Introduction

During the past several years, the Ohio Local Technical Assistance Program (LTAP) Center has added many online courses – also called eLearning, or Web-based training (WBT) – to its roster of available training opportunities. There are several ways in which online courses can be used by a variety of employees and agencies.

In some cases, successful completion of a specific online course might be a mandatory requirement as part of a training course, program, pre-requisite, etc. In other cases, an employee might simply be interested in learning more about a variety of topics in the interest of increasing their general knowledge. Click here to learn more about use of eLearning to supplement workforce training.

This catalog provides detailed descriptions of more than 280 online courses that are currently available from the Ohio LTAP eLearning system. Customers can access these courses free of charge, simply by establishing a MyODOT username and password. Instructions are provided on the LTAP eLearning webpage.

The eLearning courses are housed in a Learning Management System (LMS) called CourseMill. After signing in at the Login page, click on the Course Catalog tab. Then click on the individual Pages of the catalog (1 through 11, etc.) to access the courses, which are listed alphabetically. Click on the green + sign to enroll; then go to the My Courses tab and click on the Launch Course icon (orange arrow) to start the training.

While most customers have no difficulties enrolling in a course, and then are able to successfully launch the course to proceed with the training, there are occasional situations where a specific eLearning course might fail to launch due to incompatibility issues with the user’s computer or network settings. Click here for an easy solution to help resolve access issues.

Viewing Your Completed Courses

The courses that you’ve Completed can be viewed under the My Courses tab. An example is shown on the next page:
Accessing Your Transcript Form

Your CourseMill Transcript serves as detailed documentation of the eLearning courses you successfully complete. Clicking on the Transcript tab will generate a report of all courses that you have completed (Percent Complete: 100%), and also any courses that were attempted but not completed. The total time actually spent on each course is also listed.

Based on the high volume of online courses that we are currently hosting from a variety of different offices, programs and course developers, please note that we are not able to generate or issue certificates for eLearning courses. Our LTAP office continues to provide certificates to persons who attend our instructor-led (classroom-based) workshops and courses.

Click here for more detailed information regarding some of the specific options that are available when generating your Transcript Form.

As a general recommendation, it’s a good idea to periodically save or print a copy of your CourseMill Transcript (training history), especially if you would like to document your recent completion of a course or series of courses. Based on how the CourseMill system is structured and programmed, our LTAP office has found that the necessary process of periodically updating and re-posting course modules to the eLearning system typically results in removal or deletion of all previous completion history data. Therefore, it’s helpful for customers to keep track of their Transcript Form documentation, as we are unable to recover course completion data once it has been removed from the CourseMill system.
How to Retake an eLearning Module

The following guidance is provided because customers are sometimes asked to retake one or more eLearning modules after several years, in accordance with specific program requirements. An example would be the Local Public Agency (LPA) Course series, which requires periodic renewal. Click here to access a PDF packet version of this guidance.

* Please note the following important information!

If you are tasked with retaking an eLearning module in LTAP eLearning, you will need to follow these steps to unenroll and then re-enroll to take the module:

1. Once you have logged into LTAP eLearning, please make sure you have the “My Courses” tab selected; and then,

2. Click on the “Completed” tab below the “My Courses” tab on the screen.

3. Then look for the course you need to retake in the list displayed on the screen. In this example, we are using the “Title VI for Local Public Agencies” course. Once you find the course, look to the right on the screen and click on the grey box to the far right with the “i” in it. Click on that box.
4. Once the course details box opens on your screen, click on the “unenroll” button at the bottom of the course details box.

5. When the Unenroll box displays on your screen, click on the “Yes” button to confirm you want to unenroll.

6. The LTAP eLearning system will then display a box confirming you have been unenrolled from the course. Click “OK” to continue.
7. Then click on the “Course Catalog” tab at the top of the screen.

8. Enter a keyword for your course into the “Title” field; and then,

9. Click on the “Search” button.

10. From the list which is displayed, please click on the “Enroll” button in front (to the left of) the course you want to register for and complete.

11. In the “Enroll” box which appears on your screen, click on “Yes”.
12. In the “Enrolled” box which will display on your screen, please read the instructions for navigating to the “My Courses” tab. Once you click on the “My Course” button, you will be able to launch the course and retake it for credit. (We do not require additional approvals, so you will be able to take the course right away after enrolling.)

If you have any questions or concerns while completing this process, please contact the Ohio LTAP center at 614-387-7359 or via email at ltap@dot.ohio.gov. You can contact us at any time of the day but please note we will respond to your question(s) during normal business hours.

**Tip #1:**
Once you unenroll for a course, your course completion history for that course will no longer display on your transcript.

If you need your history of completing the course, please download a copy of your history BEFORE you unenroll and re-enroll in a course.

**Tip #2:**
If the various boxes shown on this step-by-step guide are not appearing on your screen, it may be because you have your pop-up blocker turned on.

Please check your pop-up blocker to make sure it is turned off. If you still experience issues, please contact Ohio LTAP (see above).

**Using This Catalog**

A Table of Contents (front section) and Index (back section) are provided for easy reference.

When viewing the electronic (PDF) version of this catalog, customers can also quickly search for specific keywords or topics using the Find feature. Simply use “Ctrl” + “F” on the keyboard to open the Find box:
Then type in a keyword to search, and use the Enter/Return key to go to the first use of the word:

Clicking on the “Next” button will then advance to any additional uses of the word in the PDF document.

**Future Updates**

Looking ahead, this catalog will be updated periodically to reflect the addition of new courses to the Ohio LTAP eLearning system. The updated PDF copy of the catalog will be re-posted to the Ohio LTAP website on a periodic basis. *This version includes updates as of 2/04/2021.*

For the most current listing of available online courses, please login to the eLearning system (CourseMill). Details are provided on the eLearning webpage, at:

[http://www.dot.state.oh.us/Divisions/Planning/LocalPrograms/LTAP/Pages/Ohio_LTAP_eLearning.aspx](http://www.dot.state.oh.us/Divisions/Planning/LocalPrograms/LTAP/Pages/Ohio_LTAP_eLearning.aspx).
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### ODOT Traffic Academy

Placeholder for Traffic Signals, Modules 1-7 and exam

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### ODOT Office of Transit

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Credit Hrs: 1.0

Course: AM (Access Management) Module 2
Description: This is module 2 of 6 in the Access Management series. In this course, we will; Identify the four keys to good transportation; Define the transportation and land use cycle; Identify conflicts; Describe how access management is accomplished and identify five elements for a good access management program
Credit Hrs: 1.0

Course: AM (Access Management) Module 3
Description: This is module 3 of 6 in the Access Management series. In this course, we will; Describe the 3 steps to apply access management to a roadway system and define access management categories.
Credit Hrs: 0.25

Course: AM (Access Management) Module 4
Description: This is module 4 of 6 in the Access Management series. In this course, we will; discuss the 10 principles of access management and identity who is responsible for access management.
Credit Hrs: 0.5

Course: AM (Access Management) Module 5
Description: This is module 5 of 6 in the Access Management series. In this course, we will; Identify the processes that play a role in determining access outcomes; describe the design objectives for access control; and understand the use of zoning in access management.
Credit Hrs: 1.0
Course: AM (Access Management) Module 6

Description: This is module 6 of 6 in the Access Management series. In this course, we will; Understand the purpose of a traffic impact study; understand the use of access management in the vicinity of interchanges; Identify specific local strategies; and explain multi-modal development and access.

Credit Hrs: 1.0
### Active Transportation Academy (ATA) Courses

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<td>ATA (Active Transportation Academy) Adult School Crossing Guard Training</td>
<td>Adult school crossing guards play an important role in the lives of children who walk or bicycle to school. They help children safely cross the street at key locations. They also remind drivers of the existence of pedestrians. This training program is for adults that are interested in assisting students safely walk and bicycle to and from school. This eLearning module teaches the techniques and procedures to use as an adult school crossing guard. The module contains a downloadable, PDF version of the training course manual as a reference. We recommended this module be combined with an in-person field exercise measured with the Performance Checklist found in the downloadable training manual.</td>
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<th>Course:</th>
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<td>ATA (Active Transportation Academy) Advocating for Active Transportation</td>
<td>Course overview: This course examines the concept of advocacy, in relation to active transportation, and how to design a strategy for building advocacy in your community. It provides guidance to residents, activists, grassroots organizations, and planning and engineering professionals on how to engage elected officials on active transportation issues. What you will learn: Upon completion of this course, participants will have the knowledge and skills needed to initiate and support active transportation-related advocacy efforts in their community. They will understand why active transportation advocacy is necessary in their community, with whom to partner on advocacy efforts, effective methods to approach advocacy, and how to work with elected officials to build a culture of active transportation advocacy.</td>
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Course: ATA (Active Transportation Academy) Active Transportation Basics Module 1 -3

Description: This training was developed to introduce the concepts of active transportation in relation to planning programs and projects across the state of Ohio and in conjunction with the Ohio Department of Transportation.

Credit Hrs: 1.5

Upon completion of this course, participants will recognize the legitimacy of bicycle and pedestrian modes, understand key processes, practices, and contexts for decision making in active transportation planning processes, and understand the core principles and process for designing for people walking and biking. They will also build skills related to reviewing bike and ped related data, and have the knowledge and skills needed to initiate and support active transportation planning efforts in their community. They will understand why active transportation planning is necessary in their community, with whom to partner on planning and funding efforts, and where to find references for best practices and design standards when planning and designing active transportation facilities.

Module 2 will start off with an introduction to active transportation planning. The second section will cover types of active transportation plans that can be developed. We will also cover how to approach active transportation planning efforts, and provide examples of the different types of plans we cover. The module concludes with a review of the content and a "knowledge check" of what you have learned.

Module 3 will start off with a brief summary of resources related to standards for active transportation facilities. The second section will cover, in detail, different types of active transportation facilities and their application. The third section will cover traffic calming, or approaches used to slow traffic and/or cut traffic volumes in the interest of street safety. The fourth section will discuss supporting facilities and services for active transportation. The fifth section will cover the most common categories of funding sources for active transportation efforts, as well as specific funding programs and their details. Information on a selection of organizations, references, and tools, as well as additional training opportunities related to planning, design, and implementation of active transportation plans and projects will follow in the sixth and seventh sections.

The module concludes with a review of the content and a "knowledge check" of what you have learned. This is the last module in the course, so upon completion of this module, you will have completed the course.
Course: ATA (Active Transportation Academy) Traffic Calming

Description: This eLearning module teaches the techniques and procedures to use as an adult school crossing guard. The module contains a downloadable, PDF version of the training course manual as a reference. We recommended this module be combined with an in-person field exercise measured with the Performance Checklist found in the downloadable training manual.

This course presents the concept of traffic calming as it pertains to active transportation facilities and users. The purpose of this course is to introduce the principles of traffic calming, to become familiar with various types of safety countermeasures, and to learn about the resources and tools available to inform the planning and implementation of traffic calming countermeasures.

Upon completion of this course, participants will have the knowledge needed to determine if traffic calming countermeasures are an option for them to further explore for implementation in their community.

They will:
1. Understand why communities are looking to make their streets safer;
2. Be familiar with technical tools for making streets safer;
3. Possess practical knowledge of how to start planning and funding safety countermeasure projects; and,
4. Apply the knowledge to their community
Active Transportation Academy (ATA) Courses

Course: ATA (Active Transportation Academy) Adult School Crossing Guard Training

Description: Adult school crossing guards play an important role in the lives of children who walk or bicycle to school. They help children safely cross the street at key locations. They also remind drivers of the existence of pedestrians. This training program is for adults that are interested in assisting students safely walk and bicycle to and from school. This eLearning module teaches the techniques and procedures to use as an adult school crossing guard. The module contains a downloadable, PDF version of the training course manual as a reference. We recommended this module be combined with an in-person field exercise measured with the Performance Checklist found in the downloadable training manual.

Course: ATA (Active Transportation Academy) Traffic Calming

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Bridge Inspection Refresher Training

*ODOT Office of Structural Engineering*

**Course:** Bridge Refresher Training Module 1

**Description:** The purpose of the refresher training is to update inspectors on new policies and procedures within the inspection program. This serves as the ODOT and FHWA approved refresher training covering the following: Introduction to training.

**Credit Hrs:** 1.0

**Course:** Bridge Refresher Training Module 2

**Description:** The purpose of the refresher training is to update inspectors on new policies and procedures within the inspection program. This serves as the ODOT and FHWA approved refresher training covering the following: AssetWise Overview

**Credit Hrs:** 1.0

**Course:** Bridge Refresher Training Module 3

**Description:** The purpose of the refresher training is to update inspectors on new policies and procedures within the inspection program. This serves as the ODOT and FHWA approved refresher training covering the following: Roadway inventory fields in Assetwise

**Credit Hrs:** 1.0

**Course:** Bridge Refresher Training Module 4

**Description:** The purpose of the refresher training is to update inspectors on new policies and procedures within the inspection program. This serves as the ODOT and FHWA approved refresher training covering the following: Measuring Section Loss

**Credit Hrs:** 1.0

**Course:** Bridge Refresher Training Module 5

**Description:** The purpose of the refresher training is to update inspectors on new policies and procedures within the inspection program. This serves as the ODOT and FHWA approved refresher training covering the following: Load rating

**Credit Hrs:** 1.0
Course: Bridge Refresher Training Module 6

Description: Module The purpose of the refresher training is to update inspectors on new policies and procedures within the inspection program. This serves as the ODOT and FHWA approved refresher training covering the following:
Condition Rating Guidance

Credit Hrs: 1.0

Course: Bridge Refresher Training Module 7

Description: Module The purpose of the refresher training is to update inspectors on new policies and procedures within the inspection program. This serves as the ODOT and FHWA approved refresher training covering the following:
Prestressed box beams

Credit Hrs: 1.0
Disadvantaged Business Enterprise (DBE) Courses

ODOT Division of Opportunity, Diversity, and Inclusion

Course: DBE Business Plan Resources

Description: This training is intended to assist Disadvantaged Business Enterprise (DBE) firms in creating a business plan. The course covers online and in-person business plan resources available, including the U.S. SBA, Minority Business Assistance Centers (MBAC), Small Business Development Centers (SBDC), and Ohio SCORE.

Course: DBE Goal Attainment

Description: This training is designed to inform Disadvantaged Business (DBE) firms of the parts of the DBE Goal Attainment Process, the PN 013 Process, the C-92 Process, and Good Faith Efforts.

Course: DBE Supportive Services

Description: This training is designed to inform Disadvantaged Business Enterprise (DBE) firms of the DBE Supportive Services Program. Topics covered include the reimbursement program and the Mentor/Protégé program.
Environmental Courses

ODOT Office of Environmental Services (OES)

Course: OES Aesthetic Design Guidelines - Module 1

Description: An introduction to the background and basics of ODOT's integrated and multi-disciplined aesthetic design process. Presents aesthetic design concepts and ODOT guidelines that help formulate a plan to integrate aesthetic treatments into projects throughout ODOT's Project Development Process. Learning Objectives: 1. Describe the basic goals and considerations driving ODOT's aesthetic design process 2. Identify the differences between baseline and enhanced treatments 3. Recognize how aesthetic design is incorporated into ODOT projects throughout the Project Development Process (PDP) 4. Describe how to implement aesthetic design into your projects. Credit Hours (maximum) = 0.33.

Course: OES Aesthetic Design Guidelines - Module 2

Description: Learning Objectives: 1. Recognize some of the key design differences between baseline and enhanced treatments on Ohio's bridges and roadways 2. Identify where to find additional information on aesthetic elements. Credit Hours (maximum) = 0.50.

Course: OES Aesthetic Design Guidelines - Module 3

Description: Learning Objectives: 1. Identify which projects are exempt from aesthetic considerations during the PDP 2. Describe how aesthetic treatments are considered and implemented throughout the PDP. Credit Hours (maximum) = 0.33.

Course: OES Aesthetic Design Guidelines - Module 4

Description: Learning Objectives: 1. Recognize visual design elements within a corridor 2. Identify the aesthetic considerations involved in typical bridge and roadway design. Credit Hours (maximum) = 0.33.

Course: OES Air Quality 100 (Project Level Air Quality)

Description: An overview for environmental practitioners of ODOT's Project Level Air Quality
process. Learning Objectives: 1. Recognize when and where an analysis of air quality is required; 2. Describe the difference between Project-Level Air Quality and Regional Air Quality Conformity; 3. Identify the six criteria pollutants; 4. Understand the pitfalls of the air quality process; 5. Understand what we can do to improve air quality and particle emissions. Credit Hours (maximum) = 0.50.

Course: OES Air Quality 200 - Module 1 (Project Level Air Quality)

Description: This course will explain how to determine what level of air quality analysis is necessary for a transportation project and to ensure all state and federal requirements are met. Learning Objectives: 1. Describe project-level scoping for ozone, and particulate matter 2.5 (PM2.5); 2. Determine whether or not your project has a PM2.5 requirement; 3. Confirm that the project design concept and scope as described in the NEPA document has not changed significantly from what is described in the Statewide Transportation Improvement Program or Transportation Improvement Program; 4. Identify language you can include in your NEPA documents when your project has a PM2.5 requirement. Credit Hours (maximum) = 0.50.

Course: OES Air Quality 200 - Module 2 (Project Level Air Quality)

Description: Learning Objectives: 1. Describe project-level scoping for Mobile Source Air Toxics; 2. Describe the Federal Highway Administration's three-tiered approach for analyzing MSATs; 3. Recognize what information needs to be included in a qualitative MSAT analysis and what needs included in a quantitative MSAT air-quality analysis; 4. Identify air quality pitfalls and lessons learned; 5. Understand what MSAT, PM2.5, and ozone information needs to be included in EnviroNet. Credit Hours (maximum) = 0.50.

Course: OES Categorical Exclusion - Module 1

Description: This course will provide an overview of how Categorical Exclusions (CE) are managed and documented in relation to ODOT projects. Discussion will include, identifying the different classifications of CEs, the processing of CEs, and an overview of ODOT's online environmental documentation system, EnviroNet. Learning Objectives: 1. Define a categorical exclusion 2. Recognize the laws, regulations, and policies that pertain to categorical exclusions 3. Know how to use ODOT's Categorical Exclusion (CE) Guidance 4. Explain significance in relation to context and intensity 5. Identify the appropriate signature authority for different levels of projects.
Course: OES Categorical Exclusion - Module 2

Description: Learning Objectives:
1. Differentiate between C-listed and D-listed projects
2. Recognize the thresholds for each level of Categorical Exclusion.

Course: OES Categorical Exclusion - Module 3

Description: Learning Objectives: 1. Identify when and how to use EnviroNet
2. Differentiate between the various tabs and levels of Categorical Exclusions
3. Determine the appropriate information and documentation to include for projects in the project file and within each tab of EnviroNet.

Course: OES Creating Permanent Records of Historic Properties - Module 1

Description: Overview of the need and importance of producing permanent documentation of a historic resource with emphasis on how to conduct research and perform fieldwork for the documentation. Discussion will also include what is included in the physical document for a permanent record. Learning Objectives: 1. Use the information in the MOA to create a permanent record for the State Library of Ohio; 2. Use the guidelines of HABS/HAER as a reference when producing permanent documentation. Credit Hours (maximum) = 0.50.

Course: OES Creating Permanent Records of Historic Properties - Module 2

Description: Learning Objectives: 1. Use the criteria of eligibility to inform your historical research;
2. Perform historical research to create permanent documentation for ODOT;
3. Recognize the sources to research and information to include in the documentation;
4. Use the results of your research to perform fieldwork. Credit Hours (maximum) = 0.50.

Course: OES Creating Permanent Records of Historic Properties - Module 3

Description: Learning Objectives: 1. Properly prepare for fieldwork to create a permanent record;
2. Determine the materials you need to do fieldwork to create a permanent documentation;
3. Describe the appropriate views for photography during fieldwork for permanent documentation. Credit Hours (maximum) = 0.50.
Course: OES Creating Permanent Records of Historic Properties - Module 4

Description: Learning Objectives: 1. Describe the main components of the permanent record; 2. Produce the documentation to be submitted to ODOT.
Credit Hours (maximum) = 0.50.

Course: OES Ecological 100

Description: This training is an overview of ecological documentation and coordination with an emphasis on the methods and techniques required for completion of ecological survey reports (ESRs) for ODOT projects. This course is one of the prequalification requirements identified by ODOT's Office of Environmental Services with regard to ESR preparation. This online module must be completed by those who have registered for an upcoming, in-person session of the course.

Course: OES Ecological 200 - Module 1

Description: The purpose of this course is to help participants conduct ecological documentation for ODOT projects. Discussion will include; the actions needed before performing ecological fieldwork, how to survey for ecological resources, and the tools available to assist with completing any level of Ecological Survey Report, or ESR.
Learning objectives: 1. Define the ecological study area and encompass all potential disturbances as it relates to project activities 2. Understand the ecological Literature Review process, and its importance to ecological field investigations and documentation 3. Recognize the general goals of the ecological field survey.

Course: OES Ecological 200 - Module 2

Description: Learning objectives: 1. Identify and assess streams, wetlands, ponds, lakes, and reservoirs within the study area 2. Identify potential jurisdictional ditches using ODOT's guidance 3. Understand how to gather data to complete the relevant table(s) and comment fields in the ESR.

Course: OES Ecological 200 - Module 3

Description: Learning objectives: 1. Determine if biotic sampling for fish and/or macrobenthos is needed for your project 2. Determine if a mussel survey is needed for your project 3. Identify fish and macroinvertebrate sampling techniques 4. Appropriately document results of biotic sampling in the ESR.
Course: **OES Ecological 200 - Module 4**

**Description:** Learning objectives: 1. Understand how to document terrestrial Vegetative Communities and Land Cover in the tables and comment boxes in the ESR, and map their location in the study area 2. Understand how to document the presence of observed animal species in each habitat type 3. Understand how to investigate for both State and Federally Listed Species and their suitable habitats, and how to document findings in the ESR 4. Recognize the types of USFWS consultation processes for Federally Threatened and Endangered Species.

Course: **OES Ecological 200 - Module 5**

**Description:** Learning objectives: 1. Understand how to complete an ESR 2. Document and assess impacts to ecological resources that will result from a construction project 3. Identify the needed supporting documents to include as appendices to the ESR 4. Understand the agency coordination process 5. Understand how comments from ecological coordination are addressed in the NEPA document.

Course: **OES Environmental Commitments Training Course**

**Description:** The Environmental Commitments training must be completed, and the test successfully passed after completing the Environmental Commitments training module to attain Office of Environmental Services completion for Environmental Commitments training. The objective of the Introduction to Environmental Commitments training is for participants to gain an understanding of what environmental commitments are and why they matter. Participants will learn the basic process of developing and implementing environmental commitments. This training covers defining environmental commitments and their foundation in federal law, in addition to environmental commitment decision-making, writing, communicating, and implementing. Who should take this training series? Consultants, ODOT District Environmental staff, ODOT Communications staff, Project Managers, and Local Public Agency staff. Credit Hours (maximum) = 0.50.

Course: **OES Farmlands Coordination Training**

**Description:** This course provides an overview of regulations and ODOT's procedures related to Farmlands. Discussion will include how ODOT assesses each project to ensure potential impacts to farmlands are considered. Learning Objectives: 1. Define the process for projects in urbanized or non-urbanized areas; 2. Recognize the Farmland Memorandum of Understanding, or MOU, criteria
for non-urbanized areas; 3. Recognize when additional farmland designations need to be considered for projects in urbanized and non-urbanized areas; 4. Complete the Farmland Conversion Impact Rating form for projects that do not meet the criteria in the Farmland MOU; 5. Provide appropriate documentation in EnviroNet related to Farmlands. Credit Hours (maximum) = 0.50.

Course: **OES Feasibility Studies and Alternative Evaluation Reports**

Description: The Feasibility Study and Alternative Evaluation Report training must be completed, and the test successfully passed after completing all of the Feasibility Study and Alternative Evaluation Report training module to attain Office of Environmental Services completion for Feasibility Study and Alternative Evaluation Report training. This course provides an overview of the Feasibility Study (FS) and Alternative Evaluation Report (AER) Guidance published by the Office of Environmental Services. Upon completion of the training the student will be able to understand the differences between the FS and AER when they occur in the Project Development Process (PDP) and their role in the evaluation and comparison of alternatives for all project stakeholders.

Who should take this training series? Consultants, ODOT District Environmental staff, ODOT Communications staff, Project Managers, and Local Public Agency staff.

Course: **OES Floodplains Training Course**

Description: The Floodplains training must be completed, and the test successfully passed after completing all of the Floodplains training module to attain Office of Environmental Services completion for Floodplains training. An overview for environmental practitioners of the National Flood Insurance Program and Executive Order 11988 and how ODOT complies with these laws and regulations.

Who should take this training series? Consultants, ODOT District Environmental staff, ODOT Communications staff, Project Managers, and Local Public Agency staff. Credit Hours (maximum) = 1.2.

Course: **OES Noise Analysis 100**

Description: An overview for environmental practitioners of the Noise Analysis Process and how ODOT complies with these laws and regulations. Learning Objectives: 1. Understand when a noise analysis is required and what information must be provided to the noise analyst to help him or her complete a noise analysis; 2. Recognize what information must be included with all submittals related to noise analysis and abatement;
3. Identify common pitfalls in the noise analysis process.
Credit Hours (maximum) = 0.50.

