold positions as State, district, and county maintenance supervisors. It is designed to help participants develop practical decisionmaking skills related to the various processes, methods, and materials that are applied to maintain their organization's bridge and highway systems.

The Weather-related Operations module prepares maintenance supervisors to develop, implement, and evaluate a weather-related operations plan.

The basic principles presented apply to all weather events. Throughout the course, the independent study assignments, class exercises, and discussions provide participants with an opportunity to consider the types of weather events they encounter regularly and apply the principles accordingly.

The Weather-related Operations module is delivered using independent study and classroom training methods. The independent study materials, consisting of an independent study workbook and Web-based training (WBT) module, are completed by participants before attending the classroom session.

The goal for this module is to prepare you to develop, implement, and manage a comprehensive, risk-based plan for weather-related events.

Outcomes

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

- Explain your State's policies, guidelines, and standards regarding treatment of roadways during inclement weather events.
- Given a scenario, identify information, procedures, and activities required for planning a response to a weather-related event.
- Given a scenario, select appropriate procedures and resources for executing a response to a weather-related event.
- Given a scenario, select appropriate procedures for documenting the response following a weather-related event.
- Explain the benefit of using an after-action review to inform future planning efforts.

Target Audience

The target audience for the Maintenance Leadership Academy is individuals who hold positions as State, district, and county maintenance supervisors involved with the operations of running a statewide, regional, or county operation and need the skills and knowledge associated with asset management.Assumed Training CompetenciesParticipants should understand and demonstrate specialized skills in a variety of maintenance tasks of the intermediate level and perform specialized tasks in limited areas or broad-based tasks with little or no daily supervision.

Training Level: Accomplished

Fee: 2021: $0 Per Person; 2022: N/A

Length: 7 HOURS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-380122B

WBT

Course Title

Safety Data and Analysis Fundamentals Training for Data Collectors/Stewards

This web-based training is tailored to the participant's individual goal and/or role within an organization. Individual learning tracks are provided for Data Analysts, Data Collectors, Project/Program Mangers and Safety Advocates. Participants enroll in one of these four tracks that most closely matches their personal goals and responsibilities. Refer to the "Target Audience" section for more information

NHI's Safety Data and Analysis Fundamentals course helps transportation professionals understand safety data and collection methods, including how to interpret safety data and use it to support key decision-making efforts. It's important for data collection practices to keep up with the latest safety data analysis tools and methodologies, to accurately forecast trends. Accurate forecasts help identify optimal times for project deployment and help improve program results.

This web-based training provides the knowledge necessary to identify weaknesses in current practices and strengthen the way safety data is used in transportation programs, projects, and communities. Course participants learn about key safety data types and terms, as well as sources and collection methods. Participants study the data analysis process and several methods of data analysis, and also explore and interpret various examples throughout the training. They leave the training with the skills and knowledge necessary to evaluate data and to enhance data collection and storage methods, with awareness of the potential, as well as the limitations of these methods.

Outcomes

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

- Use data to support decision-making, with respect to identifying safety issues, selecting countermeasures to mitigate safety issues, and evaluating the success of those countermeasures.
- Identify basic terms and concepts related to safety data and analysis, enabling participants to communicate effectively on safety-related data projects.
- Identify types, sources, strengths, and weaknesses of transportation safety data.
- Explain various methods used to analyze safety data, including their application and limitations.

Target Audience

DATA COLLECTORS/STEWARDS - 4 hours (0.4 CEUs) - For professionals who are responsible for collecting, coding, and managing data to support safety analysis and decision-making.Emphasizes ways data collectors meet the needs of data analysts and helps collectors understand how managers use data to make strategic, informed decisions about safety priorities.Recommended for law enforcement officers, emergency medical service providers, trauma registrars, driver and vehicle service clerks, roadway data collectors, and anyone responsible for collecting crash, traffic, roadway, behavioral, injury, or other safety data.

Training Level: Basic

Fee: 2021: $0 Per Person; 2022: N/A

Length: 4 HOURS (CEU: .4 UNITS)

Class Size: MINIMUM: 0; MAXIMUM: 0

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-420018

Course Title

Instructor Development Course (3.5-Day)

The Instructor Development Course prepares current and potential instructors to deliver learner-centric instruction using pre-developed and designed instructional materials. This course helps broaden and enhance your current knowledge, skills, and abilities required to conduct training for adult learners. This is not a presentation skills course, but one that teaches participants how to tap into Adult Learning Principles and improve an instructor's ability to meet the needs of an adult learner.