**Course:** OES Noise Analysis 200 - Module 1

**Description:** An overview of ODOT's general Noise policies and procedures and the necessary requirements that have to be meet prior to preparing a Noise Analysis. Topics include: noise measurements and noise modeling, addressing impacts, noise analysis report, Noise Public Involvement, and Noise Wall Construction Plans. The Noise Analysis Report parts will be discussed as well uploading them to EnviroNet.
Learning Objectives: 1. Identify who is qualified to complete a noise analysis; 2. Explain the noise analysis process; 3. Describe the components of a noise analysis report; 4. Understand the purpose of the FHWA Traffic Noise Modeling software (TNM2.5); 5. Understand traffic and noise principles and Noise Abatement Criteria; 6. Analyze different land use areas; 7. Describe the role of existing year and design year traffic data in the noise process. Credit Hours (maximum) = 0.50.

**Course:** OES Noise Analysis 200 - Module 2

**Description:** An overview of ODOT's general Noise policies and procedures and the necessary requirements that have to be meet prior to preparing a Noise Analysis. Topics include: noise measurements and noise modeling, addressing impacts, noise analysis report, Noise Public Involvement, and Noise Wall Construction Plans. The Noise Analysis Report parts will be discussed as well uploading them to EnviroNet.
Learning Objectives: 1. Understand the requirements of a Noise Measurement; 2. Recognize the guidelines and procedures for Noise Model Validation; 3. Identify the steps involved in Noise Modeling; 4. Understand the requirements of a barrier analysis; 5. Recognize some of the pitfalls that can occur in the noise measurement and modeling processes and Noise Analysis Report. Credit Hours (maximum) = 0.50.

**Course:** OES Noise Analysis 200 - Module 3

**Description:** An overview of ODOT's general Noise policies and procedures and the necessary requirements that have to be meet prior to preparing a Noise Analysis. Topics include: noise measurements and noise modeling, addressing impacts, noise analysis report, Noise Public Involvement, and Noise Wall Construction Plans. The Noise Analysis Report parts will be discussed as well uploading them to EnviroNet.
Learning Objectives: 1. Understand the requirements of the Noise Public Involvement Process; 2. Describe the components of the Noise Public Involvement Summary Report; 3. Recognize the requirements of noise wall construction plans; 4. Identify
which guidance documents are used to prepare noise wall construction plans; 5. Recognize some pitfalls in the Noise Public Involvement and noise wall construction plan processes. Credit Hours (maximum) = 0.25.

Course: **OES Preparing Reader Friendly Documents**

Description: The purpose of this course is to help participants prepare effective letters, memos, emails or documents of any kind that are easy to comprehend. This training will help recognize the intended audience, the best language to use to communicate with them, and tools and tips to better incorporate visuals into documents for overall ease of understanding.

Learning Objectives: 1. Understand how to create reader-friendly documents; 2. Explain their importance; 3. Recognize the needs of your audience; 4. Understand and use best practices for creating such documents. Credit Hours (maximum) = 0.50.

Course: **OES Project Development Process (PDP) - Module 1**

Description: This is module 1 of the Ohio Department of Transportation's Project Development Process (PDP) and will provide participants with an understanding of the decision elements of the PDP, the flexibility built into the PDP, and how to make project decisions within the PDP structure. This course takes into account lessons learned and changes in the law since the PDP was implemented.

Participants must complete modules 1, 2 and 3 of the course, plus the post-course test in order to receive credit for completing this course. Course completion is automatically reported to the Office of Environmental Services for prequalification purposes. Credit Hours (maximum) = 1.25.

Course: **OES Project Development Process (PDP) - Module 2**

Description: This is module 2 of the Ohio Department of Transportation's Project Development Process (PDP) and will provide participants with an understanding of the decision elements of the PDP, the flexibility built into the PDP, and how to make project decisions within the PDP structure. This course takes into account lessons learned and changes in the law since the PDP was implemented.

Participants must complete modules 1, 2 and 3 of the course, plus the post-course test in order to receive credit for completing this course. Course completion is automatically reported to the Office of Environmental Services for prequalification purposes. Credit Hours (maximum) = 1.25.
Course: **OES Project Development Process (PDP) - Module 3**

Description: This is module 3 of the Ohio Department of Transportation's Project Development Process (PDP) and will provide participants with an understanding of the decision elements of the PDP, the flexibility built into the PDP, and how to make project decisions within the PDP structure. This course takes into account lessons learned and changes in the law since the PDP was implemented. Participants must complete modules 1, 2 and 3 of the course, plus the post-course test in order to receive credit for completing this course. Course completion is automatically reported to the Office of Environmental Services for prequalification purposes. Credit Hours (maximum) = 1.0.

Course: **OES Public Involvement Training - Module 1**

Description: All Public Involvement training modules must be taken in numerical order to complete the series as they build on each other. The Public Involvement test must be completed and successfully passed after completing all of the Public Involvement training modules to attain Office of Environmental Services prequalification for Public Involvement. Details are available online from the OES website at: [http://www.dot.state.oh.us/Divisions/Planning/Environment/training/prequalifications/](http://www.dot.state.oh.us/Divisions/Planning/Environment/training/prequalifications/)

Who should take this training series? Consultants, ODOT District Environmental staff, ODOT Communications staff, Project Managers, Local Public Agency staff, and others who work with the public on projects following ODOT's Project Development Process. This training provides an overview of public involvement as it relates to the NEPA process and ODOT's Project Development Process. Discussion will also include why public involvement is necessary, public involvement requirements, and methods and best practices. Credit Hours (maximum) = 0.50.

Course: **OES Public Involvement Training - Module 2**

Description: All Public Involvement training modules must be taken in numerical order to complete the series as they build on each other. Credit Hours (maximum) = 0.50.

Course: **OES Public Involvement Training - Module 3**

Description: All Public Involvement training modules must be taken in numerical order to complete the series as they build on each other. Credit Hours (maximum) = 0.50.
**Course:** OES Public Involvement Training - Module 4  
**Description:** All Public Involvement training modules must be taken in numerical order to complete the series as they build on each other. Credit Hours (maximum) = 0.50.

**Course:** OES Public Involvement Training - Module 5  
**Description:** All Public Involvement training modules must be taken in numerical order to complete the series as they build on each other. Credit Hours (maximum) = 0.50.

**Course:** OES Public Involvement Training - Module 6  
**Description:** All Public Involvement training modules must be taken in numerical order to complete the series as they build on each other. Credit Hours (maximum) = 0.50.

**Course:** OES Public Involvement Training - Module 7  
**Description:** All Public Involvement training modules must be taken in numerical order to complete the series as they build on each other. Credit Hours (maximum) = 0.30.

**Course:** OES Public Involvement Training - Module 8  
**Description:** All Public Involvement training modules must be taken in numerical order to complete the series as they build on each other. Credit Hours (maximum) = 0.30.

**Course:** OES Purpose and Need Training - Module 1  
**Description:** This course provides an overview of the Purpose and Need and explains the importance of providing this baseline for effectively developing, evaluating and eliminating or advancing alternatives. Learning Objectives: 1. Recognize the importance of having a Purpose and Need 2. Identify the timing of P&N development in a project 3. Recall the legal requirements that drive the P&N. Credit Hours (maximum) = 0.25.

**Course:** OES Purpose and Need Training - Module 2  
**Description:** Learning Objectives: 1. Assess the level of detail needed in a Purpose and Need 2.
Identify sources of information for the Purpose and Need 3. Break down the basic format of the Purpose and Need 4. Develop a Purpose Statement 5. Describe the function of Need Elements in crafting your Purpose and Need. Credit Hours (maximum) = 0.25.

Course: **OES Purpose and Need Training - Module 3**

Description: Learning Objectives: 1. Identify Primary and Secondary Needs; 2. Explain the importance of obtaining quantified data to support the Needs; 3. Define Performance-Based Project Development; 4. Identify when it's integrated into the Purpose and Need. Credit Hours (maximum) = 0.33.

Course: **OES Purpose and Need Training - Module 4**

Description: Learning Objectives: 1. Define Logical Termini and Independent Utility 2. Consider Public Involvement 3. Utilize best practices to create an effective Purpose and Need 4. Submit the Purpose and Need in EnviroNet. Credit Hours (maximum) = 0.25.

Course: **OES Regulated Materials Review (RMR) 100 Course**

Description: The Regular Materials Review training must be completed and the test successfully passed after completing all of the Regular Materials Review training module to attain Office of Environmental Services completion for Regular Materials Review training. An introduction to ODOT's Regulated Materials Review Process. This level will introduce the laws and regulations governing regulated materials ODOT routinely encounters during projects. This level will also introduce the RMR screening process and how to document findings related to regulated materials. Who should take this training series? Consultants, ODOT District Environmental staff, ODOT Communications staff, Project Managers, and Local Public Agency staff. Credit Hours (maximum) = 0.70.

Course: **OES Regulated Materials Review 200 - Module 1**

Description: An introduction to ODOT's Regulated Materials Review Screening Process. The RMR Screening form, Property Inventory form, Flowchart, Remote Property Inventory, Decision Summary and Cost Form, and RMR Plan Notes will be discussed in detail. Recommended decisions and RMR Screening outcomes will be identified. Learning Objectives: 1. Identify general information needed for completing the RMR Screening 2. Describe how to determine Project Limits for RMR Screening.
3. Understand how to complete a Property Inventory form to help determine if there is a need for further RMR studies.

**Course:** OES Regulated Materials Review 200 - Module 2

**Description:** Learning Objectives: 1. Understand how to walk a property through the RMR Screening Flowchart to determine what action needs to be taken 2. Describe how to properly document what action needs to be taken 3. Complete the Property Inventory and RMR Screening forms 4. Identify what is needed to complete the RMR Screening.

**Course:** OES Regulated Materials Review 200 - Module 3

**Description** Learning Objectives: 1. Recognize the components of the RMR Decision Summary and Cost Form, or DCSF 2. Describe the process for identifying and estimating Regulated Material waste removal and management costs 3. Identify the steps involved in completing an RM Plan Note.

**Course:** OES Regulated Materials Review 300 - Module 1

**Description:** An introduction to ODOT’s RMR Assessment Process, including historic resources review, property evaluations, and results and outcomes. Discuss the RMR Investigation process, from conducting fieldwork and analyzing data to results and outcomes.
Learning Objectives: 1. Identify various methods for conducting a historic resource review, 2. Recognize which regulatory file reviews are needed for a property 3. Understand the State of Ohio’s Right of Entry laws 4. Describe items to consider for property evaluation 5. Provide recommendations based on RMR Assessment findings.

**Course:** OES Regulated materials Review 300 - Module 2

Course: OES Section 106 Training - Module 1

Description: All Section 106 training modules must be taken in numerical order to complete the series as they build on each other. The Section 106 test must be completed and successfully passed after completing all of the Section 106 training modules to attain Office of Environmental Services prequalification for Section 106. This training course was developed to better inform and educate participants of the requirements of Section 106 of the National Historic Preservation Act of 1966, which requires federal agencies to take into account the effects of their actions on historic properties. This course is one of the prequalification requirements identified by ODOT's Office of Environmental Services with regard to Cultural Resources document preparation. Details are available online from the OES website at: http://www.dot.state.oh.us/Divisions/Planning/Environment/training/prequalifications/

Who should take this training series? Consultants, LPAs and ODOT staff, and others involved in cultural resources investigations. Credit Hours (maximum) = 0.75.

Course: OES Section 106 Training - Module 2

Description: All Section 106 training modules must be taken in numerical order to complete the series as they build on each other. Credit Hours (maximum) = 2.0.

Course: OES Section 106 Training - Module 3

Description: All Section 106 training modules must be taken in numerical order to complete the series as they build on each other. Credit Hours (maximum) = 0.75.

Course: OES Section 4f Training - Module 1

Description: This course provides an overview of the regulatory history of Section 4(f). Identifies the various types and uses of Section 4(f) properties and Determinations. Discussion will also include the overlap between Section 4(f) and Section 6(f). Learning Objectives: 1. Define the key terms pf Section 4(f); 2. Recall the history of Section 4(f). Credit Hours (maximum) = 0.25.

Course: OES Section 4f Training - Module 2

Description: Learning Objective: Identify Section 4(f) properties, based on specific characteristics. Credit Hours (maximum) = 0.40.
Course: OES Section 4f Training - Module 3

Description: Learning Objectives: 1. Identify the types of "use" a project could have on a Section 4(f) property; 2. Utilize the Five Levels of Section 4(f) Determinations that could be applied. Credit Hours (maximum) = 0.25.

Course: OES Section 4f Training - Module 4

Description: Learning Objectives: 1. Prepare the Determination Request Form for Recreational Properties; 2. Coordinate with the appropriate Official with Jurisdiction; 3. Address Section 4(f) in EnviroNet; 4. Describe the overlap between Section 4(f) and Section 6(f). Credit Hours (maximum) = 0.25.

Course: OES Section 6f Training - Module 1

Description: This course provides an overview on the background information required to understand Section 6(f). This course focuses on helping you identify Section 6(f) properties, impact determinations, and coordination requirements. Discussion will also include the overlap between Section 4(f) and Section 6(f). Learning Objectives: 1. Recall what constitutes a Section 6(f) property; 2. Recognize why ODOT addresses Section 6(f); 3. Understand the ODOT/ODNR MOU involving Section 6(f) Land and Water Conservation Fund Properties. Credit Hours (maximum) = 0.20.

Course: OES Section 6f Training - Module 2

Description: Learning Objectives: 1. Recall the steps taken to identify Section 6(f) properties; 2. Describe the three Impact Determinations for Section 6(f) properties. Credit Hours (maximum) = 0.25.

Course: OES Section 6f Training - Module 3

Description: Learning Objectives: 1. Identify and fulfill the Coordination Requirements for Section 6(f) properties 2. Understand the overlap between the Section 4(f) and Section 6(f) processes. Credit Hours (maximum) = 0.25.
Course: OES Underserved Populations - Module 1

Description: All Underserved Populations training modules must be taken in numerical order to complete the series as they build on each other. The Underserved Populations test must be completed and successfully passed after completing all of the Underserved Populations training modules to attain Office of Environmental Services completion for Underserved Populations training. This training class will focus on how to properly engage traditionally Underserved Populations (Minority, Low-Income, Limited English Proficiency, and Older Adult Populations) through public involvement during the NEPA process for ODOT projects. Who should take this training series? Consultants, ODOT District Environmental staff, ODOT Communications staff, Project Managers, and Local Public Agency staff. Credit Hours (maximum) = 0.70.

Course: OES Underserved Populations - Module 2

Description: All Underserved Populations training modules must be taken in numerical order to complete the series as they build on each other. Credit Hours (maximum) = 1.4.

Course: OES Virtual Public Involvement – Module 1

Description: Module 1 provides an overview of how to involve the public virtually in project planning needs and the importance of it. It will review methods for conducting online Virtual Public Involvement and audience considerations for virtual outreach.

Credit Hrs: 0.15

Course: OES Virtual Public Involvement – Module 2

Description: Module 2 will focus on preparing for Virtual Public Involvement Meetings. This includes Targeted Virtual Meetings, Virtual Open Houses, and Virtual Public Meetings. It will review the steps to prepare for Virtual Public Involvement Meetings, project team roles for these meetings, and the notification process for Virtual Public Involvement Meetings.

Credit Hrs: 0.20

Course: OES Virtual Public Involvement – Module 3

Description: Module 3 will focus on the specifics of conducting a virtual open house or virtual public meeting. It will review the steps to conduct each type of meeting and best practices to ensure these meetings run smoothly and efficiently.

Credit Hrs: 0.15
Course: OES Virtual Public Involvement – Module 4

Description: Module 4 will focus on analytics and follow-up tasks for Virtual Public Involvement projects. It will review analytics that can be used to determine if an outreach method is achieving desired results as well as information about responding to comments and documentation needed to meet NEPA requirements.

Credit Hrs: 0.10

Course: OES Waterway Permits 100

Description: Focusing on the Waterway Permits processes, Office of Environmental Services staff explains the intricacies of waterway permit regulations, permit application development, agency coordination requirements and consultant prequalification. Topics include relevant environmental laws, application processes, permitting timeframes, and the roles of the regulatory agencies in the process. This course is one of the prequalification requirements identified by ODOT's Office of Environmental Services for waterway permit application preparation. This online module must be completed by those who have registered for an upcoming, in-person session of the course. Credit Hours (maximum) = 1.0.

Credit Hrs: 1.0

Course: OES Waterway Permits 200

Description: This course provides an overview of the Waterway Permit Determination Process and provides information on how the permit process is coordinated with the District, Consultants, and ODOT's Waterway Permits Unit, or WPU. Learning Objectives: 1. Understand the Permit Determination Process; 2. Describe why the Permit Determination Process is needed; 3. Understand how to complete the Permit Determination Request for waterway impacts. Credit Hours (maximum) = 0.50.

Credit Hrs: 0.50

Course: OES Waterway Permits 300 - Module 1

Description: This course focuses on general permits regulated by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. Learning Objectives: 1. Identify types of general waterway permits; 2. Recognize permit conditions and permit thresholds for Nationwide Permits; 3. Determine when a U.S. Army Corps of Engineers Pre-Construction Notification is required. Credit Hours (maximum) = 0.50.

Credit Hrs: 0.50

Course: OES Waterway Permits 300 - Module 2

Description: Learning Objectives: 1. Recognize permit conditions and permit thresholds for the Regional General Permit; 2. Determine when a U.S. Army Corps of Engineers Pre-
Construction Notification or Ohio EPA Notification is needed; 3. Understand how to prepare a Pre-Construction Notification. Credit Hours (maximum) = 0.50.

**Course:** OES Waterway Permits 400 - Module 1

**Description:** This course focuses on advanced Surface Water Permitting. It provides information on advanced topics, such as Individual 404/401 Permits, Ohio EPA's Director Authorizations, isolated wetland permits, Section 9, 10 and 408 authorizations and mitigation and special provisions.

Learning Objectives:
1. Identify the requirements of an Individual Section 404 Permit and an Individual Section 401 Water Quality Certification
2. Determine when these advanced levels of permits are needed
3. Explain the general process for obtaining these permits
4. Identify the format and content required for individual permit application submittals.

**Course:** OES Waterway Permits 400 - Module 2

**Description:** Learning Objectives: 1. Recognize when a Director's Authorization may be appropriate for a project 2. Identify the application and supplemental information needed to submit a Director's Authorization request to Ohio EPA. 3. Define the three levels of Ohio EPA isolated wetland permit reviews 4. Understand the application and reporting requirements associated with each level.

**Course:** OES Waterway Permits 400 - Module 3

**Description:** Learning Objectives: 1. Identify other permits that ODOT encounters outside of Section 404 and 401 of the Clean Water Act, including Sections 9 and 10 Permits and 408 Permissions 2. Identify permits and coordination efforts that ODOT encounters less frequently including United States Coast Guard Section 9 Bridge Permits and U.S. Army Corps of Engineers Section 10 Permits and Section 408 Permissions.

**Course:** OES Waterway Permits 400 - Module 4

**Description:** Learning Objectives: 1. Recognize ODOT's approach to addressing a project's compensatory mitigation requirements 2. Recognize how ODOT uses Special Provisions to ensure permit compliance during construction.
Local Public Agency (LPA) Courses

ODOT Office of Local Programs / Ohio LTAP Center

Course: LPA Commercially Useful Function Training

Description: This course is part of the Local Public Agency prequalification training series. Local Public Agencies (LPAs) who are seeking to administer Federal Funds must complete this module on Commercially Useful Functions for Disadvantaged Business Enterprises (DBEs), prior to applying for funding.

Course: LPA Financial Responsibilities Training

Description: Local Public Agencies (LPAs) who administer Federal-aid local-let projects will learn the key financial responsibilities required for proper Federal contract compliance. The training is provided in an easy-to-understand, top ten list format highlighting: 1) the problem, 2) the way it works and 3) what your agency needs to do. This module is a requirement of the LPA qualification process.

Course: LPA Prompt Payment, DBE Goal Attainment, Commercially Useful Function and Retainage Training

Description: All ODOT Local-let LPA projects advertised after October 1, 2020 will be required to utilize GoFormz to track prompt payment, DBE goal attainment, CUF, and retainage. The training will highlight the reasons behind the updates in procedures, will demonstrate the CUF and Prompt Payment requirements in the GoFormz application, and provide details for account registration.

Course: LPA Title VI for Local Public Agencies

Description: Title VI applies to Local Public Agencies (LPAs) receiving federal funds for projects. This course provides training for LPAs on what Title VI is, why it is important for the LPA and how to apply Title VI's requirements in their daily work. The module contains a post-test which is ten questions in length. A 70% must be achieved to pass the post-test. This course is a requirement for the LPA Project Administration Training Series which must be completed by all Local Public Agencies seeking to qualify to locally-let a project.
Course: LPA Training, Module 1 - Introduction to Locally Administered Transportation Projects in Ohio

Description: Training for Local Public Agencies on the first chapter in the Locally Administered Transportation Projects (LATP) Manual. This course provides training on the "Introduction and Process Overview" Chapter from the LATP Manual. If you have never administered a local let project or it has been a while, this is a great module to start with in building or updating your local let project administration knowledge.

Course: LPA Training, Module 2 - Locally Administered Transportation Projects in Ohio

Description: Training for Local Public Agencies (LPAs) on the second chapter in the Locally Administered Transportation Projects (LATP) Manual. This training covers the LPA participation requirements.

Course: LPA Training, Module 3 - Project Development and Design

Description: This training will provide information on the Project Development and Design stage of a Local-let project. The topics covered include: project initiation activities, issuance and completion of the programming package, field review and scope meeting, finalization of LPA agreement, project oversight and monitoring requirements, design phase requirements, scope of services and completion of project.

Course: LPA Training, Module 4 - Right-of-Way

Description: Training for Local Public Agencies (LPAs) on the Locally Administered Transportation Projects (LATP) manual, chapter four on Right-of-Ways. This training covers the following topics related to right-of-ways: project programming, monitoring process, public involvement, right-of-way cost estimate, relocation planning, appraisals, acquisitions, relocation assistance, property management, right-of-way certification and federal policies specifically related to the reimbursement of right-of-way costs.

Course: LPA Training, Module 5 - Environmental

Description: This training will provide information on the Environmental stage of a Local-let project by covering the following topics - application of Federal and State environmental laws, including the National Environmental Policy Act (NEPA), to
local-let projects and steps for compliance with environmental requirements on your local-let project.

**Course:** LPA Training, Module 6 - Advertising, Sale and Award

**Description:** Training for Local Public Agencies (LPAs) on chapter 6 in the Locally Administered Transportation Projects (LATP) manual of procedures. This training will provide information on the Advertising, Sale and Award stage of a Local-let project. Course participants will learn the importance of receiving Federal Authorization before advertising for bids or starting work on a project for which Federal funds will be used. They will also learn the process for preparing a bid package for advertising, sale and award. Additionally, Ohio specific legal requirements for bids are addressed.

**Course:** LPA Training, Module 7 - Consultant Contract Administration

**Description:** Training for Local Public Agencies (LPAs) on chapter 7 in the Locally Administered Transportation Projects (LATP) manual of procedures. This training will provide information on the Consultant Contract Administration stage of a Local-let project. Course participants will learn to recognize when a consultant agreement must comply with Federal regulations, complete a review of the process for administering a consultant agreement and will learn to identify the Federal Highway Administration (FHWA) documents and other relevant Federal documents for consultant contract administration.

**Course:** LPA Training, Module 8 - LPA Construction Contract Administration

**Description:** Training for Local Public Agencies (LPAs) on chapter 8 in the Locally Administered Transportation Projects (LATP) manual of procedures. This training will provide information on the Construction Contract Administration stage of a Local-let project. Course participants will learn the Federal requirements which their agency must follow when locally administering a Federal-aid funded construction contract, understand the process for properly administering a Federal-aid funded construction contract, and will review the various forms used by ODOT in their monitoring of their agency during the construction contract administration process.

**Course:** LPA Training, Module 9 - Railroad Coordination

**Description:** Training for Local Public Agencies (LPAs) on chapter 9 in the Locally Administered Transportation Projects (LATP) manual of procedures. This training will provide
information on the Railroad Coordination stage of a Local-let project. Course participants will understand railroad coordination requirements for all Local-let projects and learn the steps to properly coordinate with the railroad for your agency’s project.

Course: **LPA Training, Module 10 - Utility Coordination**

Description: Training for Local Public Agencies (LPAs) on chapter 10 in the Locally Administered Transportation Projects (LATP) manual of procedures. This training will provide information on the Utility Coordination stage of a Local-let project. Course participants will understand Utility coordination requirements for all Local-let projects and learn the steps to properly coordinate with the utilities for your agency’s project.
Modeling and Forecasting Training

Course: SHIFT Introduction Training

Description: The Simplified Highway Forecasting Tool (SHIFT) training was created and published by the ODOT Office of Statewide Planning and Research - Modeling and Forecasting Section. The Simplified Highway Forecasting Tool (SHIFT) is front end software for reporting simplified traffic forecasts for highway design purpose for low risk projects on State highways. SHIFT generates a design designation from a Microsoft Access database file. The database file was created by adding functionality to the Modeling & Forecasting Section's congestion management forecasting tool built and thus it is consistent with Ohio's Congestion Management and Ohio's statewide travel demand model. The congestion management information and SHIFT database tables are updated annually. There is no attempt to provide any consistency with known developments or projects occurring in the vicinity of the segment. If the forecast needs must account for such things, send Modeling Forecasting a request accompanied by the usual required information so the requisite model runs can be conducted for the project.

Course: Simplified Highway Forecasting Tool (SHIFT) – Intersection Training

Description: NOTE: This is the intersection specific portion of this training. Please start with the Introduction Module first. The Simplified Highway Forecasting Tool (SHIFT) training was created and published by the ODOT Office of Statewide Planning and Research - Modeling and Forecasting Section.
Project Management Training Program (PMTP) Courses

Course: PMTP (ODOT) – Construction Projects from a Contractor’s Perspective: Risk Management Module One – Contracting Business Model

Description: The unit is the first module for the Project Management Training Program’s (PMTP) Construction Projects from a Contractor’s perspective / Risk Management course. It provides an introduction to the Contracting business model.

Course: PMTP (ODOT) – Drainage Design – Project Management Training Program

Description: This course provides general knowledge of the ODOT drainage process; identifies and explains hydraulic design concepts and references ODOT’s Construction and Material Specifications. There is a test at the end of the course that must be passed in order to receive full credit.
Roadway Safety Courses

Ohio LTAP Center / ODOT Office of Local Programs

Course: Ohio QuickClear Training

Description: This course provides training on how first responders, roadway traffic professionals and others involved with clearing crashes on Ohio's roadways can collaborate to safely and efficiently reopen roadways for the motoring public.

Course: Road Diets eLearning Module 1: Introduction and Why Consider a Road Diet?

Description: This self-paced course allows the participant to learn what a Road Diet is and how the definition includes many different roadway designs, understand why Road Diets are an important safety improvement for roadways, learn the various types of roadway users which can benefit from Road Diets, and analyze the impacts, both positive and negative, of Road Diet implementations. Suggested Credit Hours: 0.75.

Course: Roadway Departure Countermeasures - Module 1, Introduction

Description: Welcome to the Roadway Departure Countermeasures (RDC) eLearning series. This training program is intended to share information about available strategies to assist with reducing roadway departure crashes. Module 1 (Introduction) discusses crash data, strategic highway safety planning, roadway departure crash types, and resources for addressing risk factors.

Course: Roadway Departure Countermeasures - Module 2, Implementation Approaches

Description: Welcome to Module 2 (Implementation Approaches) of the Roadway Departure Countermeasures (RDC) eLearning series. This module discusses several types of strategies that are used to address traffic crash problems, and introduces the Systemic (or Systematic) safety approach.

Course: Roadway Departure Countermeasures - Module 3, Roadway Delineation Part I

Description: Welcome to Module 3 (Roadway Delineation) / Part I of the Roadway Departure Countermeasures (RDC) eLearning series. Part I of Module 3 discusses traffic control
standards and pavement markings.

Course: **Roadway Departure Countermeasures - Module 3, Roadway Delineation Part II**

Description: Welcome to Part II of Module 3 (Roadway Delineation), of the Roadway Departure Countermeasures (RDC) eLearning series. Part II discusses traffic signing and additional delineation treatments.

Course: **Roadway Departure Countermeasures - Module 4, Pavement and Geometric Part I**


Course: **Roadway Departure Countermeasures - Module 4, Pavement and Geometric Part II**

Description: Part II of Module 4 discusses improving friction for pavement surfaces.

Course: **Roadway Departure Countermeasures - Module 5, Improve Recovery Area**

Description: Module 5 describes strategies for improving the roadside recovery area to help reduce crashes.
Snow and Ice Pooled Fund Cooperative Program (SICOP)

American Association of State and Highway Transportation Officials (AASHTO)

SICOP is the Snow and Ice Pooled Fund Cooperative Program of the American Association of State Highway and Transportation Officials (AASHTO). Please note that the SICOP eLearning courses were developed as part of a national Winter Maintenance Technical Service Program. While they reflect material and input from various agencies/persons through the course development process, some SICOP courses might include information that differs from the specifications followed by individual states or agencies. Always check with your agency’s standards and specifications when using these resources.

Course: **SICOP-TC3-01 Anti-Icing/RWIS: Introduction to Anti-Icing and Winter Maintenance**

Description: Tremendous advances have been made in recent years to improve road weather forecasting techniques, increase material efficiency, and lower operating costs. This course defines what anti-icing is and why it's important to you. This lesson is part of the Anti-icing/Road Weather Information System (RWIS) training series, which introduces the learner to effective use of anti-icing techniques in winter road maintenance using road weather information system technology. There are seven courses in this series, and it is recommended that you take all courses in order. The development of this training program by the Snow and Ice Pooled Fund Cooperative Program (SICOP) was made possible through the pooled fund contributions by SICOP member states and other interested entities. It is being made available here through a partnership between SICOP and the Transportation Curriculum Coordinating Council (TC3). Please note that these courses are all Flash-based. If the screen is blank or shows the message, "Make a Selection to Continue," Flash is not enabled for TC3 courses. The easiest way to enable Flash is to select the lock icon next to the URL for the course and change the Flash settings to "Allow."

Target audience: This training is designed for winter road maintenance practitioners at all levels, including operators, supervisors, and mid-level managers.

Learning outcomes: Upon completion of this course, participants will be able to:

- Explain how anti-icing differs from traditional winter maintenance operations;
List the benefits of anti-icing; and
Identify and utilize the units of measure commonly used for anti-icing.

Course: **SICOP-TC3-02 Anti-Icing/RWIS: Winter Road Maintenance Management**

*Description:* This course discusses the general management aspects of winter road maintenance as it applies to anti-icing and road weather information systems. This lesson is part of the Anti-icing/Road Weather Information System (RWIS) training series, which introduces the learner to effective use of anti-icing techniques in winter road maintenance using road weather information system technology. There are seven courses in this series, and it is recommended that you take all courses in order.

*Target audience:* This training is designed for winter road maintenance practitioners at all levels, including operators, supervisors, and mid-level managers.

*Learning outcomes:* Upon completion of this course, participants will be able to:
- List the components necessary for a successful anti-icing program;
- Identify things to consider when planning for the winter season;
- Define level of service (LOS);
- Describe the importance of data collection and recordkeeping;
- Describe the value of community relations; and
- List key legal issues.

Course: **SICOP-TC3-03 Anti-Icing/RWIS: Winter Roadway Hazards and the Principles of Overcoming Them**

*Description:* This course discusses roadway ice and winter hazards. This lesson is part of the Anti-icing/Road Weather Information System (RWIS) training series, which introduces the learner to effective use of anti-icing techniques in winter road maintenance using road weather information system technology. There are seven courses in this series, and it is recommended that you take all courses in order.

*Target audience:* This training is designed for winter road maintenance practitioners at all levels, including operators, supervisors, and mid-level managers.

*Learning outcomes:* Upon completion of this course, participants will be able to:
- Describe the states of water and winter forms of water;
- Describe the heat balance above and below the pavement surface and explain how this affects the surface temperature;
- Know the importance of condensation and dew point temperature;
- Identify the characteristics of snow and ice and how these characteristics apply to the roadway;
- Explain why snow and ice bonds to the road;
- Explain the importance of "dilution of solution";
List chemical concentrations and application rates; and explain the importance of friction to winter road maintenance.

Course: SICOP-TC3-04 Anti-Icing/RWIS: Weather Basics

Description: This course discusses the basic weather principles necessary to make effective decisions for anti-icing operations. This lesson is part of the Anti-icing/Road Weather Information System (RWIS) training series, which introduces the learner to effective use of anti-icing techniques in winter road maintenance using road weather information system technology. There are seven courses in this series, and it is recommended that you take all courses in order.

Target audience: This training is designed for winter road maintenance practitioners at all levels, including operators, supervisors, and mid-level managers.

Learning outcomes: Upon completion of this course, participants will be able to:
- Describe weather and how it relates to winter maintenance;
- Define the terms air, atmosphere, temperature, and humidity;
- Explain the basics of weather systems;
- Identify typical regional winter weather patterns;
- List precipitation hazards; and
- List non-precipitation hazards.

Course: SICOP-TC3-05 Anti-Icing/RWIS: Weather and Roadway Monitoring

Description: This course introduces powerful tools and techniques that will help you make informed decisions about anti-icing applications. This lesson is part of the Anti-icing/Road Weather Information System (RWIS) training series, which introduces the learner to effective use of anti-icing techniques in winter road maintenance using road weather information system technology. There are seven courses in this series, and it is recommended that you take all courses in order.

Target audience: This training is designed for winter road maintenance practitioners at all levels, including operators, supervisors, and mid-level managers.

Learning outcomes: Upon completion of this course, participants will be able to:
- Explain the value and limitations of radar as a weather forecasting tool;
- Describe other weather observation and data gathering tools;
- List the components for RWIS;
- Explain the importance of value added meteorological (VAM) services;
- List the eight critical questions that need to be answered in preparation for anti-icing; and
- Describe how anti-icing can work with traditional operations.
Course: **SICOP-TC3-06 Anti-Icing/RWIS: Computer Access to Road Weather Information**

**Description:** In this course, we'll learn about your RWIA and provide detailed instructions on how to access the specific information you'll need for decision-making with your computer. Your RWIS program is a powerful system with a vast amount of roadway and localized weather information. This lesson is part of the Anti-icing/Road Weather Information System (RWIS) training series, which introduces the learner to effective use of anti-icing techniques in winter road maintenance using road weather information system technology. There are seven courses in this series, and it is recommended that you take all courses in order.

Target audience: This training is designed for winter road maintenance practitioners at all levels, including operators, supervisors, and mid-level managers.

Learning outcomes: Upon completion of this course, participants will be able to:

- Identify the main screens in the RWIS software;
- Navigate the RWIS software interface;
- Be able to describe the key features of the Maintenance Decision Support System (MDSS); and
- Identify additional information sites to support your work.

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Course: **SICOP-TC3-07 Anti-Icing/RWIS: Anti-Icing Practice in Winter Maintenance Operations**

**Description:** This course covers the implementation of anti-icing operations and the details of road maintenance how-to's, including material application, equipment operation and maintenance, and calibration and repair. This lesson is part of the Anti-icing/Road Weather Information System (RWIS) training series, which introduces the learner to effective use of anti-icing techniques in winter road maintenance using road weather information system technology. There are seven courses in this series, and it is recommended that you take all courses in order.

Target audience: This training is designed for winter road maintenance practitioners at all levels, including operators, supervisors, and mid-level managers.

Learning outcomes: Upon completion of this course, participants will be able to:

- Evaluate, plan, and prepare anti-icing operations for the upcoming winter maintenance season;
- Explain how anti-icing chemicals are applied and how to use and maintain anti-icing equipment;
- Use an objective process for selecting chemicals to mitigate environmental impacts;
- Describe proper material preparation and storage;
- List practical anti-icing chemical application rates;
- Describe proper techniques for the application of dry chemicals;
- Implement a step-by-step approach for designing a treatment plan; and
- List end-of-season tasks.
Course: SICOP-TC3-08 Blowing Snow Mitigation

Description: Primarily intended for winter maintenance practitioners in regions of North America experiencing significant blowing snow events, the Blowing Snow Mitigation course provides technical and practical instruction in planning for and mitigating the negative effects blowing snow can cause on roadways. Techniques for designing and installing structural and living snow fences are included, as well as optimizing roadway configuration for new construction projects. Topics include:

Unit 1: The Problem of Blowing Snow;
Unit 2: How Snow Fences Work;
Unit 3: Identifying and Analyzing Problem Areas;
Unit 4: Structural Snow Fence Design;
Unit 5: Living Snow Fences;
Unit 6: Road Design to Mitigate Blowing Snow; and
Unit 7: Working with Landowners.

Extensive use of illustrations, photographs and 3D animation help communicate the content.

Target audience: This course is not intended for operators but rather is suited for those agency specialists specifically responsible for mitigating the negative effects of blowing snow on roadways.

Learning outcomes: Upon completion of this course, participants will be able to:

Explain the problem of blowing snow;
Describe how snow fences work;
Explain how to identify and analyze problem areas;
Describe how to design a structural snow fence;
Explore living snow fence alternatives;
Explain how to design roadway features to mitigate effects of blowing snow; and
Explain how to work with landowners to mitigate blowing snow.

Course: SICOP-TC3-09 Deicing

Description: The Deicing training program is a comprehensive seven-unit course, introducing the learner to the various aspects of deicing winter roadways, such as materials, equipment, and application techniques. Topics covered include:

Unit 1: Introduction to Deicing and Common Deicing Materials;
Unit 2: Material Selection and Ordering;
Unit 3: Material Manufacturing, Handling and Storage;
Unit 4: Deicing Equipment;
Unit 5: Application Guidelines;
Unit 6: Application Techniques; and
Unit 7: Periodic Activities and Equipment Maintenance.
The course material is presented using video, animation, photographs, illustrations, and narration, and features extensive interactive activities to ensure understanding as the learner progresses through the course. After the learner has completed all seven units, a quiz is presented to evaluate the student's understanding.

Target audience: The target audience for this training includes all levels of winter maintenance practitioners: operators, supervisors, and mid-level managers, whether new or experienced.

Learning outcomes: Upon completion of this course, participants will be able to:
- Describe the properties of common deicing materials;
- Explain how to select and order deicing materials;
- Explain how to prepare, handle, and store deicing materials;
- List common types of deicing material applicators;
- Describe the general guidelines for efficient and effective application of deicing materials;
- Explain material application techniques; and
- Explain periodic activities and maintenance procedures.

Course: **SICOP-TC3-10 Equipment Maintenance**

**Description:** This course presents procedures that all winter maintenance operators should be familiar with in preparing and maintaining snow and ice control equipment. This module is presented in eight units:
- Unit 1: Pre-season Preparation;
- Unit 2: Common Types of Winter Maintenance Equipment;
- Unit 3: Mounting and Inspecting Snow Removal Equipment;
- Unit 4: Preparing for Each Event;
- Unit 5: Within-event Maintenance;
- Unit 6: Post-event Maintenance;
- Unit 7: Periodic Maintenance; and
- Unit 8: End-of-Season Tasks.

Target audience: This training is designed for new operators and is also well-suited for experienced operators and supervisors as a refresher.

Learning outcomes: Upon completion of this course, participants will be able to:
- Explain how to prepare equipment for the winter season;
- List common types of snow removal equipment;
- Explain how to mount and inspect equipment;
- Describe how to prepare for each event;
- Explain within-event maintenance procedures;
- Explain post-event maintenance procedures;
- List periodic maintenance procedures; and
- List end-of-season tasks.
Course: **SICOP-TC3-11 Performance Measures for Snow and Ice Control Operation**

**Description:** This course provides instruction on planning for, monitoring, and objectively evaluating winter roadway operations. Topics include the following seven units:

Unit 1: The Importance of Performance Measures;
Unit 2: Input and Output Measures;
Unit 3: Outcome Measures;
Unit 4: PSIC and Winter Severity Index;
Unit 5: Technologies to Help Measure and Report Performance;
Unit 6: Developing a Performance Measures System; and
Unit 7: Developing a Field Test Plan.

Photographs, on-screen forms, narration and other media are used to guide the learner through the content.

Target audience: The target audience for this training includes mid-level managers, however, facility supervisors may also benefit from this training.

Learning outcomes: Upon completion of this course, participants will be able to:
- Explain the importance of performance measures;
- List input and output measures;
- List outcome measures;
- Explain how a pavement snow and ice condition index and a winter severity index can provide more objectivity in your performance evaluations;
- List technologies to help measure and report performance;
- Explain how to develop a performance measures system; and
- Explain how to develop a field test plan for the system.

Course: **SICOP-TC3-12 Proper Plowing Techniques**

**Description:** The Proper Plowing Techniques training program uses video, illustrations, photography, and narration to present the proper techniques for plowing various roadway configurations including two-lane roads, multi-lane highways, one-way streets, traffic circles, and other situations. The eight units in this module cover:

Unit 1: Pre-season Preparation
Unit 2: Pre-trip Preparation
Unit 3: Safety
Unit 4: Common Types of Snow Removal Equipment
Unit 5: Roadway Plowing Techniques
Unit 6: Plowing Special Areas
Unit 7: Using Specialty Equipment
Unit 8: Clean-up.

Target audience: This training is designed primarily for new operators as well as experienced operators now responsible for maintaining new or different roadways.
Learning outcomes: Upon completion of this course, participants will be able to:
- Explain how to prepare for the winter season;
- List the steps to follow prior to each trip;
- Explain plowing safety procedures;
- Identify common types of snow removal equipment;
- Explain proper techniques for clearing snow from roadways;
- Explain how to plow special roadway areas;
- Explain how to properly employ special snow and ice removal equipment; and
- List clean-up activities.

**Course:** SICOP-TC3-13 Winter Maintenance Management

**Description:** This course provides learners with guidance on best practices for managing the equipment, facilities, material, and staff necessary for efficient and effective winter roadway maintenance. This module is presented in seven units:
- Unit 1: Snow and Ice Operational Plan;
- Unit 2: Establishing Levels of Service;
- Unit 3: Operational Methods;
- Unit 4: Selecting Snow and Ice Control Materials;
- Unit 5: Material Management;
- Unit 6: Budgeting; and
- Unit 7: Staffing.

Using examples from experienced winter roadway maintenance practitioners as well as charts, photographs, illustrations and narration, the learner will gain a good all-around understanding of the many facets involved in managing winter roadway maintenance operations.

Target audience: This training is designed for facility supervisors and mid-level managers. The course may also be suitable for operators if they aspire to take on a leadership role.

Learning outcomes: Upon completion of this course, participants will be able to:
- List the components of an effective snow and ice operational plan;
- Describe how to establish varying levels of service objectives;
- Describe various operational methods;
- Explain how to objectively select snow and ice control materials;
- Explain the guidelines for proper material management;
- Explain budgeting guidelines; and
- Explain staffing guidelines.
Traffic Academy Courses

*ODOT Traffic Academy*

**Course:** Introduction to Traffic Signals in Ohio, Modules 1 - 7

**Description:** These are pre-requisite modules 1 through 7 for the Traffic Signals course of the ODOT Traffic Academy. Information about the Traffic Academy is available at: [http://www.dot.state.oh.us/Divisions/Engineering/Roadway/TrafficAcademy/](http://www.dot.state.oh.us/Divisions/Engineering/Roadway/TrafficAcademy/).

**Course:** TRAF Highway Lighting Modules 1 - 7

**Description:** This course has been designed to provide the training required by ODOT’s prequalification for “Highway Lighting Design”.


Transit Courses

*ODOT Division of Transit*

**Course:** Rural Ohio Transit

**Description:** This training was created to assist new Rural Transit Managers in learning about the Ohio Rural Transit Program (49 USC Section 5311). It provides the participant with an overview of everything that is required of a Rural Public Transit Manager. There are 11 modules that cover everything from the requirements of the program to operating a public transit system. It is also useful for those that simply desire to learn more about the Rural Transit Program. After completing this training, the participant is invited to take Transit 101 training. Transit 101 consists of five in-depth modules that are 2 to 3 days in length. This series of courses provides an in-depth review of how to manage a transit system and covers all aspects such as Transit Operations & Administration, Human Resources, Financial Planning, Procurement and much more. At the end of this training the manager can become a Certified Rural Transit Program Manager (CRTPM) by completing a final test.
TC3 is the Transportation Curriculum Coordination Council of the American Association of State Highway and Transportation Officials (AASHTO). Please note that the TC3 eLearning courses are developed as part of a national Technical Service Program. While they reflect material and input from various agencies/persons through the course development process, some TC3 courses might include information that differs from the specifications followed by individual states or agencies. Always check with your agency’s standards and specifications when using these resources.

**Course:** TC3 3D Engineered Models for Construction, Part 1: Introduction - AASHTO

**Description:** The first in this four-module series defines and introduces 3D engineered modeling and explains how advanced 3D engineered modeling offers improvements over traditional 2D methods to deliver projects within schedule and budget with better quality from concept to completion. This first module is divided into three lessons.

- Lesson 1: What are 3D Engineered Models?
- Lesson 2: Applications in Highway Transportation; and
- Lesson 3: Implementation Lessons Learned.

While all four modules in this course explore a new topic within 3D modeling, they are also designed with enough recurring content to serve as individual learning experiences.

**Target audience:** This training is available to anyone interested in learning more about the use of 3D engineered models in construction. This training is recommended for mid-level managers with owner agencies in the following roles: district county, city, or State construction engineer, project design engineer/manager, on-site resident/project engineer, construction manager, and construction inspector.

**Learning outcomes:** Upon completion of this module, participants will be able to:
- Explain the benefits of 3D modeling;
List examples of 3D modeling currently in use;
Explain how the application of 3D modeling differs in various project delivery methods;
Describe quality control techniques at all stages of project delivery;
Describe how workflow with 3D models differs from 2D design; and
Describe the current practices in Civil Integrated Management (CIM).
Suggested Total Credit Hours (maximum) = 2.0. If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.
See also: Guidance for Engineers Regarding TC3 Courses.

Course: TC3 3D Engineered Models for Construction, Part 2: Surveying - AASHTO

Description: The second in this four-module series explains how 3D engineered modeling utilizes improved survey technologies for efficient design and construction. This module is divided into four lessons. They are: Lesson 1: Overview of Surveying Equipment and Techniques; Lesson 2: Surveying with the use of GPS, Lasers, Total Stations, and other Tools; Lesson 3: Subsurface Utility Engineering (SUE); and Lesson 4: Building the 3D Engineered Model. While all four modules in this course explore a new topic within 3D modeling, they are also designed with enough recurring content to serve as individual learning experiences.
Target audience: This training is available to anyone interested in learning more about the use of 3D engineered models in construction. This training is recommended for mid-level managers with owner agencies in the following roles: district county, city, or State construction engineer, project design engineer/manager, on-site resident/project engineer, construction manager, and construction inspector.
Learning outcomes: Upon completion of this module, participants will be able to: List recent events in the history of surveying and mapping technology; Explain how site and project constraints dictate which type of survey technology is used; Describe the order of magnitude costs for the equipment; Explain the training needs of high-tech equipment; List the requirements to utilize global positioning systems (GPS); Explain how terrestrial scanning and mobile LiDAR equipment works; Match the right technology to the right application; Explain and define SUE; and Explain the purpose of the digital terrain model (DTM).
Suggested Total Credit Hours (maximum) = 2.0.


Description: The third in this four-module series explains how advanced 3D engineered modeling enables intelligent design analysis, improves quality, and expedites downstream
This module is divided into four lessons. They are: Lesson 1: Applications of 3D Engineered Models in Design (Design Analysis); Lesson 2: Office Workflow and Process Elements; Lesson 3: Design and Coordination Process; and Lesson 4: Quality Assurance with 3D Modeling.

Target audience: This training is available to anyone interested in learning more about the use of 3D engineered models in construction. This training is recommended for mid-level managers with owner agencies in the following roles: district county, city, or State construction engineer, project design engineer/manager, on-site resident/project engineer, construction manager, and construction inspector.

Learning outcomes: Upon completion of this module, participants will be able to:

1. Describe how 3D engineered models provide clear design intent to downstream users;
2. Explain the capabilities of 3D modeling software;
3. Explain how 3D engineered models facilitate project communication;
4. Discuss good practices on data management and coordination with contractor associations;
5. Identify techniques used for visualizing problem areas during the design process; and
6. Describe how visualizing the project in 3D and simulating the project can greatly reduce the amount of errors and lead to a higher quality of construction.

While all four modules in this course explore a new topic within 3D modeling, they are also designed with enough recurring content to serve as individual learning experiences.

Suggested Total Credit Hours (maximum) = 2.0.

Course: TC3 3D Engineered Models for Construction, Part 4: Applications and Quality Assurance - AASHTO

Description: The fourth and final module in this series explains how 3D engineered modeling expedites concept to completion, reduces rework, increases safety, and decreases risk. This training is divided into four lessons. They are: Lesson 1: 3D Applications in Highway Construction; Lesson 2: Constructability Review; Lesson 3: Automated Machine Guidance (AMG) and Control Systems; and Lesson 4: Quality Assurance in Construction with 3D Engineered Modeling. While all four modules in this course explore a new topic within 3D modeling, they are also designed with enough recurring content to serve as individual learning experiences.

Target audience: This training is available to anyone interested in learning more about the use of 3D engineered models in construction. This training is recommended for mid-level managers with owner agencies in the following roles: district county, city, or State construction engineer, project design engineer/manager, on-site resident/project engineer, construction manager, and construction inspector.

Learning outcomes: Upon completion of this module, participants will be able to:
Explain how survey, 3D design, and construction techniques are used in modern highway construction;
Discuss the benefits of performance-based specifications and utilizing AMG technology;
Explain how the use of 3D design and construction techniques can be applied to as-built documentation and tied to GIS databases and systems;
Describe how cost and schedule information can be incorporated into the 3D engineered model;
Explain the challenges and benefits of implementing 4D and 5D modeling into a project;
Identify the different types of equipment and their inputs used in AMG;
List strategies for overcoming site-specific challenges; and
Discuss how increased accuracy results in an improved project delivery.
Suggested Total Credit Hours (maximum) = 2.0.

Course: **TC3 AASHTO Designation: R 47**

*Description:* The Standard Practice for Reducing Samples of Hot Mix Asphalt (HMA) to Testing Size is explained in this course. This procedure covers sample reduction of HMA; the reduced portion is to be representative of the original sample. This course includes all of the steps to prepare for, conduct, and report findings of this test. Target audience: The target audience for this training includes plant technicians, laboratory technicians, private lab employees, and contractor employees who perform the standard method tests for asphalt. This is also a good refresher course for supervisors and managers who are exposed to asphalt testing. Learning outcomes: Upon completion of this course, participants will be able to:
- Explain the purpose of AASHTO R 47;
- List the equipment (apparatus) needed for this test method;
- Describe the steps involved in the procedure for this test method; and
- Explain the required reports for this test method.