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.

Readings: Reading material will be sent to you 2-3 weeks prior to the training session.

This course is part of the NHI Instructor Certification program. To learn more about NHI's Instructor Certification visit the NHI Web site at https://www.nhi.fhwa.dot.gov/resources/course-instruction.aspx.

Outcomes

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

- Identify critical training competencies for instructors
- List strategies to address adult learning needs in a classroom environment
- Demonstrate the proper use of learning outcomes when delivering lessons
- Use visual aids and teaching strategies to support a 15-minute training delivery
- Deliver a 15-minute training that incorporates the approved learning outcomes, in an interactive manner and using appropriate instructional strategies, training media, and evaluation methods

Target Audience

This course is intended for instructors who will be delivering training for adult learners.

Training Level: Basic

Fee: 2021: $365 Per Person; 2022: N/A

Length: 3.5 DAYS (CEU: 2.1 UNITS)

Class Size: MINIMUM: 7; MAXIMUM: 12

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-420047

Course Title

Instructor Development Course (IDC) for Web Conference Training (WCT)

The Instructor Development Course (IDC) for Web Conference Training (WCT) is a blended learning course consisting of live, WCTs and self-paced, web-based trainings (WBTs). It is designed to teach instructors who have taken the IDC for Instructor-Led Training course how to effectively deliver interactive training through NHI's web conferencing software. The IDC for WCT will provide new and experienced instructors the knowledge and skills needed to deliver online training that keeps participants engaged. Participants will also get insight into the logistics behind preparing for the delivery of online training.

Participants need access to both a telephone and an internet connection to participate in the live, WCT sessions. The course is estimated to take 12 hours to complete over a period of 3.5 days. It is comprised of 10.7 hours of instructor-led WCT and 1.5 hours of self-paced WBT.

COURSE SEQUENCE

PRIOR TO LIVE LESSONS:

Lesson 2 (Self-paced, WBT): During this self-paced lesson, participants learn the basics of how to use NHI's web conferencing software. It is estimated to take one hour to complete.

Lesson 3 (Self-paced, WBT): This is a brief video demonstration which is designed to teach participants how to set up their own teach back room which will be used to deliver a presentation at the end of the course. This presentation will serve as the course assessment.

LIVE SESSIONS

Lesson 1 (Live, WCT): This lesson is a live, 30-minute session which orients participants to the course layout.

Lesson 2 REVIEW OF THE PREREQUISITE LESSONS: (Self-paced, WBT): During this self-paced lesson, participants learn the basics of how to use NHI's web conferencing software. It is estimated to take one hour to complete.

Lesson 3 REVIEW OF THE PREREQUISITE LESSONS: (Self-paced, WBT): This is a brief video demonstration which is designed to teach participants how to set up their own teach back room which will be used to deliver a presentation at the end of the course. This presentation will serve as the course assessment.

Lesson 4 (Live, WCT): In this session, participants will learn more about distance learning and the roles and responsibilities of everyone involved in making distance learning a success. This session is estimated to take two hours.

Lesson 5 (Live, WCT): In this session, participants will learn the key characteristics of how to deliver effective WCT instruction. This session is scheduled for two hours.

Lesson 6 (Live, WCT): In this live, two hour session, participants will learn how to properly prepare to deliver training through a web conferencing platform.

Lesson 7 (Live, WCT): This live, two hour session serves as the performance assessment for the course. Participants will deliver an 8-10 minute presentation through NHI's web conferencing software. Upon completing delivery, participants will receive feedback from the course facilitator(s) and the other participants. These sessions will be recorded for later review so participants can gain greater insight into their strengths and practice any areas for improvement.

In between WCTs, participants will have the opportunity to ask questions/post comments in an intersession chat room. This chat room will be monitored by the course facilitator(s) and any questions will be addressed at the beginning of each live, WCT.

Outcomes

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

- Explain Distance Learning and the purpose of a Web Conference Training (WCT).
- Identify the NHI Instructor's role in the training.
- Identify the main features and tools available for a WCT.
- Demonstrate effective content delivery skills for a WCT.

Target Audience

This course is intended for instructors who will develop and/or deliver interactive training to adult learners through web conferencing.