Course: **TC3 AASHTO Designation: R 60**

*Description:* This course explains and demonstrates how to perform the standard method test for AASHTO R 60, Sampling of Concrete. This includes all of the steps to prepare for, conduct, and report findings of this test. This course is part of the Inspection of Concrete Series, which includes several AASHTO test methods related to sampling and testing fresh concrete. The overall goals of this series are for you to understand the basics of testing freshly mixed concrete and for you to be competent with specific test procedures. The following AASHTO standard test procedures, practices, and specifications are
covered: • AASHTO T 309 Temperature of Concrete;  
• AASHTO T 119 Slump of Fresh Concrete;  
• AASHTO T 121 Density, Yield, and Air Content;  
• AASHTO T 152 Air Content by the Pressure Method; and  
• AASHTO T 23 Making and Curing Test Specimens.

You may take any of these courses as a standalone course; however, if concrete inspection is new to you, we recommend that you take these courses in order. Each of these are treated in summary form. Reference to the source documents is recommended when a more complete understanding of the information is required for conducting testing required by the governing agency.

Target audience: The target audience for this training includes plant technicians, laboratory technicians, private lab employees, and contractor employees who perform the standard method tests for fresh concrete. This is also a good refresher course for supervisors and managers who are exposed to PCC sampling and testing.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain the purpose of AASHTO R 60;  
• List the equipment needed for this test method;  
• Describe the steps involved in the procedure for this test method; and  
• Explain the required reports for this test method.

Course: TC3 AASHTO Designation: R 66

Description: The Standard Practice for Sampling Asphalt Materials is explained in this course. This course covers procedures for obtaining samples of liquid asphalt materials in accordance with AASHTO R 66. Sampling of solid and semi-solid asphalt materials, which is also included in AASHTO R 66, is not covered here. This course includes all of the steps to prepare for, conduct, and report findings of this test. Target audience: The target audience for this training includes plant technicians, laboratory technicians, private lab employees, and contractor employees who perform the standard method tests for asphalt. This is also a good refresher course for supervisors and managers who are exposed to asphalt testing. Learning outcomes: Upon completion of this course, participants will be able to:
• Explain the purpose of AASHTO R 66;  
• Describe the steps involved in the procedure for this test method;  
• List the requirements for the containers used in AASHTO R 66; and  
• Explain the information to report for this test method.

Course: TC3 AASHTO Designation: T 30

Description: This course explains and demonstrates how to perform the Standard Method of Test for Mechanical Analysis of Extracted Aggregate (AASHTO Designation: T 30). This includes all of the steps to prepare for, conduct, and report findings of this test. This test method is used to determine the grading of aggregates extracted from asphalt.
mixtures. The results are used to determine compliance of the particle-size distribution with applicable requirements and to provide necessary data for control of the production of various aggregates to be used in asphalt mixtures.

Target audience: The target audience includes plant technicians, laboratory technicians, private lab employees, and contractor employees who perform standard method tests for mechanical analysis of extracted aggregate. This is also a good refresher course for supervisors and managers who are exposed to aggregate testing.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain the background and purpose of AASHTO T 30;
• List the equipment needed for this test method;
• Describe the steps involved in the procedure for this test method; and
• Explain the required calculations and wrap-up procedures for this test method.

Course: TC3 AASHTO Designation: T 119

Description: This course explains and demonstrates how to perform the standard method test for AASHTO T 119, Slump of Fresh Concrete. This includes all of the steps to prepare for, conduct, and report findings of this test.

This course is part of the Inspection of Concrete Series, which includes several AASHTO test methods related to sampling and testing fresh concrete. The overall goals of this series are for you to understand the basics of testing freshly mixed concrete and for you to be competent with specific test procedures. The following AASHTO standard test procedures, practices, and specifications are covered:
• AASHTO R 60 Sampling of Concrete;
• AASHTO T 309 Temperature of Concrete;
• AASHTO T 121 Density, Yield, and Air Content;
• AASHTO T 152 Air Content by the Pressure Method; and
• AASHTO T 23 Making and Curing Test Specimens.

You may take any of these courses as a standalone course; however, if concrete inspection is new to you, we recommend that you take these courses in order. Each of these are treated in summary form. Reference to the source documents is recommended when a more complete understanding of the information is required for conducting testing required by the governing agency.

Target audience: The target audience for this training includes plant technicians, laboratory technicians, private lab employees, and contractor employees who perform the standard method tests for slump on concrete. This is also a good refresher course for supervisors and managers who are exposed to PCC testing.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain the purpose of AASHTO T 119;
• List the equipment (apparatus) needed for this test method;
• Describe the steps involved in the procedure for this test method; and
• Explain the required reports for this test method.
Course: **TC3 AASHTO Designation: T 121**

**Description:** This course explains and demonstrates how to perform the standard method test for AASHTO T 121, Density, Yield, and Air Content. This includes all of the steps to prepare for, conduct, and report findings of this test. This course is part of the Inspection of Concrete Series, which includes several AASHTO test methods related to sampling and testing fresh concrete. The overall goals of this series are for you to understand the basics of testing freshly mixed concrete and for you to be competent with specific test procedures. The following AASHTO standard test procedures, practices, and specifications are covered:
- AASHTO R 60 Sampling of Concrete;
- AASHTO T 309 Temperature of Concrete;
- AASHTO T 119 Slump of Fresh Concrete;
- AASHTO T 152 Air Content by the Pressure Method; and
- AASHTO T 23 Making and Curing Test Specimens.

You may take any of these courses as a standalone course; however, if concrete inspection is new to you, we recommend that you take these courses in order. Each of these are treated in summary form. Reference to the source documents is recommended when a more complete understanding of the information is required for conducting testing required by the governing agency.

**Target audience:** The target audience for this training includes plant technicians, laboratory technicians, private lab employees, and contractor employees who perform the standard method tests density, yield, and air content. This is also a good refresher course for supervisors and managers who are exposed to these concrete tests.

**Learning outcomes:** Upon completion of this course, participants will be able to:
- Explain the purpose of AASHTO T 121;
- List the equipment needed for this test method;
- Describe the steps involved in the procedure for this test method;
- List the calculations required for this test method; and
- Explain the required reports for this test method.

Course: **TC3 AASHTO Designation: T 166**

**Description:** This course explains and demonstrates how to perform the Standard Method of Test for Bulk Specific Gravity (Gmb) of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens (AASHTO Designation: T 166). This includes how to perform all of the necessary set up procedures, complete the steps in the test method, make all necessary calculations, and complete this standard method of test. The bulk specific gravity test is used to determine the specific gravity of a compacted hot mix asphalt (HMA) sample by determining the ratio of its weight to the weight of an equal volume of water. The bulk specific gravity test measures a HMA sample's weight under three different conditions: dry, saturated surface dry (SSD), and submerged in
water. HMA bulk specific gravity is needed to determine weight-volume relationships and to calculate various volume-related quantities such as air voids and voids in mineral aggregate (VMA).

Target audience: The target audience for this training includes plant technicians, laboratory technicians, private lab employees, and contractor employees who perform the standard method tests for bulk specific gravity. This is also a good refresher course for supervisors and managers who are exposed to bulk specific gravity testing.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain the purpose of AASHTO T 166;
• List the equipment needed for Methods A, B, and C of this test method;
• Describe the steps involved in the procedure for Methods A, B, and C of this test method; and
• Explain the required calculations and wrap-up procedures for Methods A, B, and C of this test method.

Course: TC3 AASHTO Designation: T 168

Description: The Standard Method of Test for Sampling Bituminous Paving Mixtures is explained in this course. This procedure covers the sampling of bituminous paving mixtures from hot mix asphalt (HMA) plants, haul units, and roadways. Sampling is as important as testing, and every precaution must be taken to obtain a truly representative sample. This course includes all of the steps to prepare for, conduct, and report findings of this test. Target audience: The target audience for this training includes plant technicians, laboratory technicians, private lab employees, and contractor employees who perform the standard method tests for asphalt. This is also a good refresher course for supervisors and managers who are exposed to asphalt testing.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain the purpose of AASHTO T 168;
• List the apparatus used in AASHTO T 168;
• Describe the steps involved in sampling from attached devices, transport, and the roadway; and
• Explain the information to report for this test method.

Course: TC3 AASHTO Designation: T 209

Description: This course explains and demonstrates how to perform the standard method test for theoretical maximum specific gravity and density of hot mix asphalt (HMA). This includes all of the steps to prepare for, conduct, and report findings of this test. To improve the quality of highway construction, maintenance, rehabilitation, and reconstruction projects, each State must ensure that appropriate and superior highway
materials are incorporated into the finished highway infrastructure element. The only way to achieve this goal is to be able to guarantee the utmost quality assurance possible. This means that qualified technicians involved in the processes of sampling and testing must be able to maintain their proficiencies and certification with applicable test methods.

Target audience: The target audience for this training includes plant technicians, laboratory technicians, private lab employees, and contractor employees who perform standard method tests for theoretical maximum specific gravity (Gmm) and density of hot mix asphalt (HMA). This is also a good refresher course for supervisors and managers that are exposed to HMA testing.

Learning outcomes: Upon completion of this course, participants will be able to:

• Explain why this test is used;
• List the equipment needed to run this test and describe preparation steps;
• Describe how the flasks, bowls, and pycnometers are standardized;
• Explain how samples are prepared;
• Describe how the theoretical maximum gravity test is performed;
• Calculate the theoretical maximum gravity of the specimen;
• Describe the supplemental procedure on porous aggregates;
• List what’s documented in the gravity and density report; and
• Explain how to correct for different temperatures.

Course: **TC3 AASHTO Designation: T 283**

Description: This course explains and demonstrates how to perform the standard method test for the resistance of compacted asphalt mixtures to moisture-induced damage. This includes all of the steps to prepare for, conduct, and report findings of this test. To improve the quality of highway construction, maintenance, rehabilitation, and reconstruction projects, each State must ensure that appropriate and superior highway materials are incorporated into the finished highway infrastructure element. The only way to achieve this goal is to be able to guarantee the utmost quality assurance possible. This means that qualified technicians involved in the processes of sampling and testing must be able to maintain their proficiencies and certification with applicable test methods.

Target audience: The target audience for this training includes plant technicians, laboratory technicians, private lab employees, and contractor employees who perform standard method tests for resistance of compacted asphalt mixtures to moisture-induced damage. This is also a good refresher course for supervisors and managers who are exposed to asphalt testing.

Learning outcomes: Upon completion of this course, participants will be able to:

• Explain why this test is used;
• List the equipment needed to run this test and describe preparation steps;
• Describe how specimens are prepared in the laboratory and field;
• Describe how the dry and conditioned specimens are preconditioned for testing;
• Explain how the indirect tensile strength is determined for the specimens;
• Calculate the tensile strength for each specimen; and
• List what's documented in the compaction report.

Course: TC3 AASHTO Designation: T 308

Description: Course overview: The AASHTO Designation: T 308 course explains the importance of asphalt content. It also describes the equipment needed to perform the test procedure, shows how to perform the ignition furnace test procedure (both Method A - internal balance and Method B - external balance), and instructs how to calculate and apply the correction factors.

Some of the topics covered in this training include:
• Background and purpose of asphalt content;
• Apparatus;
• The determination of correction factors; and
• Test procedure, calculations, and wrap-up of the test procedure (including reporting).

Target audience: This training is designed for plant technicians, private lab, or contractor employees who are qualified to sample hot mix, aggregate or asphalt cement, and perform acceptance tests including Asphalt Content by Ignition Oven (AASHTO T 308-10). It is also useful for laboratory and personnel assessment technicians.

Learning outcomes: Upon completion of the course, participants will be able to:
• Explain the impact that asphalt binder content can have on a pavement;
• Define the purpose of the ignition method, as well as the benefits and limitations of the test procedure;
• Understand the basic concepts behind the test procedure;
• Identify the equipment needed to perform the test procedure for both Method A and Method B;
• Understand why correction factors must be determined;
• Explain how to determine the asphalt binder correction factor;
• Explain how to determine the aggregate correction factor;
• Describe how the ignition test is performed for either Method A or Method B;
• Calculate the measured (corrected) asphalt binder content percent for both Method A and Method B;
• Report the test results; and
• Prepare a sample for a gradation analysis according to AASHTO T 30.

Course: TC3 AASHTO Designation: T 309
Description: This course explains and demonstrates how to perform the standard method test for AASHTO T 309, Temperature of Concrete. This includes all of the steps to prepare for, conduct, and report findings of this test.

This course is part of the Inspection of Concrete Series, which includes several AASHTO test methods related to sampling and testing fresh concrete. The overall goals of this series are for you to understand the basics of testing freshly mixed concrete and for you to be competent with specific test procedures. The following AASHTO standard test procedures, practices, and specifications are covered:

- AASHTO R 60 Sampling of Concrete;
- AASHTO T 119 Slump of Fresh Concrete;
- AASHTO T 121 Density, Yield, and Air Content;
- AASHTO T 152 Air Content by the Pressure Method; and
- AASHTO T 23 Making and Curing Test Specimens.

You may take any of these courses as a standalone course; however, if concrete inspection is new to you, we recommend that you take these courses in order. Each of these are treated in summary form. Reference to the source documents is recommended when a more complete understanding of the information is required for conducting testing required by the governing agency.

Target audience: The target audience for this training includes plant technicians, laboratory technicians, private lab employees, and contractor employees who perform the standard method tests for temperature of concrete. This is also a good refresher course for supervisors and managers who are exposed to concrete testing.

Learning outcomes: Upon completion of this course, participants will be able to:

- Explain the purpose of AASHTO T 309;
- List the equipment (apparatus) needed for this test method;
- Describe the steps involved in the procedure for this test method; and
- Explain the required reports for this test method.

Course: TC3 AASHTO Designation: T 310

Description: The Standard Method of Test for In-Place Density and Moisture Content of Soil and Soil Aggregate by Nuclear Methods (Shallow Depth) is explained in this course. This course includes all of the steps to prepare for, conduct, and report findings of this test.

Training level: Target audience: The target audience for this training includes plant technicians, laboratory technicians, private lab employees, and contractor employees who perform the standard method tests for asphalt. This is also a good refresher course for supervisors and managers who are exposed to asphalt testing.

Learning outcomes: Upon completion of this course, participants will be able to:

- Explain the purpose of AASHTO T 310;
- List the apparatus used in AASHTO T 310;
- Explain how to prepare to perform and actually perform the test method procedures; and
• Describe the calculations and reporting necessary for AASHTO T 310.

Course: **TC3 AASHTO Designation: T 312**

**Description:** AASHTO Designation: T 312: Preparing and Determining the Density of Asphalt Mixture Specimens by Means of the Superpave Gyratory Compactor explains how to perform all of the necessary set-up procedures, complete the steps in the test method, make all necessary calculations, and complete the documentation required to prepare and determine the density of an asphalt mixture using the Superpave gyratory compactor. This training covers the following topics:

- Significance and use;
- Apparatus and preparation of apparatus;
- Asphalt mixture preparation;
- Compaction procedure;
- Density procedure; and
- Density calculations.

Target audience: This training is designed for plant technicians, private lab, DOT technicians, or contractor employees who are qualified to perform acceptance tests including Preparing and Determining the Density of Asphalt Mixture Specimens by Means of the Superpave Gyratory Compactor. It is also useful for laboratory and personnel assessment technicians.

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

- Explain the purpose of the T 312 test method;
- Describe the equipment used in the T 312 test method;
- List the steps to prepare the apparatus for the test procedure;
- Explain which items may require periodic verification of calibration;
- Describe the process to prepare the HMA mixture for the gyration test when the sample is laboratory prepared;
- Describe the procedure for compacting the prepared HMA mixture;
- List the density procedures that are determined after the mixture has been compacted;
- Calculate the uncorrected relative density and the relative density; and
- Explain how to close out the T 312 test.

Course: **TC3 AASHTO Designation: T 355**

**Description:** The Standard Method of Test for In-Place Density of Asphalt Mixtures by Nuclear Methods is explained in this course. This course includes all of the steps to prepare for, conduct, and report findings of this test. Target audience: The target audience for this training includes plant technicians, laboratory technicians, private lab employees, and contractor employees who perform the standard method tests for asphalt. This is also a good refresher course for supervisors and managers who are exposed to asphalt
testing. Learning outcomes: Upon completion of this course, participants will be able to:

- Explain the purpose of AASHTO T 355;
- List the equipment (apparatus) needed for this test method;
- Describe how to prepare for and conduct the steps involved in the procedure for T 355; and
- Explain the required calculations and reports for this test method.

**Course:** TC3 Advanced Self-Consolidating Concrete - AASHTO

**Description:** This training will cover the basic characteristics of self-consolidating concrete (SCC) as well as advantages of using SCC as compared to conventional concrete. In addition, it will discuss SCC's composition and proportioning, and fresh and hardened properties. Finally, the course will review specific examples where SCC has been used and the details of SCC use in slipform paving.

Learning outcomes: Upon completion of the course, participants will be able to:
- Define SCC;
- List procedures for creating SCC;
- Identify SCC performance characteristics;
- Compare SCC and conventional concrete; and
- Recognize SCC applications.

**Course:** TC3 Aggregate Sampling Basics - AASHTO

**Description:** Course overview: The Aggregate Sampling Basics course will cover the importance of proper sampling, why we need to sample aggregate, and why we need special procedures to do so. The course will cover how to obtain a proper sample that will accurately represent the materials by utilizing sampling principles and preferred methods. The specifications covered in the course are from the American Association of State Highway and Transportation Officials (AASHTO). The course starts at the beginning with what are aggregates, what are aggregate uses, and continues through proper sampling. It also has information on aggregate processing and sieving.

Target audience: This training is targeted to the beginning technician that will be obtaining aggregate samples for testing during production or on a project for an agency, industry, or consultant.

Learning outcomes: Upon completion of the course, participants will be able to:
- Define aggregates;
- Describe aggregate processing; and
- Describe aggregate sampling.
Course: **TC3 Basic Construction Surveying - AASHTO**

**Description:** Course overview: This training serves as a review of the basics of construction surveying. The important surveying tasks involved in this work and the surveying procedures to be followed are described in this course. This training is divided into three modules:
1. Basic Surveying Concepts;
2. Measurement and Construction Surveying; and

Target audience: This training is designed for agencies and their industry counterparts involved in construction survey. This training is targeted for those who have not had construction surveying experience or anyone needing a review over the key concepts of surveying.

Learning outcomes: Upon completion of the course, participants will be able to:
- Describe basic surveying concepts;
- Understand measurement and construction surveying;
- List the instruments and techniques used in measurement;
- Perform stationing and staking operations; and
- Perform basic survey mathematics.

Course: **TC3 Bloodborne Pathogens - AASHTO**

**Description:** Course overview: This course covers the basics of bloodborne pathogen safety and the techniques you can use to prevent any contamination, disease, or injury from occurring. In addition to covering safe work practices, this course will provide steps to take in case of bloodborne pathogen exposure.

Target audience: This training is suited for all workers that risk occupational exposure to pathogens, including those who make contact with blood through the skin, eye, mucous membrane, and via the parenteral route. Qualified first aid and CPR employees must also be trained.

Learning outcomes: Upon completion of the course, participants will be able to:
- Explain the importance of bloodborne pathogen safety;
- List training applicability and requirements;
- Describe the transmission routes and symptoms of Hepatitis B, Hepatitis C, and HIV;
- Describe safe work practices used to limit bloodborne pathogen exposure; and
- Describe the process for reporting exposure incidents.

Course: **TC3 Bolted Connections - AASHTO**

**Description:** Course overview: Bolting is a common method of making connections and care
should be exercised in their design, installation, and maintenance. This course focuses on the installation of bolts. This module consists of three lessons:

- Lesson 1 reviews the basic connection types, types of holes, faying/contact surfaces, use of washers, tightening patterns, and fastener documentation.
- Lesson 2 on installation procedures explains how important it is to protect the fastener assemblies and surfaces during construction. The pre-installation verification of fastener assemblies will be reviewed and rotational capacity testing will be explained.
- Lesson 3 discusses basic guidelines to achieve quality fastener installations. There are several accepted methods for installing structural bolts. The methods covered in this training are turn-of-nut, calibrated wrench, direct tension indicator, twist-off bolt, and lock pin and collar.

Target audience: This training is designed for agencies and their industry counterparts involved in the installation and inspection of bolts and bolted connections on construction projects.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify various fastener connection types;
- Describe installation procedures; and
- Identify and describe various accepted installation methods.

Course: **TC3 Bridge Cleaning - AASHTO**

Description: This course was developed to give the user a better understanding of the cleaning methods appropriate for the removal of debris and chemicals, natural or manufactured, that can accumulate on a bridge. This course describes how to plan and execute a bridge cleaning operation considering best practices and introduces participants to environmental protection, maintenance of traffic, and safety requirements.

Target audience: The target audience for this training is the technician performing bridge cleaning; however, it is also good information for supervisors.

Learning outcomes: Upon completion of this course, participants will be able to:
- List contaminants found on bridges;
- List the benefits of bridge cleaning;
- Describe the components of the bridge that need to be cleaned;
- Explain the environmental considerations when bridge cleaning; and
- List the steps in the bridge washing process.

Course: **TC3 Bridge Construction Inspection Safety - AASHTO**

Description: Course overview: This course covers three topics: safety responsibility, personal protective equipment (PPE), and potential hazards. The course references OSHA and
ANSI safety standards. Two important areas covered include communication and inspector authority. Hazards on the bridge construction site including equipment, traffic, and falls are each detailed for the inspector. Also included in this course are trenching and excavation hazards, confined spaces, painting hazards, and construction over waterways, which are important safety areas that anyone on bridge inspection have knowledge of.

Target audience: This training is targeted to anyone performing bridge inspection duties for either agencies or consultants. This course focuses on the entry level inspector, but is a good refresher for any level of inspector.

Learning outcomes: Upon completion of the course, participants will be able to:
• Understand the inspector's safety role;
• Describe necessary construction site PPE; and
• Identify potential safety hazards.

Course: TC3 Bridge Preservation Guide - AASHTO

Description: This course follows the Bridge Preservation Guide that was developed for Federal, State, and local bridge engineers, bridge owners, and bridge preservation practitioners to support the Federal-aid Highway Program. The Bridge Preservation Guide: Maintaining a Resilient Infrastructure to Preserve Mobility was created because many State DOTs, local agencies, and other bridge owners face significant challenges in addressing the needs of their aging infrastructure.

A successful bridge program seeks a balanced approach to preservation and rehabilitation or replacement. Bridge owners are striving to be more strategic by adopting and implementing systematic processes for bridge preservation as an integral component of their overall asset management.

This course is divided into two modules. Module 1 covers definitions and commentaries, which will assist as a means of establishing clear and consistent terminology for bridge owners and preservation practitioners. Module 2 covers establishing a bridge preservation program.

Target audience: This course targets technicians involved in the maintenance of in-service highway structures.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain the challenges of preserving and maintaining bridges and culverts;
• Describe how bridge preservation and maintenance activities qualify for Federal funding;
• Define various terms used in bridge preservation;
• Explain the difference between cyclical and condition-based maintenance;
• Explain how the National Bridge Inventory General Condition Ratings are used; and
• Explain the difference between design life and service life;
• Describe the purpose of a bridge preservation program; and
• Explain how to establish a bridge preservation program.
Course: **TC3 CDL Air Brakes - AASHTO**

**Description:** Course overview: This training has been designed for those interested in commercial driver's license (CDL) air brake systems. This training discusses the parts of an air brake system, dual air brake systems, how to inspect your air brake system, and how to effectively use your air brake system. If you want to drive a truck or bus, or pull a trailer with air brakes, you'll need to take a test on this material. This training is broken into two modules:

- Module 1 consists of air brake system parts and dual air brakes systems.
- Module 2 consists of inspecting air brakes and using air brakes.

For more information on the CDL examination and requirements that apply to Ohio, please contact your local Ohio Bureau of Motor Vehicles (BMV) Office.

**Target audience:** This course is designed for anyone wanting to learn more about CDL air brake systems.

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

- Identify the important parts of the air brake system;
- Define dual air brakes;
- Recognize key elements in the air flow process of the dual air brake system;
- Identify the important components of air brake inspection; and
- Recognize the proper ways to use air brakes.

Course: **TC3 CDL General Knowledge - AASHTO**

**Description:** Course overview: This training was designed for those interested in general commercial driver's license (CDL) knowledge. This training contains the general knowledge and safe driving information that all commercial drivers should know. It is broken into three modules:

- Module 1 reviews vehicle control, shifting gears, seeing the road, communicating, speed control, and space management.
- Module 2 covers night driving, driving in cold and hot weather, mountain driving, and railroad crossings.
- Module 3 discusses seeing hazards, driving and road emergencies, staying alert and fit to drive, and transporting hazardous materials.

For more information on the CDL examination and requirements that apply to Ohio, contact your local Ohio Bureau of Motor Vehicles (BMV) office.

**Target audience:** This course is designed for any individuals wanting to learn more about general CDL information.

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

- Describe the procedures in controlling a vehicle and shifting gears;
- Define the steps to seeing the road in various situations;
- Recognize the importance of signaling and communicating;
• Identify the important components of speed control and space management;
• Describe the proper ways to drive at night;
• Identify the correct practices for driving in cold and hot weather;
• Describe the procedures for driving on a mountain;
• Recognize the proper way to cross a railroad;
• Describe the procedures in responding to driving emergencies and emergencies on the road;
• Identify the guidelines to staying alert and fit to drive; and
• Define the proper way to transport hazardous materials.

Course: **TC3 CDL Pre-trip Inspection - AASHTO**

Description: Course overview: This is a basic course in the area of commercial driver's license (CDL) pre-trip inspection. This training covers the different parts of a vehicle that you would check before a trip. We'll approach the different parts of the vehicle in the order that we would in a standard pre-trip inspection. It is broken into two modules:
• Module 1 covers front of the vehicle, engine compartment, engine start and cab check, steering, and suspension.
• Module 2 reviews brakes, wheels, side and back of vehicle, and trailer.
For more information on the CDL examination and requirements that apply to Ohio, contact your local Ohio Bureau of Motor Vehicles (BMV) office.
Target audience: This course is designed for anyone wanting to learn more about CDL pre-trip inspection.
Learning outcomes: Upon completion of the course, participants will be able to:
• Describe the inspection items in the front of the vehicle and engine compartment;
• Identify the important steps in the cab check and air brake check;
• Describe the important components of steering inspection;
• Define the parts of the front and rear suspension;
• Identify the components that are checked in front and rear brakes and front and rear wheels;
• Describe the inspection steps for the side and back of the vehicle; and
• Identify the inspection items for parts of the trailer.

Course: **TC3 Change Orders, Claims and Dispute Resolution - AASHTO**

Description: Course overview: Highway construction contracts often require modification due to scope changes, differing site conditions, and a number of other reasons. Administration of changes and/or claims can result in a dispute. Some contracts have a dispute resolution process specified to facilitate timely administration of the issue. This training explores all of these topics and more and provides you with an overview of the change process, the claim process, and the Federal government's role in these
situations.
The Change Orders, Claims, and Dispute Resolutions course contains two lessons. Lesson 1 contains information on change orders and Lesson 2 covers claims and dispute resolutions. This course discusses the relationship between the contractor and owner, and different ways a change can be handled between the two.
Target audience: This training is targeted to technicians and administrators that are responsible for change orders, claims, and change resolutions.
Learning outcomes: Upon completion of the course, participants will be able to:
• Describe what constitutes a change in a transportation contract;
• Define the different kinds of changes;
• Identify the authority behind change orders;
• Identify the existing regulations that impact changes;
• Describe the Federal government's role in the change process;
• Define a claim;
• Describe the process for determining a claim's validity;
• Define dispute resolution; and
• Describe the best way to avoid disputes.

Course: TC3 Chip Seal Best Practices - AASHTO

Description: Course overview: The Chip Seal Best Practices course assists in the development and implementation of pavement preservation programs by identifying the benefits of using chip seal as part of a preventive maintenance program. This course has six modules:
1. Introduction into Chip Seals
2. Designing Chip Seal Mixes
3. Selecting the Proper Materials for the Chip Seal Mix
4. Use of Equipment
5. Proper Construction Practices
6. Performance Measures of Chip Seals
The combination of this information provides an excellent overview of successful chip seal practices worldwide.
Target audience: This training would benefit entry level construction inspectors, maintenance employees, and contractor personnel. It also serves as a refresher training for those already well-versed in the selection and application of chip seal as a preventive maintenance treatment.
Learning outcomes: Upon completion of the course, participants will be able to:
• Define chip seal;
• Describe how chip seals are used as a preventive maintenance treatment for pavement;
• Identify materials used in chip seals;
• Describe the characteristics of chip seal design;
• Identify types of chip seal;
• Identify the important considerations of aggregate and binder selection;
• Describe aggregate-binder compatibility;
• Describe equipment used in chip seal practices;
• Identify important variables in construction practice;
• Define the measures of control implemented over the quality of materials and construction;
• Identify construction best practices;
• Describe the components of engineering-based performance measures;
• Identify qualitative performance indicators for chip seal; and
• Define common visible chip seal distresses.

Course: **TC3 Clean Water Act Compliance During Construction (Section 404) - AASHTO**

**Description:** Course overview: The purpose of the Clean Water Act (CWA) is to preserve the benefits and functions of the nation’s aquatic ecosystems. Those ecosystems include items such as flood protection, wildlife habitats, and water quality. This course covers the requirements of Section 404 of the CWA specifically as they pertain to construction activities in a manner that is accessible and understandable to non-environmental personnel. Recognizing potential non-compliance issues and how to deal with them is also covered. This course is divided into two modules: Module 1: What’s Regulated; and Module 2: Typical Construction Requirements. Target audience: The target audience for this training includes everyone involved in a construction project, and specifically those working on the project site and that would be exposed to the conditions that warrant CWA regulations and requirements.

Course: **TC3 Cold In-Place Recycling - AASHTO**

**Description:** Cold in-place recycling (CIR) is a method of reconstructing any flexible pavement where the need arises from structural failures. These failures include transverse cracking, wheel rutting, potholes, surface irregularities, or a combination of these. The proper selection of a CIR process, in conjunction with good specifications and quality construction, are all important in the long-term performance of the pavement rehabilitation. This series on CIR will introduce each method and provide a background on when, how, and why that method is selected/used. This training is meant to provide an overview of CIR, including an explanation of the pre-production inspection, completing the control strip, full production of the mix, mix placement, curing and maintenance, acceptance testing, and measurement and payment. This course contains three modules: Introduction to Cold In-place Recycling;
Cold In-place Recycling Full Production; and Cold In-place Recycling Post Production.
This course will provide the inspector with a background and proper inspection procedures when placing cold-in-place hot mix asphalt.

Target audience: This course is intended for local, county, and State owner agency technicians and inspectors. It is also useful for individuals who need awareness or basic understanding of cold in-place recycling.

Learning outcomes: Upon completion of the course, participants will be able to:
Explain what CIR is and why it is used;
Describe what happens during pre-production;
Explain how the control strip helps determine compaction procedures and why it is needed;
Identify the factors that can influence a CIR mix;
Describe important considerations during placement, compaction, and finishing;
Explain the importance of curing and maintenance on the quality of a CIR surface; and
Describe what happens once the surface is finished.

Course: **TC3 Compaction Technician Basics - AASHTO**

Description: This course covers the fundamental concepts related to compaction, including safety, soil basics, and basic operation of gauges, as well as introduction to compaction theory. This course is not intended to be used for certification purposes, but it instead intended to be a primer for those technicians and inspectors preparing for involvement in compaction activities and agency-specific training programs. There are three modules that make up this course. They are:

- Compaction Fundamentals;
- Compaction and Testing; and
- Nuclear Density Gauge Basics.

Target audience: This course is ideal for local, county, and State owner agency technicians and inspectors.

Learning outcomes: Upon completion of this course, participants will be able to:
Describe the importance of compaction during roadway construction;
Explain the relationship between water and compaction;
Describe equipment and safety considerations used for soil compaction;
List density testing methods used during compaction inspection;
Explain the basic theory of nuclear gauges;
Describe when and why nuclear gauges are used; and
Summarize the application of nuclear density gauges in the field.
Course:  **TC3 Concrete Bridge Deck Patching - AASHTO**

**Description:** The deck of a bridge is like the roof on a house; it receives the brunt of the storm and shelters the contents below from the harsh elements. The most common bridge deck material is reinforced concrete.

This course was developed to provide a better understanding of the process to patch concrete bridge decks. It describes how to plan and execute a concrete deck patching operation with an emphasis on identifying repair areas, surface preparation, and placing, finishing and curing deck patch material. The best practices presented in this course will help minimize potential premature failure of bridge deck patches and contribute to a successful deck patching operation.

This course offers professional development hours (PDHs). You will see the PDHs on your course completion certificate, which also serves as documentation of your attendance. PDH requirements vary, therefore, it is up to you to determine whether or not this particular course qualifies under your State or board requirements.

Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, III, and IV.

Target audience: The target audience for this training is the technician performing concrete bridge deck patching; however, it is also good information for supervisors and managers.

Learning outcomes: Upon completion of this course, participants will be able to:
- Explain bridge deck patching planning procedures;
- Describe methods to identify deteriorated areas on a bridge deck; and
- Explain the procedure for repairing the surface of a bridge deck by patching.

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Course:  **TC3 Concrete Series: Basics of Cement Hydration - AASHTO**

**Description:** Course overview: This module covers how a concrete mixture changes from a plastic state to become a solid concrete slab in a relatively short period of time. Central to this transformation is a complex process called hydration, an irreversible series of chemical reactions between water and cement.

This module is part of a curriculum from the "Integrated Materials and Construction Practices for Concrete Pavement" manual developed through the National Concrete Pavement Technology Center at Iowa State University. The other Web-based training modules include:
- Design of Pavement
- Hardened Concrete Properties – Durability
- Fundamentals of Materials Used for Concrete Pavements
- Incompatibility in Concrete Pavement Systems
- Mix Design Principles
- Early Age Cracking
- Fresh Concrete Properties
• Construction of Concrete Pavements
• QCQA for Concrete Pavements
• Troubleshooting for Concrete Pavements

Target audience: This training is designed for agencies and their industry counterparts involved in the process to assure that the mix design and proportioning of portland cement concrete (PCC) materials meet specification requirements and provide good, durable concrete. It is applicable to anyone desiring a better understanding of the mix design of PCC.

Learning outcomes: Upon completion of the course, participants will be able to:
• Understand the physical and chemical occurrences that happen during cement hydration;
• Identify various factors that can adversely affect these occurrences; and
• Recognize the different temperature changes during particular stages of hydration.

Course: TC3 Concrete Series: Construction of Concrete Pavements - AASHTO

Description: Course overview: This module covers construction operations and establishes important ties to design and materials. This module is part of a curriculum from the "Integrated Materials and Construction Practices for Concrete Pavement" manual developed through the National Concrete Pavement Technology Center at Iowa State University.

Target audience: This training is designed for agencies and their industry counterparts involved in the plant manufacturing process, delivery, placement, and inspection of PCC paving.

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

- Recognize the principles of good quality portland cement concrete (PCC) pavement construction;
- Identify proper material handling;
- Describe the importance of the design and mixing of PCC;
- Recognize when field adjustments may be necessary; and
- Describe paving operations including placing, finishing, curing, and sawing concrete.

Course: TC3 Concrete Series: Design of Pavement - AASHTO

Description: Course overview: This module covers pavement design and subgrade concepts as they relate to materials and construction. It does not provide sufficient detail to actually design or evaluate a design. It covers the primary goal of pavement design, which is to provide a pavement that is safe, long lasting, cost effective, low maintenance, and
This module is part of a curriculum from the "Integrated Materials and Construction Practices for Concrete Pavement" manual developed through the National Concrete Pavement Technology Center at Iowa State University.

Target audience: This training is designed for agencies and their industry counterparts involved in designing, constructing, and inspecting Portland cement concrete pavements.

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

- Identify pavement types and design features;
- Recognize what design variables are controlled by field operations;
- Discuss the two primary types of pavement distresses (performance measures); and
- Recognize how subgrades and bases affect construction operations and long-term pavement performance.

Course: TC3 Concrete Series: Early Age Cracking - AASHTO

Description: Course overview: Cracks are not a problem as long as they are controlled through jointing; ideally the concrete will crack below the saw joint to relieve the stress. Uncontrolled random cracks are not aesthetically acceptable and can reduce ride quality, durability, and particularly load transfer. Early cracking in this module is defined as those cracks that occur before the concrete is open to public traffic. In this module, we will be talking about early age cracking. Primarily, why does it occur and how can it be eliminated or at least controlled?

This module is part of a curriculum from the "Integrated Materials and Construction Practices for Concrete Pavement" manual developed through the National Concrete Pavement Technology Center at Iowa State University.

Target audience: This training is designed for agencies and their industry counterparts involved in the process to assure that concrete meets all the requirements to prevent early age cracking. It is applicable to anyone desiring a better understanding of the causes and prevention of early age cracking.

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

- Describe the various mechanisms that can lead to early age cracking;
- Define and understand why curling and warping occur;
- Recognize how curling and warping affect early age cracking;
- Recognize the proper use of the materials and maintaining good construction practices can control early age cracking; and
- Describe how certain material properties and construction methods can affect early age cracking and can help prevent the cracking from occurring.
Course: **TC3 Concrete Series: Fresh Properties - AASHTO**

**Description:** Course overview: This module covers the properties of fresh concrete needed to produce high-quality, long-lasting pavements and how to monitor these properties. This module is part of a curriculum from the "Integrated Materials and Construction Practices for Concrete Pavement" manual developed through the National Concrete Pavement Technology Center at Iowa State University.

Target audience: This training is designed for agencies and their industry counterparts involved in the process to assure that the properties of a concrete mixture provide ease in placement, ease of consolidation, and long-lasting pavement. It is applicable to anyone desiring a better understanding of the properties of portland cement concrete.

Learning outcomes: Upon completion of the course, participants will be able to:
- List the main properties of fresh concrete;
- Describe what affects each property; and
- Recognize how to monitor these properties through concrete testing.

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Course: **TC3 Concrete Series: Fundamentals of Materials Used in Concrete Pavement - AASHTO**

**Description:** Course overview: The materials used in portland cement concrete (PCC) play an extremely valuable role in the performance of the concrete. This training covers both the non-reactive and reactive materials used in PCC. This would include the aggregates, curing compound, reinforcement, and the materials that are chemically reactive. This module is part of a curriculum from the "Integrated Materials and Construction Practices for Concrete Pavement" manual developed through the National Concrete Pavement Technology Center at Iowa State University.

Target audience: This training is designed for agencies and their industry counterparts involved in the process to assure that the materials used in PCC meet specification requirements and are compatible to provide good, durable concrete. It is applicable to anyone desiring a better understanding of the materials used in PCC.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify materials used in PCC;
- Describe the importance of each material and the role it plays in the performance of the concrete; and
- Describe how each material reacts with the other materials to obtain strength, permeability, workability, etc.

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Course: **TC3 Concrete Series: Hardened Concrete Properties - AASHTO**
Description: Course overview: Durability as a property of hardened concrete is essential for long-lasting pavements. This workshop discusses factors that contribute to durable concrete and covers permeability, frost resistance, sulfate resistance, alkali silica attack, and a brief look at abrasion resistance. This module is part of a curriculum from the "Integrated Materials and Construction Practices for Concrete Pavement" manual developed through the National Concrete Pavement Technology Center at Iowa State University.

Target audience: This training is designed for agencies and their industry counterparts involved in the process to assure that concrete meets all the requirements for durability. It is applicable to anyone desiring a better understanding of the factors of durability.

Learning outcomes: Upon completion of the course, participants will be able to:
- Recognize factors contribute to durable concrete;
- Explain the importance of permeability, alkali-silica reaction, abrasion resistance and, in certain regions in the country, frost resistance and sulfate resistance of hardened concrete; and
- Identify tests that can be performed to determine the variables affecting the durability of hardened concrete.

Course: TC3 Concrete Series: Incompatibility in Concrete Pavement Systems - AASHTO

Description: Course overview: The materials used in portland cement concrete (PCC) play an extremely valuable role in the performance of the concrete. This training covers the incompatibilities of materials used in PCC. Although certain materials may be perfectly acceptable on their own, when they are combined they are not compatible with each other. This can cause early stiffening, retardation, cracking, and the lack of a quality of air void system. This module is part of a curriculum from the "Integrated Materials and Construction Practices for Concrete Pavement" manual developed through the National Concrete Pavement Technology Center at Iowa State University.

Target audience: This training is designed for agencies and their industry counterparts involved in the process to assure that the materials used in PCC meet specification requirements and are compatible to provide good, durable concrete. It is applicable to anyone desiring a better understanding of the materials used in PCC.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify the causes of incompatible conditions leading to early stiffening or setting and occasional early age cracking;
- Recognize the importance to use the correct air void system; and
- Describe test methods used to identify incompatibilities.
Course: **TC3 Concrete Series: Mix Design Principles - AASHTO**

**Description:** Course overview: This module discusses mix design and mix proportioning. Mix design is the process of choosing the characteristics we are looking for in the concrete mixture. Mix proportioning, on the other hand, involves taking the information provided by the mix design process and using that information to determine the actual proportions of ingredients in the mixture. This course discusses theoretical, laboratory, and field testing to determine the portland cement concrete (PCC) mix that will achieve the best possible durability, strength, constructability, economy, and uniformity. This module is part of a curriculum from the "Integrated Materials and Construction Practices for Concrete Pavement" manual developed through the National Concrete Pavement Technology Center at Iowa State University.

Target audience: This training is designed for agencies and their industry counterparts involved in the process to assure that the mix design and proportioning of PCC materials meet specification requirements and provide good, durable concrete. It is applicable to anyone desiring a better understanding of the mix design of PCC.

Learning outcomes: Upon completion of the course, participants will be able to:
- Describe the overall goal of mix design;
- Define the difference between mix design and mix proportioning;
- Recognize field and laboratory testing plans; and
- Describe test methods used to identify incompatibilities.

Course: **TC3 Concrete Series: QCQA for Concrete Pavements - AASHTO**

**Description:** Course overview: This module covers an overview of quality control/quality assurance (QC/QA) concepts and definitions. It does not provide sufficient detail to actually develop a comprehensive QC/QA plan. This module is part of a curriculum from the "Integrated Materials and Construction Practices for Concrete Pavement" manual developed through the National Concrete Pavement Technology Center at Iowa State University.

Target audience: This training is designed for agencies and their industry counterparts involved in the quality control activities on a portland cement concrete paving project. Learning outcomes: Upon completion of the course, participants will be able to:
- Identify the basic QC/QA terminology and record keeping requirements;
- Recognize the statistical quality control chart; and
- Describe the common QC/QA tests performed for concrete paving projects.

Course: **TC3 Concrete Series: Troubleshooting for Concrete Pavements - AASHTO**

**Description:** Course overview: This module covers using the information available in the Integrated Materials and Construction Practices for Concrete Pavement (IMCP)
Manual to identify and diagnose problems related to concrete pavement pre- and post-construction and to develop a plan to address the problems. This module is part of a curriculum from the "Integrated Materials and Construction Practices for Concrete Pavement" manual developed through the National Concrete Pavement Technology Center at Iowa State University.

Target audience: This training is designed for agencies and their industry counterparts involved in designing mixes, constructing, and inspecting PCC pavements.

Learning outcomes: Upon completion of the course, participants will be able to:
• Recognize IMCP manual tables 10-1 through 10-4 to identify and diagnose problems with portland cement concrete (PCC) pavement; and
• Compose a plan to correct problems associated with PCC pavement.

Course: **TC3 Construction Inspector Orientation – AASHTO**

Description: A construction inspector serves as the eyes and ears for the contracting agency on a construction project. It is the inspector's responsibility to ensure that proper construction processes and procedures are followed, and acceptable materials are incorporated into the project. This course covers the primary duties of an inspector, as well as some of the basic knowledge an inspector needs in his or her daily tasks.

There are three lessons in this course. They are:
The Role of an Inspector;
Introduction into Highway Construction Materials; and
Specific Project Inspection Duties.

Learning outcomes: Upon completion of this course, participants will be able to:
Explain an inspector's role and responsibilities;
List the skills and knowledge an inspector must have to be successful;
Describe best practices for working with contractors and handling documentation;
Identify different lab facilities and tell what they are used for; and
Explain the inspector’s responsibilities related to different projects (structures, Portland cement concrete (PCC), and hot mix asphalt (HMA) paving).

Course: **TC3 Construction of PCC Pavements Series: Curing, Sawing and Joint Sealing – AASHTO**

Description: Course overview: The Construction of PCC Pavements series is divided into three courses: Production, Paving Process, and Curing, Sawing, and Joint Sealing. Curing, Sawing, and Joint Sealing is the third course in this series. This training covers crack prevention, sawing, and sealant types, including installation.

This course consists of three modules:
• Module 1: Preventing Cracks and Curing
• Module 2: Sawing
• Module 3: Joint Sealing
It is recommended that after you complete PCC Curing, Sawing, and Joint Sealing, you also take the PCC Production and PCC Paving Process courses.
Target audience: This training is designed for contractors, technicians, and inspectors who are involved in daily pavement operations for the placement of PCC pavements. Participants should have some working knowledge of concrete pavement construction.
Learning outcomes: Upon completion of the course, participants will be able to:
• Describe curing's effect on short- and long-term performance;
• Identify the different methods for curing PCC;
• Define sawing;
• Identify the types of saw cuts;
• Describe the different pieces of equipment used in sawing;
• Determine the sequence of sawing operations;
• Describe how traffic, raveling, noise and dust, and critical sequencing impact sawing;
• Troubleshoot sawing issues;
• Describe joint sealing operations;
• Identify sealant types; and
• Describe formed-in-place and preformed sealant types and installation.

Course: TC3 Construction of PCC Pavements Series: Paving Process - AASHTO

Description: Course overview: The Construction of PCC Pavements series is divided into three courses: Production, Paving Process, and Curing, Sawing, and Joint Sealing. Paving Process is the second course in this series. This training covers line/grade and pavement foundations, slipform paving, including reinforcement, PCC placement, texturing, and troubleshooting, and fixed form paving, including placing operations and form removal.
This course consists of seven modules:
• Module 1: Establishment of Line/Grade and Pavement Foundations
• Module 2: Slipform Paving: Reinforcement
• Module 3: Slipform Paving: PCC Placement
• Module 4: Slipform Paving: Texturing
• Module 5: Slipform Paving: Troubleshooting
• Module 6: Fixed Form Paving: Forms
• Module 7: Fixed Form Paving: Forms Placing Operations and Form Removal
It is recommended that after you complete PCC Paving Process, you also take the PCC Production and PCC Curing, Sawing, and Joint Sealing courses.
Target audience: This training is designed for contractors, technicians, and inspectors who are involved in daily pavement operations for the placement of PCC pavements. Participants should have some working knowledge of concrete pavement construction.
Course: **TC3 Construction of PCC Pavements Series: Production – AASHTO**

**Description:** Course overview: The Construction of PCC Pavements series is divided into three courses: Production, Paving Process, and Curing, Sawing, and Joint Sealing. Production is the first course in this series. This training covers quality in construction and provides an overview of the production process, including the materials used, the production team, and plant and batch operations. This course consists of six modules:

- Module 1: Construction Quality
- Module 2: Production Overview
- Module 3: Materials
- Module 4: Production Team
- Module 5: Plant Operations
- Module 6: Batch Operations

It is recommended that after you complete PCC Production, you also take the PCC Paving Process and PCC Curing, Sawing, and Joint Sealing courses. Target audience: This training is designed for contractors, technicians, and inspectors who are involved in daily pavement operations for the placement of PCC pavements. Participants should have some working knowledge of concrete pavement construction.

Course: **TC3 Construction Safety: Barges - AASHTO**

**Description**  A barge is a flat-bottomed boat used for carrying freight, typically on canals and rivers, either under its own power or towed by another. Departments of Transportation (DOTs) use barges in projects such as bridge construction when the delivery of materials and footing for equipment, such as cranes, require different solutions than those used at a typical construction job. Marine operations have a unique set of hazards and other concerns that need to be dealt with so a job that includes barges also requires different safety practices, which are covered in this course. This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards.

Examples of PPE include items such as gloves, foot and eye protection, hearing protection, hard hats, respirators, and more.

This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Target audience: The target audience for this training is everyone that will be working at, or exposed to, a construction site. Target audience: The target audience for this training is any worker working around or on a barge.

Learning outcomes: Upon completion of this course, participants will be able to:
- Define longshoring;
• Describe material handling operations;
• Explain equipment and worker safety procedures;
• Describe barge access requirements; and
• Describe work surface safety requirements.

**Course:** TC3 Construction Safety: Concrete and Masonry Construction - AASHTO

**Description:** There are a number of factors that need to be considered when working with or around concrete. This course will discuss the latest industry standards and regulations as well as cast-in place formwork, lift-slab operations of precast concrete, access zones, and potential hazards of cement products. This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Target audience: The target audience for this training is everyone that will be working with or around wet concrete, concrete slabs, precast concrete, or masonry construction.

Learning outcomes: Upon completion of this course, participants will be able to:
- List the general requirements of OSHA Standard 3106, Concrete and Masonry Construction;
- Describe the different areas of cast-in place formwork and the requirements of each;
- Explain the lift-slab operations of precast concrete;
- Describe the limited access zone when performing masonry construction; and
- List the four types of skin problems caused by cement products.

**Course:** TC3 Construction Safety: Confined Spaces - AASHTO

**Description:** Many workplaces contain spaces that are considered to be “confined” because their configurations hinder the activities of employees who must enter into, work in, or exit from them. Construction workers (in process vessels or buildings), road crews (in excavations or tunnels), and others can easily find themselves in dangerous, confined space.

Employees who work in confined spaces face increased risk of exposure to serious hazards such as entrapment, engulfment, and hazardous atmospheric conditions. This course defines confined spaces and explains the safety precautions to help workers exposed to these spaces. This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Target audience: The target audience for this training is anyone working in or near confined spaces.

Learning outcomes: Upon completion of this course, participants will be able to:
Course: **TC3 Construction Safety: Crane Safety - AASHTO**

**Description:** Cranes and derricks are used at many DOT jobsites to facilitate the movement of materials between levels of elevated roadways, and to place sections of new roadways or bridges. As with most equipment on a jobsite, cranes and derricks come with safety hazards, including loads that strike and injure workers, a crane boom hitting power lines, and employees being struck by the crane itself. This course covers safe work practices to help minimize these risks. This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Target audience: The target audience for this training is everyone that will be working with, or near, cranes or derricks on the jobsite.

Learning outcomes: Upon completion of this course, participants will be able to:
- Explain the general requirements of cranes on project sites;
- List the major safety factors for workers on a project using cranes; and
- Describe special considerations that need to be made for various types of cranes.