Training Level: Basic

Fee: 2021: $50 Per Person; 2022: N/A

Length: 12 HOURS (CEU: 1.2 UNITS)

Class Size: MINIMUM: 6; MAXIMUM: 10

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

Course Number

FHWA-NHI-420052

New Training

Course Title

Facilitation Skills

The skilled Facilitator is dynamic and able to change and adjust to the group and task at hand. Good facilitation skills vary with every group and with every topic that a Facilitator is asked to handle. This course will improve your toolbox of facilitation skills.

This course is based on a series of varied learning techniques so that participants will see that learning facilitation is as dynamic as being an effective Facilitator. Participants should expect some unique exercises that are designed to test the participant's facilitation skills and provide a more valuable learning experience. you will be actively learning, practicing, and improving your facilitation skills. The material for the course includes a "try this" section for each topic that will give participants a resource for building a facilitation toolbox of their own.

Outcomes

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

- Develop a variety of practical tools to build confidence and improve facilitator skills
- Infer how to draw creativity, innovation, and ideas in a collaborative manner
- State how to effectively deal with "challenging people"
- Model new techniques and get feedback throughout the training

Target Audience

This course is intended for individuals at all levels of an organization, from seasoned professionals to new entrant level employees. Facilitation skills benefit an agency and individuals by allowing for more productive meetings, day-to-day communications and interactions.

Training Level: Basic

Fee: 2021: $200 Per Person; 2022: N/A

Length: 2 DAYS (CEU: 0 UNITS)

Class Size: MINIMUM: 20; MAXIMUM: 30

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov

NHI STORE PROVIDES RESOURCES AND REFERENCE MATERIALS

Created based on customer feedback, the NHI Store is an online resource that enables users to order course materials through the NHI Web site. These materials can be used to plan a workshop, support train-the-trainer programs, or gather highway-related reference materials. The NHI Store offers both electronic downloads and hard copy versions.

To search for and purchase NHI course training materials, please visit www.nhi.fhwa.dot.gov. Easy directions are provided for ordering and payment; special instructions are provided for FHWA employees.

If you are unable to find the training materials you need, please contact us at nhitraining@dot.gov.

The following pages list all materials available for purchase at the time this catalog was published. For the most up-to-date listing, visit the NHI Store at www.nhi.fhwa.dot.gov. Credit card payment is accepted.

Legend

PW - Participant Workbook
RM - Reference Manual
EF - Electronic File
PP - PowerPoint Presentation
OM - Other Materials

Course Number	Material Name	Format	Type	Price
130053	Bridge Inspector's Reference Manual-Compact Disc (November 2015)	Hard Copy	RM	**$20.00**
130053A	Bridge Inspection Refresher Training (August 2014)	Hard Copy	PW	**$70.00**
130053A	Bridge Inspector's Reference Manual-Compact Disc (November 2015)	Hard Copy	RM	**$20.00**
130053V	Bridge Inspector's Reference Manual-Compact Disc (November 2015)	Hard Copy	RM	**$20.00**
130054	Bridge Inspector's Reference Manual-Compact Disc (November 2015)	Hard Copy	RM	**$20.00**
130054	Engineering Concepts for Bridge Inspectors (09/14)	Hard Copy	PW	**$40.00**
130055	Bridge Inspector's Reference Manual-Compact Disc (November 2015)	Hard Copy	RM	**$20.00**
130078	Fracture Critical Inspection Techniques for Steel Bridges (08/2016)	Hard Copy	PW	**$50.00**
130081	LRFD for Highway Bridge Superstructures-RM/DE CD	Hard Copy	OM	**$20.00**
130087	Guidelines For The Installation, Inspection, Maintenance And Repair Of Structural Supports For Highw	Hard Copy	OM	**$50.00**
130087	Inspection And Maintenance Of Ancillary Highway Structures-(March 2005)	Hard Copy	PW	**$50.00**
130091	Bridge Inspector's Reference Manual-Compact Disc (November 2015)	Hard Copy	RM	**$20.00**
130091	Underwater Bridge Inspection (January 2010)	Hard Copy	PW	**$40.00**
130091	Underwater Inspection of Bridges (June 2010)	Hard Copy	RM	**$40.00**
130091B	Underwater Bridge Repair (06/10)	Hard Copy	RM	**$40.00**
130091B	Underwater Bridge Repair, Rehabilitation, and Countermeasures (01/10)	Hard Copy	PW	**$30.00**
130092	Load and Resistance Factor Rating of Highway Bridges - Participant Workbook (November 2019)	Hard Copy	PW	**$50.00**
130093	LRFD Seismic Analysis and Design of Bridges (July 2013)	Hard Copy	PW	**$50.00**