Course: **TC3 Construction Safety: Demolition of Structures – AASHTO**

**Description:** Demolition is one of the most spectacular and dangerous undertakings in the entire construction industry. So spectacular, in fact, that television stations often show the implosion of large or landmark buildings on the evening news, often before a cheering crowd. What you don’t see is the tremendous number of safety precautions that have been taken and the meticulous planning that goes into such an undertaking. This course will familiarize you with some of the basics of safe demolition practices. This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Target audience: The target audience for this training is everyone that will be working at, or exposed to, a demolition site.

Learning outcomes: Upon completion of this course, participants will be able to:
- Explain how to prepare for a demolition project;
- Describe mechanical demolition;
- Explain considerations during a special structures demolition; and
- List all the factors when a blasting operation is performed.
Course: **TC3 Construction Safety: Earthmoving Equipment and Motor Vehicles – AASHTO**

**Description:** Construction vehicles and equipment pose a serious risk to Departments of Transportation (DOTs) and construction workers. Vehicles and equipment operating in and around the work zone are involved in over half of the worker fatalities in the construction industry. Although some accidents will always occur, industry standards provide guidelines for operating construction equipment and earthmoving equipment as safely as possible. It is important for anyone who will be on the job site to be aware of these guidelines. This course discusses general earthmoving equipment and construction equipment in detail.

This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Target audience: The target audience for this training is everyone that will be working at, or exposed to, a construction site. Learning outcomes: Upon completion of this course, participants will be able to:

- Describe safe practices for equipment on construction sites;
- List important inspection items for construction equipment; and
- Explain the requirements for earthmoving equipment.

Course: **TC3 Construction Safety: Electrical Safety – AASHTO**

**Description:** Employees face many electrical dangers in their daily work. Electrical shock from tools, overhead power lines, and lightning are just some of the threats faced by workers while out in the field. This course will help you recognize these dangers and teach you valuable information to help prevent on the job electrical accidents.

This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. This course offers professional development hours (PDHs). You will see the PDHs on your course completion certificate, which also serves as documentation of your attendance. PDH requirements vary, therefore, it is up to you to determine whether or not this particular course qualifies under your State or board requirements. Target audience: The target audience for this training is everyone that will be working at, or exposed to, a construction site. Learning outcomes: Upon completion of this course, participants will be able to:

- Describe how electricity flows and what causes electrical shock;
- Define insulation and grounding;
- Explain how a ground fault circuit interrupter (GFCI) works and its advantages; and
- Explain how to protect yourself from electrical dangers.

Course: **TC3 Construction Safety: Excavation and Trenching – AASHTO**
Description: Industry standards concerning trenching and excavation apply to all open excavations made in the earth’s surface, and they provide a guide for greatly reducing the risks associated with digging operations. This course covers these guidelines, which you should be aware of whenever you are inspecting around an area where excavation or trenching is occurring. This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Target audience: The target audience for this training is everyone that will be working at, or exposed to, a construction site. Learning outcomes: Upon completion of this course, participants will be able to:
- List conditions at the site that need to be considered prior to work;
- Explain the regulations for ingress and egress in excavations for people and equipment;
- Explain the methods used to prevent cave-ins;
- List hazards that need to be considered when working around excavations; and
- Explain inspection requirements during an excavation project.

Course: TC3 Construction Safety: Fall Protection – AASHTO

Description: This course focuses on protecting workers from falls. In the United States construction industry, falls are the leading cause of on-the-job deaths. The Occupational Safety and Health Administration (OSHA) recognizes that accidents involving falls are generally complex events frequently involving a variety of factors. Consequently, the standard for fall protection deals with both the human and equipment-related issues in protecting workers from fall hazards. The OSHA safety standards cover systems and procedures that help prevent employees from falling off, onto, or through working levels, and from being struck by falling objects. The performance-oriented requirements make it easier for employers to provide the necessary protection. This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Target audience: The target audience for this training is everyone that will be working at, or exposed to, a construction site. Learning outcomes: Upon completion of this course, participants will be able to:
- List areas where fall protection is needed;
- Describe the various fall protection systems;
- Explain controlled access zones;
- Explain guardrail system requirements; Describe the parts of a personal fall arrest system (PFAS); and
- Describe safety net and warning line systems.

Course: TC3 Construction Safety: Hazardous Materials – AASHTO
Description: Highway construction workers and inspectors face numerous risks on the job, including the possibility of exposure to multiple types of hazardous materials. Hazardous and toxic materials and substances can be defined as those chemicals and toxic substances present in the workplace that are capable of causing harm from exposure or inhalation. Enclosed areas with poor ventilation increase exposures to hazardous chemicals and exhaust gases from vehicles and equipment. And hazards can change throughout the life of a project, by the day, the hour, even minute to minute. This course discusses various workplace hazards and safety procedures to ensure that highway construction workers and inspectors stay as safe as possible. This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Target audience: The target audience for this training is anyone working in or around hazardous materials. Learning outcomes: Upon completion of this course, participants will be able to:

- List the three most deadly hazardous materials found in construction projects;
- Describe where these three hazards may be found during construction;
- Explain what is included in a hazard assessment;
- Explain the difference between engineering control and work practice control;
- Describe specialty personal protective equipment (PPE) that may be needed when hazardous materials are present; and
- List measures to take to minimize exposure to hazardous materials.

Course: TC3 Construction Safety: Material and Personnel Hoists – AASHTO

Description: In the construction industry, there is often a need to transfer people and materials to places that are not easily accessible. For instance, a roadway overpass that is under construction doesn’t yet fully exist, so you can’t just drive up and deliver all the materials. In these instances and a plethora of others, material hoists, personnel hoists, and elevators come in very handy for transport. But as with almost everything else, there’s a downside: Cranes, derricks, elevators, and personnel platforms all present their own set of hazards unless they’re used carefully. This course will help you learn some of the basics for negotiating this equipment safely and effectively. This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Target audience: The target audience for this training is everyone that will be working at, or exposed to, a construction site. Learning outcomes: Upon completion of this course, participants will be able to:

- Describe what is required when wire rope is used for material hoists;
- Explain the hoist and platform requirements;
- Describe the requirements and frequency of crane inspection;
- List what is required if using a personnel hoist;
- Explain the safety requirements of personnel lifting platforms; and
- List the steps of a trial life.
Course: TC3 Construction Safety: PPE - AASHTO

Description: A construction site can be a prime location for many types of accidents. As such, the Occupational Safety and Health Administration (OSHA) requires employers to protect their employees from workplace hazards. The first steps in controlling dangerous situations are engineering controls (for instance, placing a concrete barrier between road workers and traffic), work practice controls (for instance, changing where or when employees work to avoid a specific danger), and administrative controls. When engineering, work practice, and administrative controls are still not enough to neutralize any danger, employers must provide personal protective equipment (PPE) to employees and ensure its use. Examples of PPE include items such as gloves, foot and eye protection, hearing protection, hard hats, respirators, and more. This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Target audience: The target audience for this training is everyone that will be working at, or exposed to, a construction site. Learning outcomes: Upon completion of this course, participants will be able to:
• Explain how to properly use PPE;
• Explain the basics of a hazard assessment;
• List the types of PPE; and
• Describe appropriate PPE for a variety of circumstances.

Course: TC3 Construction Safety: Recognition and Avoidance of Unsafe Conditions - AASHTO

Description: If it were always possible to recognize and avoid unsafe conditions, there would never be another construction accident. Alas, even though we often learn the obvious lessons rather quickly (it hurts when you fall off a ladder), sometimes it takes decades to discover that things we assumed were safe are deadly (such as asbestos). In addition, there are things we can't see or smell (carbon monoxide fumes) and things we can't control (lightning). But in the final analysis, the largest category is circumstances where the old adage, "an ounce of prevention is worth a pound of cure" applies. This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Target audience: The target audience for this training is everyone that will be working at, or exposed to, a construction site. Learning outcomes: Upon completion of this course, participants will be able to:
• Describe the employer's role in construction safety;
• List the four critical elements of an effective workplace safety and health program;
• Describe how to properly assess possible hazards when entering a work zone; and
• List the various types of hazards present on any given job site.
Course: **TC3 Construction Safety: Scaffolding Safety - AASHTO**

**Description:** This course focuses on scaffolding safety on the jobsite. Scaffolds are temporary, elevated platforms that construction workers use for working safely at elevations. An estimated 2.3 million construction workers, or 65% of the construction industry, work on scaffolds frequently. There are many types of scaffolds, each of which has advantages and disadvantages. The knowledgeable user knows how to select the right scaffold for the job, and he or she should; their life depends on it. Using scaffolds properly can help prevent workplace accidents and injuries. Knowing what to do and when to do it can save lives. A thorough understanding of all aspects of constructing, using, and dismantling a scaffold is vital to protecting workers. This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, III, and IV. Target audience: The target audience for this training is everyone that will be working at, or exposed to, a construction site where scaffolding will be used. Learning outcomes: Upon completion of this course, participants will be able to:

- Describe the limitations and hazards of various types of scaffolding;
- Define a “competent person”;
- Describe the personal protective equipment (PPE) needed when working on scaffolding; and
- List recommendations for safe scaffold use.

Course: **TC3 Construction Safety: Working Safely in Work Zones - AASHTO**

**Description:** Given the intensive instruction that goes into simply teaching our children to safely cross the street, it’s easy to understand why construction workers and inspectors need to have safeguards in place as they work on or near roadways. These jobs are often done in inclement weather, in low-lighting or poor-visibility conditions, and in the presence of high-speed or congested traffic, construction vehicles, construction equipment, and other hazards. This course covers safety precautions for various work zones. This course is part of the Construction Safety Awareness series, which focuses on job site safety and health hazards. Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, III, and IV. Target audience: The target audience for this training is highway, road, street, bridge, tunnel, utility, and other workers for highway infrastructure. Learning outcomes: Upon completion of this course, participants will be able to:

- List safety risks at a construction site;
- Describe the three major types of injuries occurring in highway work zones;
- Explain the components of temporary traffic control zones; and
- Describe the ANSI/ISEA 107-2015 types and classes of safety apparel.
Course: **TC3 Construction Stormwater Field Guide Training - AASHTO**

**Description:** Course overview: This course is based on the Construction Stormwater Field Guide. Using this course and the guide helps departments of transportation (DOTs) stay in compliance with Federal, State, and local regulations for improving stormwater quality and provides guidance where local publications may currently be lacking. The information presented in this guide is based on techniques and control measures considered generally effective in many areas of the country. This guide is not meant to be a design manual or pollution prevention plan, nor is it meant to supersede, substitute, or make more stringent well-defined practices or regulatory standards. The information discussed in this guide provides information on installing and maintaining best management practices so that they are effective.

There are five modules that make up this course:

- Module 1: Introduction to Stormwater Management;
- Module 2: Pollution Prevention;
- Module 3: Sediment Control;
- Module 4: Erosion Control; and
- Module 5: Temporary Drainage Management.

Target audience: This course is intended for inspectors and resident engineers in construction on topics related to installation, maintenance, and inspection of common best management practices. Learning outcomes: Upon completion of this course, participants will be able to:

- Describe stormwater pollution prevention activities;
- Explain stormwater management practices related to erosion control;
- Describe erosion control activities related to stormwater management; and
- Summarize the various temporary drainage management methods related to controlling stormwater.

Course: **TC3 Corrosion of Structures - AASHTO**

**Description:** This course covers the corrosion effects on transportation structures, in particular, reinforcing steel, reinforced concrete, and structural steel and girders. This course explains what corrosion is, as well as how it applies to, and appears in, highway structures. Concrete and steel members are discussed, including prevention and corrosion mitigation measures for both. There are four modules in this course. They are:

- Introduction to Corrosion;
- Corrosion in Structures;
- Structural Steel Corrosion; and
- Reinforced Concrete Corrosion.

Learning outcomes: Upon completion of this course, participants will be able to:

- Define corrosion as it applies to highway structures;
• List the key impacts of corrosion on structures;
• Provide examples of corrosion in structures;
• Summarize the causes of corrosion in structures;
• Describe the affected steel members and causes of corrosion;
• Explain corrosion control options for structural steel;
• Summarize considerations related to steel materials and construction that reduce corrosion;
• Describe the affected reinforced concrete members and causes of corrosion;
• Explain corrosion control options for reinforced concrete; and
• Summarize considerations related to concrete materials and construction that reduce corrosion.

Course: TC3 Critical Path Method (CPM) Scheduling - AASHTO

Description: Critical path method (CPM) scheduling is a step-by-step project management technique for planning that defines critical and non-critical tasks with the goal of preventing delays to a project. This course focuses on what a CPM schedule is, some of the basic terms and concepts related to CPM scheduling, and how to build and develop a baseline schedule. Target audience: This course is designed for construction field personnel, including new employees, technicians, inspectors, or others with little or no CPM scheduling experience. It is also applicable to anyone interested in learning more about CPM schedules.
Learning outcomes: Upon completion of this course, participants will be able to:
• Define CPM scheduling;
• List the components of a CPM schedule;
• Define and calculate forward pass, backward pass, and total float;
• Describe the elements and application of a baseline schedule; and
• Explain how to plan a schedule based on the CPM schedule.

Course: TC3 Critical Path Method (CPM) Schedule Management - AASHTO

Description: Critical path method (CPM) scheduling is a step-by-step project management technique for planning that defines critical and non-critical tasks with the goal of preventing delays to a project. The objective of the CPM schedule is to provide a management tool for the proper and logical allocation and use of the resources needed to complete a project. This course focuses on schedule review and management. It also explores more advanced concepts related to critical path schedules, including determining if the schedule makes sense, identifying red flags, and realizing and mitigating risks before the baseline schedule is reviewed. This course goes beyond the black and white of CPM schedules and looks at how the contractor is approaching
the job and if the schedule is set up for a successful project.
Participants must have a working knowledge of critical path schedules and basic
calculations including forward pass, backward pass, and total float before taking this
course. If you aren't familiar with CPM schedules and would like to obtain more
basic information, take the CPM Scheduling course.
Target audience: This course is designed for engineers and their assistants that
contribute to or use a CPM schedule, down to senior inspection personnel who could
benefit from data provided in a CPM schedule.
Learning outcomes: Upon completion of this course, participants will be able to:
• List best practices for developing a baseline schedule;
• Describe what to look for when reviewing a baseline schedule;
• Describe what to look for when reviewing a monthly update;
• Explain the purpose of a schedule narrative;
• List common reasons why projects get delayed;
• Explain the impacts of project delays; and
• Explain when time extension requests should be approved.

Course: **TC3 Drilled Shaft Inspector Tutorial - AASHTO**

Description: The Drilled Shaft Inspector Tutorial provides training on the fundamental concepts of
construction for those involved in the inspection of drilled shafts. This 4-hour WBT
includes the following topics related to drilled shafts: foundations, drilled shaft types,
methods of construction, construction equipment, and tools. This course details the
work of the inspector prior, during, and after completion of the drilled shaft
construction process. Areas of focus include the inspector's roles, functions,
responsibilities, and levels of involvement at different phases of construction.
Theoretical and actual drilled shaft concrete volumes calculation, post installation,
load, and integrity tests, as well as other types of tests are also addressed in this
course. This course also details the steps in the drilled shaft construction process and
identifies specific responsibilities and methods that will assist inspectors in safely
achieving project goals.
Learning outcomes: Upon completion of the course, participants will be able to:
Describe the inspector's duties and responsibilities during drilled shaft construction;
Explain the inspector's role in the drilled shaft construction process;
List equipment and tools used by the inspector and at a drilled shaft construction site;
List the steps in the drilled shaft construction process; and, Identify specific
responsibilities and methods to assist the inspector in achieving their goal.

Course: **TC3 Earthwork Series: Earth Materials as Engineering Materials - AASHTO**

Description: Course overview: The Earth Materials as Engineering Materials is part of the
Earthwork Series. This training is an overview of the basic properties of earth materials or soil and their engineering properties as they relate to construction. Soil is the product of mechanical and chemical weathering of rocks. Most naturally occurring soils consist of a mixture of assorted grains of different sizes and shapes.

This course consists of five lessons. The lessons include:

1. Components and Types of Soil
2. Soil Description and Classification
3. Engineering Characteristics
4. Process of Material Verification
5. Preliminary Inspector Responsibilities

The course discusses the Atterberg Limits, which include shrinkage limits, liquid limits, plastic limits, and plastic index—the four basic measures of the nature of fine-grained soil.

Target audience: This training is targeted to both agency and industry technicians that will be using earth materials as engineering materials on an earthwork project. This training is beneficial to anyone working on the project but is targeted to the intermediate to advanced technician.

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

• Identify the components and types of soil;
• Identify the soil characteristics that affect engineering performance;
• Recognize the differences between description and classification of soil;
• Explain the processes of soil verification; and
• Recognize preliminary inspector responsibilities as a part of contract specifications.

Course: **TC3 Earthwork Series: Excavation - AASHTO**

Description: Course overview: Excavation is the fourth part of the five-part Earthwork Series. Excavations of soil and rock are an integral part of highway construction due to the associated costs, safety concerns, engineering considerations, and short- and long-term performance expectations. This course provides an overview of the basic principles related to the requirements for proper excavation during a project. This training consists of four modules, which cover the equipment used to excavate soils, and the procedures, requirements, and special considerations for mass excavation, permanent cut slopes, and temporary trench excavations. This course also covers common problems and safety concerns associated with excavation.

Target audience: This training is targeted to both agency and industry technicians that will be using earth materials as engineering materials on an earthwork project. This training is beneficial to anyone working on the project but is targeted to the intermediate to advanced technician.

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

• Explain considerations and requirements for excavation;
• Recall excavation safety procedures; and
• Relate common issues and solutions associated with excavation.

Course: **TC3 Earthwork Series: Fill Placement - AASHTO**

Description: Course overview: Fill Placement is the fifth part of the five-part Earthwork Series. Embankment construction, structural and utility bedding and backfilling, and the construction of drainage and filter systems are fundamental examples of highway earthwork—where the control of the material and how it is placed significantly influences engineering performance. This course provides an overview of the basic applications where fill materials are to be used, and some common problems and safety considerations that you will need to know. This training consists of four modules, which cover culvert bedding and backfill, drainage filters and fabrics, embankment construction, key-ways, and benching. The course discusses material and placement requirements, methods used to control and assure placement, special construction considerations, common problems, and safety issues.

Target audience: This training is targeted to both agency and industry technicians that will be using earth materials as engineering materials on an earthwork project. This training is beneficial to anyone working on the project but is targeted to the intermediate to advanced technician.

Learning outcomes: Upon completion of the course, participants will be able to:
• Explain fill placement;
• Recall fill placement safety procedures; and
• Identify steps for addressing obstacles associated with fill placement.

Course: **TC3 Earthwork Series: Grades and Grading - AASHTO**

Description: Course overview: Grades and Grading is the third part of the five-part Earthwork Series. It is designed to prepare technical frontline workers for what they can expect to see during actual project inspection. Topics covered include an overview of the plans that pertain to earthwork and earthwork quantities, grade stakes that will be encountered and their meanings, how Global Positioning System (GPS) works and its functions in the field, and verifying and documenting grade information.

The introductory lesson covers an overview of the plan sheets that deal with earthwork and earthwork quantities, topographical images and their meaning, stationing and control points, and profile/section sheets. The second lesson covers the typical grade stakes used throughout a project and their meaning. The third lesson discusses the history of GPS in construction and how it relates to current projects.

And the final lesson covers how to verify the grade and what information is needed in the documentation from the inspector.

This course provides the frontline technical inspector with the proper tools to assure
that the project is built on a stable platform.

Target audience: This training is targeted to both agency and industry technicians that will be using earth materials as engineering materials on an earthwork project. This training is beneficial to anyone working on the project but is targeted to the intermediate to advanced technician.

Learning outcomes: Upon completion of the course, participants will be able to:
- Describe the process of plan reading;
- Identify the purpose of grade stakes;
- Explain how Global Positioning System (GPS) works; and
- Describe requirements for grade verification and documentation.

Course: **TC3 Earthwork Series: Site Preparation - AASHTO**

Description: Course overview: Site Preparation is one of the modules included in the Earthwork Series. This module is designed to help inspectors understand the responsibilities of preparing the site for the start of the construction process. This includes clearing and grubbing, utility relocation, and inspector responsibilities.

The first lesson of this module will define clearing, grubbing, and scalping of the site and cover the plan notes. The second lesson covers utility location. It will define the main utility groups and utility relocation types, and will discuss preparation and staking procedures. This lesson also discusses the need for traffic control during the relocation process. The last lesson covers the inspector's role during the utility relocation process. This lesson covers backfilling and compaction, utility conflicts, and documentation responsibilities. This course will assist the inspector in making sure the site is prepared according to specifications and in a safe environment.

Target audience: This training is targeted to both agency and industry technicians that will be using earth materials as engineering materials on an earthwork project. This training is beneficial to anyone working on the project but is targeted to the intermediate to advanced technician.

Learning outcomes: Upon completion of the course, participants will be able to:
- Define clearing and grubbing responsibilities;
- Understand the processes involved during utility relocation; and
- Identify the inspector responsibilities during site preparation.

Course: **TC3 Environmental Triggers Series - Air Quality Impacts - AASHTO**

Description: Course overview: This course provides an overview into the environmental triggers related to air quality impacts. An air quality environmental trigger is data that determines how a specific air quality element should be handled. This training covers frequently asked questions, provides a regulation background, defines common acronyms, and explains data needs, elements, triggers, and risk.
Target audience: The target audience for this training includes anyone involved in air quality activities on a highway transportation project. This could include various DOT departments, environmental sections, and/or consultants hired to perform these tasks.

Learning outcomes: Upon completion of this course, participants will be able to:
- Define and describe air quality triggers;
- Describe common acronyms related to air quality issues;
- Explain the data needs for air quality trigger determination; and
- List the elements of the air quality section.

Course: **TC3 Environmental Triggers Series - Archaeological – AASHTO**

Description: Course overview: This course provides an overview of the environmental triggers related to archaeology. This training serves as a guide to some of the requirements needed for project compliance regarding potential impacts to archaeological sites and cemeteries. This course does identify some requirements that need to be satisfied; however, it does not go into detail on how these requirements can be satisfied.

Target audience: The target audience for this training is anyone involved in the environmental compliance of a highway project. This could include various DOT departments, environmental sections, and/or consultants hired to perform these tasks.

Learning outcomes: Upon completion of this course, participants will be able to:
- List common archaeological resources;
- Explain the roles and responsibilities within project compliance; and
- Describe the requirements needed for project compliance as they relate to archaeological sites.

Course: **TC3 Environmental Triggers Series - Biological Resources - AASHTO**

Description: Course overview: This course provides an overview into the environmental triggers related to biological impacts. This training will introduce you to a number of regulations that we must consider for every proposed project regulations meant to protect and preserve biological resources.

While there are a number of regulatory controls, those discussed in this course all require DOTs to evaluate negative environmental impacts and mitigate those effects.

Target audience: The target audience for this training is anyone involved in the environmental compliance of a highway project. This could include various DOT departments, environmental sections, and/or consultants hired to perform these tasks.

Learning outcomes: Upon completion of this course, participants will be able to:
- Explain the regulations pertinent to protecting and preserving biological resources.
Course: TC3 Environmental Triggers Series - Community Impacts - AASHTO

Description: Course overview: This training provides an overview into the environmental triggers related to community impacts. Community impact assessments (CIAs) must be addressed in all environmental documents. First, this course answers the question: What is an environmental trigger? Next, this course goes into more detail about knowing what triggers are, knowing their significance, ensuring compliance, and eliminating or reducing project delays.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain what environmental triggers are and why they are significant;
• Describe the laws and guidance related to CIAs; and
• List the triggers related to CIAs.

Course: TC3 Environmental Triggers Series - Hazardous Materials - AASHTO

Description: Course overview: This course provides an overview of managing hazardous materials and highway management development. It focuses on triggers that would require action to address, specifically when dealing with hazardous materials problems on a highway project.

In this course, the term hazardous material is used broadly to mean any material that might negatively impact public health and the environment.

Target audience: The target audience for this training is anyone involved in the environmental compliance of a highway project, especially as it relates to hazardous materials. This could include various DOT departments, environmental sections, and/or consultants hired to perform these tasks.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain the importance of early hazardous materials recognition;
• List common hazardous materials situations;
• Describe design and construction considerations when hazardous materials are identified; and
• Describe the general documentation requirements for hazardous materials concerns.

Course: TC3 Environmental Triggers Series - Noise Assessment - AASHTO

Description: Course overview: This course provides an overview into the environmental triggers relating to noise impacts. Noise must be addressed in all environmental documents for transportation projects. Knowing the significance of noise assessment triggers leads to effective project planning and eliminates or reduces the potential for project delays. This course provides background information and explains why we're concerned with triggers, as well as describing the ways in which noise can be mitigated.

Target audience: The target audience for this training is anyone involved in
the noise assessment and/or performing noise assessment activities. This could include various DOT departments, environmental sections, and/or consultants hired to perform these tasks.

Learning outcomes: Upon completion of this course, participants will be able to:
- Explain the significance of noise assessment triggers;
- Describe a Type I project; and
- Describe several noise abatement and mitigation measures.

Course: TC3 Environmental Triggers Series - Water Resources - AASHTO

Description: Course overview: This course provides an overview of the environmental triggers related to water resources. The purpose of this training is to help raise awareness to water resource issues and how they affect you doing your job on a daily basis. Water resources are tied to water quality, which help to protect and restore the quality of our surface waters.

These standards help us to identify water quality problems caused by, for example, improperly treated stormwater discharges or erosion of streambanks caused by improper management practices.

Target audience: The target audience for this training is anyone involved in environmental compliance on a highway transportation project. This could include various DOT departments, environmental sections, and/or consultants hired to perform these tasks.

Learning outcomes: Upon completion of this course, participants will be able to:
- List the various rules, laws, and regulatory compliance issues that are required by Federal and State agencies and what triggers them; and
- Explain why water quality regulations are important.

Course: TC3 Erosion and Sediment Control - AASHTO

Description: Course overview: The Erosion and Sediment Control for Construction course consists of five modules that provide introductory information about erosion and sediment control related to construction. Topics covered in these modules include the fundamental concepts of erosion, applicable regulations, land disturbance activities, as well as inspection and maintenance of erosion and sediment control activities.

This course focuses on erosion and sediment control measures that are designed to prevent environmental damage caused by pollution prevention related to construction materials, equipment-operations, maintenance, and soil erosion and sedimentation from land development. The course also covers construction site stormwater runoff, which is regulated on the local level and at the state level, as well planning, design, and inspection of erosion and sediment control practices.

Target audience: This training is geared toward technicians, inspectors, and/or
supervisors with a responsibility for erosion and sediment control.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain what erosion and sediment control means for transportation construction;
• List the Federal regulations related to erosion and sediment control during construction;
• Explain how State regulations related to erosion apply to transportation construction activities;
• Describe erosion and sediment control best management practices when performing land disturbance activities;
• Describe how erosion and sediment control plans are read on construction sites;
• Explain who is responsible for implementing a new erosion and sediment control practice when plans need to be updated;
• List some of the key inspection activities related to erosion and sediment control;
• List the maintenance do's and don'ts related to erosion and sediment control; and
• Explain how erosion and sediment control activities are enforced.

Course: TC3 Establishing Core Equipment Complements and Optimal Sizing of Fleets - AASHTO

Description State DOTs utilize a variety of equipment to carry out their mission of providing safe, reliable, and efficient operation of highways and other agency operations. The precise composition of these fleets depends upon the State's geography, population centers, the mission, and management policies of the department.

This course covers various theoretical approaches and technical information on establishing a program for the proactive development of core equipment fleet complements and the overall optimization of fleet size.

This course contains six modules. They are:
1. Basic Concepts and Fundamentals;
2. Understanding your Agency;
3. Identification of Critical Assets;
4. Determining the Current Condition of Fleet Assets;
5. Strategic Operations, Maintenance, and Capital Improvement; and
6. Long-Term Funding Strategies.

Target audience: The target audience for this training includes fleet managers, analysts, and other senior level fleet and agency professionals; however, the content is applicable to fleet employees at all levels within the agency.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain how optimal fleet sizing is accomplished;
• Recognize the importance of establishing deliberate agency fleet sizing programs;
• Summarize agency equipment fleet analysis methods and strategies;
• Describe characteristics and activities associated with effective equipment condition assessment programs;
• Explain strategic operations, maintenance, and capital improvement decision-making activities related to the establishment of fleet equipment replacement plans; and
• Describe the strategies, activities, and responsibilities involved in developing a long-term systematic fleet replacement program designed to stabilize funding.

Course: **TC3 Ethics Awareness - AASHTO**

Description: The Ethics Awareness for the Transportation Industry course contains good practices from various agencies. The topics of discussion in this training are conflict of interest, safety, fraud, falsification of documentation, reporting ethical concerns, gifts and favors, fairness, personal use of agency property, and consequences. Not all State agencies' codes of conduct are the same but they all demand similar ethical behavior of their employees. Be sure to access to your agency's codes or check with your supervisor for more information specific to your organization. Each State agency/company has their own work rules, which the viewer needs to review and follow.

Target audience: This training is intended for State and local public agency personnel and their industry counterparts involved in the construction, maintenance, and testing process for highways and structures.

Learning outcomes: Upon completion of the course, participants will be able to:
• Describe agency expectations on ethics;
• Give an example of a current code of conduct policy;
• Recognize and practice good ethics as an employee in the transportation industry; and
• Explain the consequences when rules and regulations are not followed.

Course: **TC3 Ethics Awareness for Engineers - AASHTO**

Description: Ethics are moral values that affect personal or professional actions. They are more than a set of rules. Ethics are knowing how to apply the rules and having the strength or character to behave in an ethical manner. In short, they are the difference between right and wrong. This course focuses on ethics for professional engineers. Professional engineers are expected to exhibit the highest standards of honesty and integrity. Services provided by engineers require honesty, impartiality, fairness, and equity. Engineers must perform their duties in alignment with a standard of professional behavior that requires adherence to the highest principles of ethical conduct. This course has five (5) Lessons. The topics discussed include: codes of ethics; the impact of ethics in the workplace; and conflicts of interest.

Target audience: The target audience for this training is professional engineers with emphasis on those that are involved in the construction of highways and structures.
Learning outcomes: Upon completion of this course, participants will be able to:
• Explain what ethics are and how they are established;
• Describe ethical and unethical behavior;
• List guidelines in national codes of ethics from the American Society of Civil Engineers (ASCE) and the National Society of Professional Engineers (NSPE);
• Explain how to develop a code of ethics;
• Explain why an organization should have an established, supported ethical program;
• List the benefits of ethics in the workplace;
• Describe different types of conflict of interest; and
• Given a scenario, determine if a conflict of interest has occurred.
Suggested Total Credit Hours (maximum) = 2.0. If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.
See also: Guidance for Engineers Regarding TC3 Courses.

Course: **TC3 Field Environmental Emergency Compliance - AASHTO**

Description: Course overview: Accidents and natural disasters can strike our highways and bridges at any time, causing damage that will have to be repaired at a moment's notice. Sometimes the normal environmental planning procedure timelines cannot be followed and we have to act quickly to restore a bridge or highway. Even though we need to act quickly, we are still bound by the same environmental requirements as before and we need to try and coordinate with the appropriate agencies as quickly as possible. This course covers the ways to deal with unexpected environmental issues on construction and maintenance projects.
Target audience: The target audience for this training includes anyone involved with a project where there is a possibility for environmental issues to be a concern. This training particularly pertains to field staff.

Course: **TC3 Flagger Training - AASHTO**

Description: Course overview: Being a flagger is the most important job on the work site. Careless use of the sign or distraction from duty could cause serious injury to workers or the motoring public. Performing flagger duties diligently can prevent traffic incidents in the work area. This is a basic training in the area of flagger training. It has been designed for someone learning the first steps in performing flagger duties. This training does not go into individual State flagger training or certification requirements. For more information on flagger training requirements, contact your State's safety office.
Target audience: This training is intended for individuals that will be performing or are engaging in flagger duties on construction/maintenance projects. It is beneficial to
the entry level employee as well as the experienced flagger.

**Course:**  
**TC3 Fleet Management: Benchmarking and Best Practices - AASHTO**

**Description:**  
Course overview: The topic of benchmarking is closely aligned with performance management. Most agencies have a strategic plan from which they make decisions on how to allocate resources and pursue their long-range strategy. This course discusses how to create a group of performance metrics to track based upon what's important in an agency's long-range strategy. This course also covers topics such as developing performance metric targets, measurement techniques, internal and external benchmarking, performance gaps, limitations of benchmarking, and benchmarking best practices.  
This course is divided into five modules, each of which presents a key concept:  
• Module 1: Performance Management;  
• Module 2: Performance Metrics;  
• Module 3: Performance Management Systems;  
• Module 4: Benchmarking; and  
• Module 5: Best Practices.  
Target audience: The target audience for this training includes maintenance supervisors, managers, and engineers that manage a fleet for their organization.  
Learning outcomes: Upon completion of this course, participants will be able to:  
• Identify a proper mix of performance measures;  
• Develop and report effective performance metrics for agency, fleet, and shop activity levels;  
• Describe the differences between internal and external benchmarking;  
• Identify what an agency should do with benchmarking data;  
• Explain the limitations of benchmarking; and  
• Identify best practices.

**Course:**  
**TC3 Fleet Operations: Preventative Maintenance - AASHTO**

**Description:**  
This course focuses on preventative maintenance (PM) programs for equipment fleet operations, which involve a systematic and proactive schedule of work that provides inspection, detection, and correction. PM programs are the key element in supporting a cost-effective fleet operation. These programs reduce equipment operating and ownership costs by minimizing unscheduled catastrophic repairs, equipment downtimes, and loss of operational productivity.  
There are six modules that make up this course:  
Preventative Maintenance A Primer;  
Establishment of a Successful Preventative Maintenance Plan;  
Preventative Maintenance Program Designs;
Planning for Preventative Maintenance Work; 
Managing the Program; and 
Understanding the Benefits Versus Costs of an Effective Preventative Maintenance Program.

This training course is intended to serve as a guide in operating a PM program. Persons taking this course must adhere to the applicable federal, State, and local regulatory requirements. Note that your agency's policies and practices may also vary from the information presented in this course.

Target audience: This course is designed for anyone seeking to develop or improve an equipment fleet preventative maintenance program and anyone that may participate in the program.

Learning outcomes: Upon completion of this course, participants will be able to:
- Explain common PM program terms and concepts;
- Communicate the operational and cost benefits of an effective PM program;
- Identify the components and processes required to set up a PM program;
- Explain the roles and responsibilities of fleet managers, fleet maintenance supervisors, fleet maintenance technicians, and equipment operators; and
- Understand the importance of capturing data and the use of reporting tools.

Course: TC3 Flexible Pavement Preservation Treatment Series - Chip Seals - AASHTO

Description: Course overview: This training is part of the Flexible Pavement Preservation Treatment Series and is designed to provide participants with information on chip seals. Topics covered in this course include project selection, pavement and weather condition requirements, storage, traffic control, construction sequence, aggregate spreading distance, brooming, chip spreading process, distributor preparation, and troubleshooting. This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), a resource for agency and industry pavement preservation practitioners. The PPTCG provides information on basic pavement preservation concepts as well as the different treatments available and how they should be applied.

Target audience: This training is ideal for highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training.

Learning outcomes: Upon completion of the course, participants will be able to:
- Recognize pavement conditions best suited to the chip seal treatment;
- Identify how proper storage and handling of chip seal materials affect their constructability and performance;
- Describe the construction of chip seals;
- Identify common problems associated with chip seals and recognize their solutions; and
- Recognize key capabilities and limitations of chip seals.
Suggested Total Credit Hours (maximum) = 1.0. If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form. See also: Guidance for Engineers Regarding TC3 Courses.

Course: TC3 Flexible Pavement Preservation Treatment Series - Crack Sealing and Fillings - AASHTO

Description: Course overview: This training is part of the Flexible Pavement Preservation Treatment Series and is designed to provide participants with information on crack sealing, crack filling, and joint sealing of flexible and rigid pavements. Topics covered in this course include working and non-working cracks, fatigue and longitudinal cracks, correct temperatures for crack sealant, crack repair sequence, hot sealant, and crack sealing or filling criteria. This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), a resource for agency and industry pavement preservation practitioners. The PPTCG provides information on basic pavement preservation concepts as well as the different treatments available and how they should be applied.

Target audience: This training is ideal for highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training.

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

- Describe the difference between a working crack and a non-working crack;
- List the types of distresses that crack sealing, crack filling, and joint sealing treatments will repair;
- Describe how proper storage and handling of sealants and fillers affect their constructability and performance;
- Describe the procedure of repairing surface cracks and rigid joints;
- Identify common problems associated with crack sealing, crack filling, and joint sealing treatments and recognize their solutions; and
- List the capabilities and limitations of crack sealing, crack filling, and joint sealing treatments.

Suggested Total Credit Hours (maximum) = 0.8. If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.

Course: TC3 Flexible Pavement Preservation Treatment Series - Fog Seals - AASHTO

Description: Course overview: This training is part of the Flexible Pavement Preservation Treatment Series and is designed to provide participants with information on fog
seals. Topics covered in this course include uses of fog seals, suitable pavement surfaces, storage and handling of materials, application process, and problems and causation. This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), a resource for agency and industry pavement preservation practitioners. The PPTCG provides information on basic pavement preservation concepts as well as the different treatments available and how they should be applied.

Target audience: This training is ideal for highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training.

Learning outcomes: Upon completion of the course, participants will be able to:
- Recognize pavement conditions most suitable for a fog seal;
- Describe how proper storage and handling of fog seal materials affect their constructability and performance;
- Describe the construction of a fog seal;
- Identify common problems associated with fog seals and recognize their solutions;
- and, List the key capabilities and limitations of fog seal treatments.

Suggested Total Credit Hours (maximum) = 0.7. If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.

Course: TC3 Flexible Pavement Preservation Treatment Series - Introduction to Pavement Preservation - AASHTO

Description: Course overview: This training is part of the Flexible Pavement Preservation Treatment Series and is designed to provide participants with an introduction to the Pavement Preservation Treatment Construction Guide (PPTCG) and the basics of pavement preservation. Topics discussed include pavement structure, distresses, and differentiating pavement preservation from preventive maintenance. As stated, this training draws on the PPTCG, a resource for agency and industry pavement preservation practitioners. The PPTCG provides information on basic pavement preservation concepts as well as the different treatments available and how they should be applied.

Target audience: This training is ideal for highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify common surface distresses in pavements;
- Distinguish between distresses caused by surface failure and those caused by subsurface layer failure; and
- Recognize the difference between pavement preservation and pavement maintenance.
Suggested Total Credit Hours (maximum) = 0.5. *If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.*

**Course:** TC3 Flexible Pavement Preservation Treatment Series - Localized Pavement Repairs - AASHTO

**Description:** Course overview: This training is part of the Flexible Pavement Preservation Treatment Series and is designed to provide participants with information on localized pavement repair. Topics covered in this course include pothole formation and edge failure, seal or fill decisions, construction of and problems with pothole patching, dig outs, edge repairs, skin patching, and capabilities and limitations of localized repairs. This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), a resource for agency and industry pavement preservation practitioners. The PPTCG provides information on basic pavement preservation concepts as well as the different treatments available and how they should be applied.

Target audience: This training is ideal for highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training.

Learning outcomes: Upon completion of the course, participants will be able to:
- Describe the mechanisms of pothole formation and edge failure;
- Select the type of localized pavement repair best suited to a given condition;
- Describe the process of pothole patching, dig outs, edge repairs, and skin patching;
- Identify common problems associated with pothole patching, dig outs, edge repairs, and skin patching and recognize their solutions; and
- List the key capabilities and limitations of localized pavement repairs.

Suggested Total Credit Hours (maximum) = 0.6. *If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.*

**Course:** TC3 Flexible Pavement Preservation Treatment Series - Materials - AASHTO

**Description:** Course overview: This training is part of the Flexible Pavement Preservation Treatment Series and is designed to provide participants with information on the materials used for preventive maintenance treatments. Topics covered in this course include materials comprising maintenance treatments, emulsions, and aggregates. This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), a resource for agency and industry pavement preservation practitioners. The PPTCG provides information on basic pavement preservation concepts as well as the different treatments available and how they should be applied.
Target audience: This training is ideal for highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training.

Learning outcomes: Upon completion of the course, participants will be able to:
- List the materials used in preventive maintenance treatments for flexible and rigid pavements;
- Recognize the differences between asphalt cement and emulsions and their use in pavement preservation treatments; and
- List the six physical properties of aggregates that affect the performance of preservation treatments.

Suggested Total Credit Hours (maximum) = 1.5. *If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.*

**Course:** TC3 Flexible Pavement Preservation Treatment Series - Micro-Surfacing - AASHTO

**Description:** Course overview: This training is part of the Flexible Pavement Preservation Treatment Series and is designed to provide participants with information on micro-surfacing. Topics covered in this course include pavement and traffic condition considerations, construction, and troubleshooting. This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), a resource for agency and industry pavement preservation practitioners. The PPTCG provides information on basic pavement preservation concepts as well as the different treatments available and how they should be applied.

Target audience: This training is ideal for highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify pavement conditions most suitable for a micro-surfacing treatment;
- Describe the construction of micro-surfacing;
- Identify common problems associated with micro-surfacing and recognize their solutions; and
- List the key capabilities and limitations of micro-surfacing relative to various traffic conditions.

Suggested Total Credit Hours (maximum) = 1.0. *If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.*
Course: TC3 Flexible Pavement Preservation Treatment Series - Selecting the Right Treatment - AASHTO

Description: Course overview: This training is part of the Flexible Pavement Preservation Treatment Series and is designed to provide participants with information on preservation treatment selection. This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), a resource for agency and industry pavement preservation practitioners. The PPTCG provides information on basic pavement preservation concepts as well as the different treatments available and how they should be applied.

Target audience: This training is ideal for highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training.

Learning outcomes: Upon completion of the course, participants will be able to:
- Select the appropriate pavement preservation treatment(s) after analyzing given pavement and traffic conditions.

Suggested Total Credit Hours (maximum) = 0.3. If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.

Course: TC3 Flexible Pavement Preservation Treatment Series - Slurry Seals - AASHTO

Description: Course overview: This training is part of the Flexible Pavement Preservation Treatment Series and is designed to provide participants with information on slurry seals. Topics covered in this course include reasons to use slurry seals, gradations of slurry seal aggregate, preparation and application process, and problems and solutions. This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), a resource for agency and industry pavement preservation practitioners. The PPTCG provides information on basic pavement preservation concepts as well as the different treatments available and how they should be applied.

Target audience: This training is ideal for highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify the type of slurry seal appropriate to various traffic conditions;
- Describe the construction of slurry seals;
- Identify common problems associated with slurry seals and recognize their solutions; and
- List the key capabilities and limitations of slurry seals.

Suggested Total Credit Hours (maximum) = 1.0. If you are interested in claiming
Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.

Course: **TC3 Flexible Pavement Preservation Treatment Series - Thin Functional HMA Overlay - AASHTO**

Description: Course overview: This training is part of the Flexible Pavement Preservation Treatment Series and is designed to provide participants with information on thin functional hot-mix asphalt (HMA) overlays. Topics covered in this course include proper usage, suitable pavement conditions, construction, and troubleshooting. This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), a resource for agency and industry pavement preservation practitioners. The PPTCG provides information on basic pavement preservation concepts as well as the different treatments available and how they should be applied. Target audience: This training is ideal for highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training. Learning outcomes: Upon completion of the course, participants will be able to:
- Identify pavement conditions best suited for a thin HMA overlay;
- Describe the construction process for a thin HMA overlay;
- Identify common problems associated with a thin HMA overlay and recognize their solutions; and
- List the key capabilities and benefits of a thin HMA overlay relative to various traffic conditions.

Suggested Total Credit Hours (maximum) = 1.5. *If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.*

Course: **TC3 Flexible Pavement Preservation Treatment Series - Ultra-Thin HMA Bonded Wearing – AASHTO**

Description: Course overview: This training is part of the Flexible Pavement Preservation Treatment Series and is designed to provide participants with information on ultra-thin, hot-mixed asphalt (HMA) bonded wearing course. Topics covered in this course include usage, distresses, application considerations, construction, and troubleshooting. This training draws on the Pavement Preservation Treatment Construction Guide (PPTCG), a resource for agency and industry pavement preservation practitioners. The PPTCG provides information on basic pavement preservation concepts as well as the different treatments available and how they should be applied.
Target audience: This training is ideal for highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training.

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

- Identify pavement conditions best suited to ultra-thin, HMA bonded wearing course;
- Describe the construction of ultra-thin, HMA bonded wearing course;
- Identify common problems associated with ultra-thin, HMA bonded wearing course and recognize their solutions; and
- List key capabilities and benefits of ultra-thin, HMA bonded wearing course relative to various traffic conditions.

Suggested Total Credit Hours (maximum) = 0.7. If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.

Course: **TC3 Full Depth Reclamation - AASHTO**

Description: Course overview: Full depth reclamation (FDR) is a rehabilitation technique in which the full thickness of the asphalt pavement and a predetermined portion of the underlying materials (the base, subbase, and/or subgrade) is uniformly pulverized and blended to provide an upgraded, homogeneous material. This course will start with the basics of FDR and then move through pre-production and reclaiming to post-production activities.

This course contains four modules:
1. Introduction – This module introduces the topic of FDR of pavements.
2. Pre-production activities – This module discusses pre-production activities associated with FDR, including the pre-production meeting, roadway preparation, and FDR equipment needs.
3. Reclaiming the pavement – This module covers establishment of a control strip, pulverization of material to be reclaimed, and the various methods and agents used to stabilize reclaimed materials.
4. Post production – This module covers the steps that need to be taken following reclamation.

Target audience: This course is intended for local, county, and State owner agency technicians and inspectors. It is also useful for individuals who need awareness or basic understanding of FDR of hot mix asphalt.

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

- Identify the various types of FDR
- Describe the stabilizing agents used for the different types of FDR
- List advantages of using FDR as a rehabilitation technique
- Describe why a pre-production meeting is important
- Describe what preparation is needed for a FDR project
• List the equipment needed for a FDR project
• Identify the purposes of a control strip
• Describe the process used to pulverize existing pavement material for FDR
• List methods used to stabilize reclaimed materials
• Describe the stabilizing agents and additives used for stabilization of reclaimed materials
• Describe the finishing steps involved in FDR
• Identify factors and actions that can affect yield and gradation results
• Describe the different methods of measuring compaction and the effect stabilizing agents may have on the results
• List factors affecting how various FDR mixtures should be cured
• Describe the steps involved in placing the final surface on a pavement
• List criteria for acceptance and payment for FDR pavements

Course: TC3 Fundamentals of Sampling and Testing Soils – AASHTO

Description: This is an introductory course covering the fundamental concepts of soils for use in transportation construction projects. The course introduces participants to identifying, describing, and classifying soils with regards to the transportation construction industry. The course also provides an overview of sampling, testing, and troubleshooting soils in both the field and laboratory settings, as well as inspection considerations.

This course is made up of five modules:
1. Introduction to Soils in Highway Transportation
2. Identifying and Describing Soils
3. Classifying Soils
4. Sampling and Field Testing
5. Laboratory Testing

Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, III, and IV.

Target audience: The target audience for this training is members of the transportation industry, particularly departments of transportation, with limited to basic knowledge of sampling and testing of soils, in support of transportation construction projects. This course is particularly suited for laboratory technicians and field inspectors where soil testing is required, but is also a good review for supervisors and managers.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain the importance of soils relative to highway transportation projects;
• Define soil;
• Describe the common soil types and their application for highway transportation projects;
• Differentiate between soil identification, description, and classification;
• List terms used to identify and describe soils; Explain field and lab-based activities
used to identify soil;
- Describe the engineering properties that are included in the classification of soils;
- Summarize the engineering properties of the key soil types;
- Explain the AASHTO Soil Classification System;
- Explain the Unified Soil Classification System (USCS);
- Explain the purpose of sampling soils for field and laboratory testing;
- Summarize how soils are sampled and tested in the field;
- Describe the role of compaction inspection in sampling and testing of soils;
- Explain the purpose of laboratory testing of soils; and
- List standard laboratory test methods for soils used in transportation construction projects.

Course: **TC3 Geosynthetic Materials: Fundamentals – AASHTO**

Description: Geosynthetics is a generic term for all synthetic materials used in conjunction with soil, rock, and/or any other engineering related material as an integral part of a man-made project, structure, or system. It includes a broad range of synthetic products. This course provides an introduction to geosynthetic materials, including geosynthetic applications for transportation facilities, construction, and maintenance. It will also cover the types of functions geosynthetics perform, general construction procedures and inspection items for geosynthetic installations, appropriate material property and design parameter test methods for specific geosynthetic applications, and the need for site-specific monitoring or special inspection. This course is divided into four modules: Introduction to Geosynthetic Materials Used in Highway Applications; Applications of Geosynthetic Materials in Highway Construction; Index and Performance Tests; and Inspection and Acceptance.

Target audience: This training is designed for individuals in the following roles: construction inspectors responsible for reviewing material submittals from contractors and inspecting geosynthetic installation for conformance with project specifications, entry level and mid-level supervisors, and project/field technicians who are either installing or inspecting.

Learning outcomes: Upon completion of this course, you will be able to:
- Explain what a geosynthetic material is;
- Describe the characteristics of geosynthetic materials;
- Explain the different functions of geosynthetic materials (when they are used/what purpose they serve);
- List the most common applications for geosynthetic materials;
- Explain how geosynthetics are typically used in different highway construction applications;
- Explain what index tests are, and what they measure;
- Describe what NTPEP is, and why it is beneficial;
- Explain what performance tests are, and what they measure;
Identify material/roll information on a geosynthetic product;
Summarize procedures for packaging and identification, receiving and storing, on-site handling, and sample identification of geosynthetic materials;
Explain how the DataMine tool can assist you;
Describe basic procedures for field inspection of geosynthetics; and
Determine the impact of proper and improper installation of geosynthetic materials.

Course: TC3 GPS Technology - AASHTO

Description: Course overview: Global Positioning System (GPS) technology is becoming a commonly used tool for construction and maintenance. This course will provide the participant with a general understanding of GPS and the accuracy that can be obtained with this new technology. GPS is used for surveying, rough and fine grading, utility locations, excavation and grading, paving, and much more. In this course, the participant will learn what advantages are gained using this technology and how these advantages are transferred to government agencies and the end user. The understanding of GPS is essential to technicians when performing inspection and maintenance job functions.
Target audience: This course is designed for State and local agencies and their industry counterparts who are currently using or will be adopting this new technology. It is applicable to anyone desiring a better understanding of GPS.
Learning outcomes: Upon completion of the course, participants will be able to:
• Define GPS;
• Describe the levels of GPS accuracy;
• Explain how GPS is used in construction today;
• Identify the advantages to contractors that use GPS; and
• Identify the challenges faced by contractors and government agencies adopting this new technology.