Course Number	Material Name	Format	Type	Price
130093	LRFD Seismic Analysis and Design of Bridges-Design Examples (July 2014)	Hard Copy	OM	**$50.00**
130093	LRFD Seismic Analysis and Design of Bridges-Reference Manual (October 2014)	Hard Copy	RM	**$50.00**
130093A	LRFD Seismic Analysis and Design of Bridges - Reference Manual (October 2014)	Hard Copy	RM	**$50.00**
130093A	LRFD Seismic Analysis and Design of Bridges-Design Examples (July 2014)	Hard Copy	OM	**$50.00**
130095	LRFD and Analysis of Curved Steel Highway Bridges (February 2011)	Hard Copy	PW	**$70.00**
130095	LRFD and Analysis of Curved Steel Highway Bridges (February 2011)-Compact Disc	Hard Copy	RM	**$20.00**
130096	Design Criteria for Arch and Cable Stayed Signature Bridges (February 2012)	Hard Copy	RM	**$70.00**
130096	Design Criteria for Arch and Cable Stayed Signature Bridges (March 2013)	Hard Copy	PW	**$40.00**
130102	Engineering for Structural Stability in Bridge Construction (04/2015)	Hard Copy	RM	**$50.00**
130102A	Engineering for Structural Stability in Bridge Construction (04/2015)	Hard Copy	RM	**$50.00**
130108	Bridge Maintenance Reference Manual (10/16)	Hard Copy	RM	**$50.00**
130126	Strut-and-Tie Modeling (STM) for Concrete Structures (11/17)	Hard Copy	PW	**$50.00**
130126	Strut-and-Tie Modeling (STM) for Concrete Structures-CD (10/17)	Hard Copy	OM	**$25.00**
131050	Asphalt Pavement In-Place Recycling Techniques (March 2013)	Hard Copy	PW	**$50.00**
132012	Soils And Foundations Workshop - Reference Manual Volume 1 (December 2006)	Hard Copy	RM	**$40.00**
132012	Soils And Foundations Workshop - Reference Manual Volume 2 (December 2006)	Hard Copy	RM	**$40.00**
132014	Drilled Shafts: Construction Procedures and Design Methods-GEC-10 (09/18)	Hard Copy	RM	**$50.00**
132033	Soil Slope and Embankment Design (September 2005)	Hard Copy	RM	**$40.00**
132035	Rock Slopes - Module 5 - Student Exercises (05/02)	Hard Copy	OM	**$50.00**
132035	Rock Slopes - Module 5 (10/98)	Hard Copy	RM	**$50.00**
132036	Earth Retaining Structures (06/08)	Hard Copy	RM	**$50.00**
132037	Shallow Foundations	Hard Copy	RM	**$50.00**
132040	Geotechnial Aspects of Pavements (June 2010)	Hard Copy	RM	**$40.00**
132042	Corrosion/Degradation of Soil Reinforcements for MSE/RSS (November 2009)	Hard Copy	RM	**$40.00**
132042	Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes-Vol 1 (March 2012)	Hard Copy	RM	**$40.00**
132042	Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes-Vol 2 (March 2012)	Hard Copy	RM	**$40.00**
132043	Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes-Vol 1 (March 2012)	Hard Copy	RM	**$40.00**

Course Number	Material Name	Format	Type	Price
132043	Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes-Vol 2 (March 2012)	Hard Copy	RM	**$40.00**
132069	Driven Pile Foundation Inspection-(07/06)	Hard Copy	PW	**$50.00**
132069	Plan Set Handout Driven Pile Foundation Inspection Course (10/02)	Hard Copy	OM	**$60.00**
132070	Drilled Shaft Foundation Inspection (12/02)	Hard Copy	PW	**$50.00**
132070	Drilled Shaft Inspector's Course-Plan Set Handout (12/02)	Hard Copy	OM	**$50.00**
132078	Micropile Design and Construction Reference Manual (12/05)	Hard Copy	RM	**$30.00**
132079	Subsurface Investigation Qualification (07/06)	Hard Copy	PW	**$40.00**
132081	Highway Slope Maintenance and Slide Restoration (10/08)	Hard Copy	RM	**$50.00**
132081	Highway Slope Maintenance and Slide Restoration (10/08)	Hard Copy	PW	**$50.00**
132085	Soil Nail Walls Reference Manual-GEC 007 (February 2015)	Hard Copy	RM	**$40.00**
132094	LRFD Seismic Analysis and Design of Transportation Structures, Features and Foundations (02/12)	Hard Copy	PW	**$50.00**
132094	LRFD Seismic Analysis and Design of Transportation Structures, Features and Foundations (02/12)	Hard Copy	RM	**$75.00**
132094	LRFD Seismic Analysis and Design of Transportation Structures,...Design Examples (04/12)	Hard Copy	OM	**$75.00**
132094A	LRFD Seismic Analysis and Design of Transportation Structures, Features and Foundations (02/12)	Hard Copy	RM	**$75.00**
132094A	LRFD Seismic Analysis and Design of Transportation Structures,...Design Examples (04/12)	Hard Copy	OM	**$75.00**
132094B	LRFD Seismic Analysis and Design of Structural Foundations (06/14)	Hard Copy	PW	**$50.00**
132094B	LRFD Seismic Analysis and Design of Transportation Structures, Features and Foundations (02/12)	Hard Copy	RM	**$75.00**
132094B	LRFD Seismic Analysis and Design of Transportation Structures,...Design Examples (0412)	Hard Copy	OM	**$75.00**
133075	Freeway Management And Operations - Participant Workbook (August 2005)	Hard Copy	PW	**$50.00**
133075A	Freeway Management And Operations - Participant Workbook (August 2005)	Hard Copy	PW	**$50.00**
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133125	Successful Traffic Signal Management: The Basic Service Approach (05/14)	Hard Copy	PW	**$50.00**
134005	VALUE ENGINEERING (02/13)	Hard Copy	PW	**$30.00**
134005B	VALUE ENGINEERING (February 2013)	Hard Copy	PW	**$30.00**

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134005V	VALUE ENGINEERING (02/13)	Hard Copy	PW	**$30.00**
134005W	VALUE ENGINEERING (02/13)	Hard Copy	PW	**$30.00**
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134037A	Managing Highway Contract Claims: Analysis And Avoidance (09/05)	Hard Copy	PW	**$50.00**
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135027	Errata for HEC-22 dtd September 2009 (Included in September 2013 Revision)	Electronic Copy	OM	**Free**
135027	Urban Drainage Design Manual, HEC-22 (Revised September 2013)	Hard Copy	RM	**$50.00**
135027A	Highway Stormwater Pump Station Design-HEC 24 (02/01)	Hard Copy	OM	**$40.00**
135028	Highway Stormwater Pump Station Design HEC-24 (02/01)	Hard Copy	OM	**$50.00**
135041	One-Dimensional Modeling of River Encroachments with HEC-RAS (03/16)	Hard Copy	PW	**$30.00**
135046	Evaluating Scour At Bridges, 5th Edition (HEC-18) (04/13)	Hard Copy	OM	**$50.00**
135046	Stream Instability, Bridge Scour, and Countermeasures: A Field Guide for Bridge Inspectors (02/09)	Hard Copy	RM	**$20.00**
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135048	Countermeasure Design for Bridge Scour and Stream Instability (09/09)	Hard Copy	OM	**$30.00**
135048	HEC-23 Bridge Scour And Stream Instability Countermeasures-Vol I (09/09)	Hard Copy	RM	**$20.00**
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380069	Desktop Reference for Crash Reduction Factors (September 2007)	Electronic Copy	OM	**Free**
380069	FHWA Road Safety Audit Guidelines (June 2006)	Electronic Copy	OM	**Free**
380069	Road Safety Audits/Assessements (03/19)	Hard Copy	PW	**$50.00**
380069	Road Safety Audits: Case Studies (December 2006)	Electronic Copy	OM	**Free**
380069	Toolbox of Countermeasures & Their Potential Effectiveness for Intersection Crashes (September 2007)	Electronic Copy	OM	**Free**

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380077V	Traffic Signals (September 2007)	Electronic Copy	OM	**Free**
380090	Developing a Pedestrian Safety Action Plan (02/19)	Hard Copy	PW	**$50.00**
380090V	Developing a Pedestrian Safety Action Plan Participant Workbook (0219)	Hard Copy	PW	**$50.00**
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