Course: TC3 Guardrail Basics - AASHTO

Description: Course overview: This course provides an introduction to guardrails, including their purpose, components, and considerations (for example, clear zones). This course is divided into three modules:
• Module 1: Introduction to Guardrail Systems will explain the components of a guardrail and explain how barriers are used.
• Module 2: Guardrail Performance Requirements will discuss the industry requirements and standards for guardrails, as well as how they've evolved over time.
• Module 3: Fundamental Guardrail Concepts will discuss roadside topography and define clear zones and length of need.
This is the first course in the Guardrail Series, which also consists of the following
courses:
• Installation and Inspection of New Guardrails; and
• Guardrail Maintenance and Repair.
Target audience: The target audience for this course includes project inspectors, construction personnel, maintenance personnel, and others involved in guardrail installation, inspection, and maintenance. In addition, designers and supervisors (project/program managers) may benefit from this course.

Course: **TC3 Guardrail Maintenance and Repair - AASHTO**

Description: Course overview: This course provides information on the correct procedures for the maintenance and repair of guardrails.
This course is divided into two modules:
• Module 1: Inspection and Maintenance of Existing Guardrails reviews the importance of guardrail maintenance and how damage is assessed.
• Module 2: Guardrail Repair reviews guardrail repair procedures and the information contained in the guardrail repair report. This is the final course in the Guardrail Series, which also consists of the following courses:
  • Guardrail Basics; and
  • Installation and Inspection of New Guardrails.
Target audience: The target audience for this course includes project inspectors, construction personnel, maintenance personnel, and others involved in guardrail installation, inspection, and maintenance. In addition, designers and supervisors (project/program managers) may benefit from this course.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain why proper maintenance and repairs are important;
• Define the levels of damage used to describe guardrail conditions;
• Describe basic inspection procedures and what you should look for when inspecting a guardrail;
• Explain how repairs are made, including the critical actions prior to making the repair;
• Determine if an inspection is needed post guardrail repair and what to look for; and
• List the information included in the repair record.

Course: **TC3 Hazardous Materials Management Series - Completing the Initial Site Assessment (ISA) Report Scoping Process - AASHTO**

Description: Course overview: All projects must include an initial site assessment (ISA) in varying levels. This course will cover the first three sections of the ISA report: Section 1, which is for identifying previously known hazmat conditions and preliminary project design and right-of-way requirements; Section 2, which is for identifying potential
hazardous material issues; and Section 3, which is for the identification of data collection actions.
Target audience: The target audience for this training is anyone within the DOT or industry that deals with hazardous waste on a project. This includes areas such as construction, environment, right-of-way, etc. It also includes those who develop the ISA and those who ensure that all regulatory and legal requirements are followed.

**Course:** TC3 Hazardous Materials Management Series - Conducting Field Interviews – AASHTO

**Description:** Course overview: This series has covered record research and databases, but now it is time to discuss going into the field and verifying information. This course will also cover the examination of unknown hazards on a project. Additionally, participants will learn about site surveys, interviews, and identified hazardous material concerns.
Target audience: The target audience for this training is anyone within the DOT or industry that deals with hazardous waste on a project. This includes areas such as construction, environment, right-of-way, etc. It also includes those who develop the ISA and those who ensure that all regulatory and legal requirements are followed.

**Course:** TC3 Hazardous Materials Management Series - Intro. to the Initial Site Assessment (ISA) Process - AASHTO

**Description:** Course overview: The initial site assessment (ISA) is used to identify and evaluate the potential for hazardous material to affect a project. This course provides an introduction to the ISA process and offers definitions and acronyms for commonly used terms associated with hazardous material management.
Target audience: The target audience for this training is anyone within the DOT or industry that deals with hazardous waste on a project. This includes areas such as construction, environment, right-of-way, etc. It also includes those who develop the ISA and those who ensure that all regulatory and legal requirements are followed.

**Course:** TC3 Hazardous Materials Management Series - Land Use Concerns - AASHTO

**Description:** Course overview: This course addresses existing and previous land use information, and links environmental hazards to existing and previous land use through the review of photographs. This course is divided into two modules: Module 1: Initial Site Assessment (ISA) Sections 4 and 6; and Module 2: Linking Environmental Hazards to Existing and Previous Land Use.
Course: TC3 Hazardous Materials Management Series - Preparing NEPA Documentation - AASHTO

Description: Course overview: This course provides information on communicating with consultants, determining what is needed for the National Environmental Policy Act (NEPA) document, and NEPA document types. It also includes a review of hazardous materials. This course is divided into three modules: Module 1: NEPA Documents; Module 2: Hazardous Material Involvement; and Module 3: Regulated Sites and Achieving Clearance.

Target audience: The target audience for this training is anyone within the DOT or industry that deals with hazardous waste on a project. This includes areas such as construction, environment, right-of-way, etc. It also includes those who develop the ISA and those who ensure that all regulatory and legal requirements are followed.


Description: Course overview: This course prepares participants for ongoing commitments, beyond the NEPA document and environmental clearance. This course addresses the purpose of the Phase II environmental site assessment (ESA) and explains what should happen when hazardous materials cannot be eliminated from a project. Lastly, ongoing environmental management is discussed.

Target audience: The target audience for this training is anyone within the DOT or industry that deals with hazardous waste on a project. This includes areas such as construction, environment, right-of-way, etc. It also includes those who develop the ISA and those who ensure that all regulatory and legal requirements are followed.

Course: TC3 Hazardous Materials Management Series - Regulatory and Legal Issues - AASHTO

Description: Course overview: This course covers the regulatory and legal issues involved in hazardous material management. To better understand the initial site assessment (ISA) process, it is important to be familiar with the environmental laws, regulations, and guidance related to this field. While there are several, this lesson covers just the major ones. Some of the Federal regulations that are covered include the Clean Air Act (CAA), the Occupational Safety and Health Act (OSHA), and the Clean Water Act (CWA).

Target audience: The target audience for this training is anyone within the DOT or industry that deals with hazardous waste on a project. This includes areas such as construction, environment, right-of-way, etc. It also includes those who develop the ISA and those who ensure that all regulatory and legal requirements are followed.
Course: TC3 Hazardous Materials Management Series - Using Regulatory Agency Databases - AASHTO

Description: Course overview: This course reviews regulatory agency databases, database characteristics, and Section 5, regulatory records review, of the initial site assessment (ISA) report.
Target audience: The target audience for this training is anyone within the DOT or industry that deals with hazardous waste on a project. This includes areas such as construction, environment, right-of-way, etc. It also includes those who develop the ISA and those who ensure that all regulatory and legal requirements are followed.

Course: TC3 High Friction Surfaces Best Practices - AASHTO

Description: This course focuses on the best practices involved in the application of high friction surface treatments (HFSTs) on pavements that can dramatically reduce crashes, injuries, and fatalities associated with friction demand issues, such as during wet conditions. The course cites recent State DOT case studies while also covering safety factors and other benefits, material specifications and durability, mixing processes, installation and application practices, post-installation and maintenance activities, project communication considerations, environmental factors, as well as best practices and lessons learned.
Learning outcomes: Upon completion of this course, participants will be able to:
Define HFSTs;
Describe typical HFST applications and benefits;
Explain the material specifications of HFSTs, including the type of binders and aggregates that are used, how they are mixed, and their durability;
Describe how HFSTs are applied, including the surface preparation activities;
List some quality control best practices involved in HFST applications;
Explain how HFSTs should be inspected;
List some maintenance issues related to HFSTs; and
Explain some of the project considerations and lessons learned related to HFST applications.

Course: TC3 High Visibility Garments - AASHTO

Description: Course overview: The need to be seen is critical for worker safety, especially for workers who perform tasks on or near moving vehicles or equipment. By wearing high-visibility garments, workers can draw attention to themselves to prevent injuries and fatalities from struck-by hazards in complex work environments, when the ability to be seen at all times is necessary. The High Visibility Garments course provides students with information on all four classes of visibility garments, the special
labeling that garments meet for the ANSI Standard, and information on when to retire a worn garment.

Target audience: This training would be beneficial to contractors, agencies, or anyone involved with construction and maintenance projects.

Learning outcomes: Upon completion of this course, participants will be able to:
• Understand the four different performance classes (1, 2, 3, and E) of visibility garments;
• Understand the special labeling for garments to meet the ANSI Standard;
• Demonstrate understanding of when to retire a worn visibility garment; and
• Demonstrate understanding of the color and material of visibility garments.

Course: **TC3 Highway and Structure Construction: Basic Materials - AASHTO**

Description: Although there are a number of materials used in the construction and maintenance process for both highways and structures, this course is focused on the three basic materials. They are aggregate, portland cement concrete (PCC), and hot mix asphalt (HMA). The course modules will address the procedures used in the production and sampling of aggregates. Module 1: Basic Aggregates includes quarry inspection, sand operation, stockpiling, and sampling. Module 2 covers PCC, including its production, the hydration process, as well as other cementing materials used in concrete such as water, admixtures, and aggregates. Module 3 reviews HMA, including the asphalt binder and aggregates used in the production.

Target audience: This training is designed for anyone involved in the construction, maintenance, and testing process for highways and structures.

Learning outcomes: Upon completion of the course, participants will be able to:
Identify aggregate production and sampling procedures;
Recognize the ingredients of PCC and the part each plays in concrete production; and
Recognize the ingredients of HMA and the part each plays in hot mix asphalt production.

Course: **TC3 Hot In-Place Recycling - AASHTO**

Description: Hot in-place recycling (HIR) is a pavement preservation and corrective maintenance technique that consists of heating and softening the existing asphalt pavement. When combined with an asphalt overlay, HIR can be classified as structural rehabilitation. The HIR techniques described in this training provide owner agencies with cost-effective and sustainable methods to repair their aging pavements. HIR processes have been used on all functional classes of roadways. When properly designed, specified, and constructed, HIR methods can result in significant cost savings as compared to conventional maintenance operations, while reducing carbon dioxide emissions.
This training consists of three modules:
Introduction to Hot In-Place Recycling;
Pre-Production Inspection; and
Full Production Pavement Recycling.
Target audience: This course is intended for local, county, and State owner agency technicians and inspectors. It is also useful for individuals who need awareness or basic understanding of hot in-place recycling.
Learning outcomes: Upon completion of the course, participants will be able to:
• Explain the purpose, benefits, and use of HIR;
• Identify the purpose and use of HIR mixture designs and equipment that are both common to all applications and those used for only specific applications;
• Identify the preparation and planning steps necessary for an HIR application; and
• Describe the production, evaluation, and payment steps necessary for an HIR application.

Course: **TC3 Improving the Daily Diary - AASHTO**

Description: Course overview: This training is intended to assist you with proper documentation on a construction or maintenance project. It is important that the information in the daily diary kept for projects are accurate, correct, and factual to ensure proper payment and to avoid lawsuits. Please note that the terminology may differ slightly from DOT to DOT; for example, the document may also be referred to as a daily work report. Each State agency/company has their own requirements, which the viewer needs to review and follow.
Target audience: This training is designed for public agency personnel and their industry counterparts involved in the construction, maintenance, and testing process for highways and structures.
Learning outcomes: Upon completion of the course, participants will be able to:
• Compose a complete and correct daily diary; and
• Recognize the importance of daily diary entries.

Course: **TC3 Inspection of Concrete Pavement Repair, Jointed and CRCP – AASHTO**

Description: This course introduces the inspection of concrete highway repairs, particularly those repairs involving jointed and continuously reinforced concrete pavement (CRCP). The course includes key concepts involved in the successful inspection of concrete highway repairs, including concrete repair options and mixtures, quality assurance practices, jointed pavement and CRCP inspection checks, as well as preventative maintenance inspection.
This course is divided into six modules. They are:
Introduction to Concrete Highway Repairs;
Concrete for Highway Repair;
Quality Assurance for Concrete Highway Repairs;
Inspection of Jointed Permanent Concrete Highway Repairs;
Inspection of CRCP Permanent Highway Repairs; and
Inspection of Preventative Maintenance for Concrete Highway Repair.

Learning outcomes: Upon completion of this course, participants will be able to:
- Explain the purpose of preventative maintenance highway repair activities;
- Summarize the benefits of preventative highway maintenance;
- List the types of concrete mixtures that are used in concrete highway repairs;
- Explain how concrete mixing is performed;
- Summarize the activities that the agency inspector should perform to ensure quality;
- List the key inspection items when evaluating jointed concrete repairs;
- List the key inspection items when evaluating CRCP repairs; and
- List the key inspection items when evaluating preventative maintenance repairs of concrete.

Course: **TC3 Installation and Inspection of New Guardrails - AASHTO**

Description: Course overview: This course discusses the installation of new guardrail systems, including the most widely used guardrail heights. The general inspection process is also covered, including scenarios that show potential problems and their solutions.

Course: **TC3 Installation and Inspection of Precast Pavement Systems - AASHTO**

Description: Course overview: Precast pavement systems are fabricated or assembled off-site, transported to the project site, and installed on a prepared foundation (either existing pavement or regraded foundation). This is an introductory course covering the installation of precast pavement systems and key inspection activities and considerations. Topics include general construction of precast pavement systems, the types of precast pavement systems available currently, as well as how precast elements are jointed and grouted. There are five modules in this course. They are: Introduction to Precast Pavement; Overview of Precast Pavement Systems; Panel Fabrication; Common Features and Requirements; and Panel Installation. Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, III, and IV.
Target audience: This course targets members of the transportation industry, particularly departments of transportation, with an interest in precast pavement construction in the following roles: minimal experience and/or entry level construction engineers, inspectors, and technicians. This is also useful for project supervisors. Learning outcomes: Upon completion of this course, participants will be
able to:
Explain the rationale for implementing precast pavement systems; Summarize the overall precast pavement construction process; Contrast the use of precast pavement systems for intermittent repairs versus continuous applications; Describe the key design and construction features of precast pavement systems; List the types and key features of precast pavement systems that have been applied to roadways in the United States; Explain considerations related to precast concrete fabrication; Describe the relationship of quality concrete and precast plant panel production; Summarize the process of precast concrete panel fabrication; Summarize the differences and commonalities of various precast pavement system features; Describe the role of joint spacing in precast pavement installations; Explain the key panel support conditions necessary for successful precast pavement installations; Describe how load transfer at joints occurs in precast pavement system installations; Contrast the precast panel installation process based on different construction applications; Summarize the panel installation activities involved in the installation of precast pavement panels for intermittent repairs; Summarize the panel installation activities involved in the installation of continuous jointed precast pavement systems; Summarize the panel installation activities involved in the installation of continuous prestressed (posttensioned) pavement systems; and List key inspection checks that should be performed during precast pavement panel installation.

Course: TC3 Instructor Preparation - AASHTO

Description: Course overview: Regardless of personality or experience, all instructors can learn how to best leverage their strengths, engage with their students, and convey information as clearly and succinctly as possible. This course aims to help instructors build their skills and confidence by providing the tools and awareness necessary to be the most effective.
While training comes in many different formats, including instructor-led, web conferences, video conferences, and web-based, this course specifically focuses on traditional, classroom-based instruction.
There are five lessons in this course:
1. Introduction to Classroom Instruction;
2. Working with Adult Learners;
3. Improving your Instructor Skills;
4. Classroom Management; and
5. Preparing to Teach.
Target audience: The target audience for this training is instructors with all levels of experience, from beginners to seasoned educators.
Learning outcomes: Upon completion of this course, participants will be able to:
• Explain basic methods and approaches that can be used to conduct effective training;
• Describe strategies for fostering a positive learning environment for adult learners;
• List ways to develop, practice, and improve instructor skills.

**Course:** TC3 Intelligent Compaction - AASHTO

**Description:** Course overview: Compaction is one of the final and most important processes in roadway construction. This process is needed to reach the desired, uniform density, which in turn ensures longer-lasting support, stability, and strength. This course aims to teach construction personnel on the benefits, use, and interpretation of intelligent compaction data. To maximize the benefit of intelligent compaction, a number of construction personnel need to be involved in the collection, use, and interpretation of the data.

This course is divided into five modules. They are:
1. Introduction to Intelligent Compaction;
2. Intelligent Compaction Construction;
3. Intelligent Compaction Data Analysis;
4. Quality Control; and
5. Inspection and Acceptance.

Target audience: The target audience for this training includes anyone involved in the intelligent compaction process, as well as any construction personnel involved in the use and interpretation of intelligent compaction data.

Learning outcomes: Upon completion of this course, participants will be able to:
• Define intelligent compaction (IC);
• List the reasons to employ IC over traditional methods;
• Describe the benefits of IC;
• Summarize the process of highway construction using IC;
• Explain the training and personnel requirements required for successful IC implementation;
• Describe how IC data analysis is used to improve uniformity of compaction;
• Describe the process of analyzing data and IC software outputs available;
• Describe general IC quality control plan characteristics;
• Describe responsibilities of key quality control personnel during IC construction activities;
• Describe the key inspection checks for IC field operations; and
Summarize typical IC acceptance.

**Course:** TC3 Introduction to GIS Mapping - AASHTO

**Description:** This course presents the basics of geographic information systems (GIS), which are used to help DOTs leverage location intelligence to manage critical assets and analyze real-time data for operational excellence. This is an introductory course covering the theory and application of mapping using geographic information systems (GIS). The
course includes an overview of the general principles of GIS and practical experience in its use. There are four modules that make up this course. They are:

1. Introduction to GIS;
2. Data Collection;
3. Data Analysis; and

Target audience: This course targets members of the transportation industry, particularly departments of transportation, with limited to early-intermediate knowledge of GIS, that work or plan to work with GIS data and mapping tools in support of transportation-related projects. The target audience for this training includes inspectors, engineers, supervisors, and project managers. Learning outcomes: Upon completion of this course, participants will be able to:

- Define GIS;
- Summarize the progression of GIS technology;
- Describe how the transportation industry leverages GIS;
- Describe the common sources of GIS information;
- List the types of data sources used for GIS;
- Explain considerations related to GIS data;
- Describe how data is analyzed for GIS;
- Explain the role of data layers and topology in GIS;
- List data analysis techniques that are used for GIS;
- List the key cartography techniques and map elements leveraged in GIS;
- Summarize the software available for producing GIS maps; and
- Explain considerations related to map sharing and cartography.

Course: TC3 Job Hazard Analysis - AASHTO

Description: Course overview: This course reviews what a job hazard analysis is and why it should be performed. More specifically, this course identifies the information that should be documented during a job hazard analysis and provides example jobs and potential hazards that may be encountered. The purpose of this training is to explain what a job hazard analysis is and offer guidelines to help you conduct a step-by-step analysis. This information should be used to analyze jobs and recognize workplace hazards. This course contains three lessons: 1. Job Hazard Analysis Overview; 2. Job Hazard Analysis Forms; 3. Job Hazard Examples. Please refer to the Occupational Safety and Health Administration (OSHA) Web site (Safety Manual) for a Job Hazard Analysis Form. Even if your agency is not directly governed by OSHA, your State agency's version of OSHA has likely adopted the standards set forth by OSHA, which will be discussed in this training.

Course: TC3 Maintenance Stormwater – AASHTO
**Description:**

This course is based on the Maintenance Stormwater Field Guide. It covers topics related to best management practice inspection, common operational practices, good housekeeping, and other pollution source control measures. Using the tips in this course and the related guide will help in complying with Federal and State regulations for stormwater quality. It will also help achieve a greater level of environmental stewardship.

There are three modules that make up this course:
- Module 1: Introduction to Stormwater Maintenance;
- Module 2: Roadside Maintenance Activities; and
- Module 3: Facilities Management.

It is not required that you complete the modules in order; however, it is recommended.

**Target audience:** This course is intended for maintenance staff and those involved in the implementation of common best management practices.

**Learning outcomes:** Upon completion of this course, participants will be able to:
- Describe stormwater maintenance activities;
- List stormwater maintenance practices related to pollution prevention and erosion control; and
- Describe facility management practices related to stormwater pollution prevention.

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**Course:**

**TC3 Maintenance and Tort Liability - AASHTO**

**Description:**

This course aims to provide an overview of highway maintenance, as it relates to tort liability. The course will cover general definitions of legal terminology and liability proceedings that are typical of many State DOTs. The course will not cover definitions, procedures, and activities that would be State-specific, but will instead aim to serve as a foundation for these discussions and training activities at the State level.

There are five modules in this course. They are:
1. Introduction to Maintenance and Liability;
2. Deficiencies and Negligence;
3. Risk Management;
4. Notice and Claims; and
5. Lawsuits.

**Target audience:** The target audience for this training is all State agency personnel and contractors involved in highway maintenance including technicians, inspectors, engineers, supervisors, and project managers.

**Learning outcomes:** Upon completion of this course, participants will be able to:
- Describe the relationship between highway maintenance and litigation;
- List the common issues that lead to claims;
- List examples of deficiencies that can result in tort liability;
- Explain the relationship between tort and negligence;
- Summarize the different elements and types of negligence;
- Explain the role of risk management in tort liability;
- Explain how risk management activities attempt to reduce liability;
• Define the term "notice";
• Explain how a claim progresses through an agency;
• Explain the involvement of a State agency in a civil lawsuit;
• List legal terms that are associated with a civil lawsuit; and
• Summarize a typical deposition process in which an agency representative might be involved.

Course: **TC3 Math Basics: Area - AASHTO**

Description: This course reviews area, or the amount of space something takes up on a surface. It also covers the various equations needed to measure the area of a particular object. This is the ninth course in the Math Basics Series for Highway Technicians, which has been designed to provide you with all of the basic math concepts you'll need on the job.

There are 11 modules that make up this series—each of which explains an introductory math concept in a quick, interactive micro-learning experience. These modules do occasionally reference one another and build upon previously explained math concepts. If you're unsure of any concepts explained in these modules, you can always go back and take previous modules.

It's recommended that you start from the beginning and take all the modules in order; however, you are also welcome to take just one (or several) modules that are applicable to your training needs. The other topics are as follows:

- Arithmetic (TC3ED008-17-T1);
- Order of Operations (TC3ED009-17-T1);
- Fractions (TC3ED010-17-T1);
- Decimals (TC3ED011-17-T1);
- Percentages (TC3ED012-17-T1);
- Ratios (TC3ED013-17-T1);
- Unit Conversions (TC3ED014-17-T1);
- Mean (TC3ED015-17-T1);
- Volume (TC3ED017-17-T1); and
- Slope (TC3ED018-17-T1).

Target audience: This course is for any individual who would like a basic technical math refresher, or an introduction to construction math in a transportation setting, including inspectors and technicians.

Learning outcomes: Upon completion of this course, participants will be able to:

- Calculate the area of example construction scenarios

Course: **TC3 Math Basics: Arithmetic - AASHTO**

Description: This course reviews arithmetic, which is addition, subtraction, multiplication, and
division. This is the first course in the Math Basics Series for Highway Technicians, which has been designed to provide you with all of the basic math concepts you'll need on the job. There are 11 modules that make up this series—each of which explains an introductory math concept in a quick, interactive micro-learning experience. These modules do occasionally reference one another and build upon previously explained math concepts. If you're unsure of any concepts explained in these modules, you can always go back and take previous modules. It's recommended that you start from the beginning and take all the modules in order; however, you are also welcome to take just one (or several) modules that are applicable to your training needs. The other topics are as follows:

- Order of operations (TC3ED009-17-T1);
- Fractions (TC3ED010-17-T1);
- Decimals (TC3ED011-17-T1);
- Percentages (TC3ED012-17-T1);
- Ratios (TC3ED013-17-T1);
- Unit conversions (TC3ED014-17-T1);
- Mean (TC3ED015-17-T1);
- Area (TC3ED016-17-T1);
- Volume (TC3ED017-17-T1); and
- Slope (TC3ED018-17-T1).

Target audience: This course is for any individual who would like a basic technical math refresher, or an introduction to construction math in a transportation setting, including inspectors and technicians.

Learning outcomes: Upon completion of this course, participants will be able to:

- Solve problems using addition, subtraction, multiplication, and division.

Course: **TC3 Math Basics: Decimals – AASHTO**

Description: This course reviews decimals. Everyday numbers are not always whole, especially in construction, so it's important to understand how to use decimals when resolving mathematical equations. This is the fourth course in the Math Basics Series for Highway Technicians, which has been designed to provide you with all of the basic math concepts you'll need on the job.

There are 11 modules that make up this series—each of which explains an introductory math concept in a quick, interactive micro-learning experience. These modules do occasionally reference one another and build upon previously explained math concepts. If you're unsure of any concepts explained in these modules, you can always go back and take previous modules. It's recommended that you start from the beginning and take all the modules in order; however, you are also welcome to take just one (or several) modules that are applicable to your training needs. The other topics are as follows:
• Arithmetic (TC3ED008-17-T1);
• Order of Operations (TC3ED009-17-T1);
• Fractions (TC3ED010-17-T1);
• Percentages (TC3ED012-17-T1);
• Ratios (TC3ED013-17-T1);
• Unit conversions (TC3ED014-17-T1);
• Mean (TC3ED015-17-T1);
• Area (TC3ED016-17-T1);
• Volume (TC3ED017-17-T1); and
• Slope (TC3ED018-17-T1).

Target audience: This course is for any individual who would like a basic technical math refresher, or an introduction to construction math in a transportation setting, including inspectors and technicians.

Learning outcomes: Upon completion of this course, participants will be able to:
• Solve decimal rounding exercises related to construction; and
• Solve arithmetic exercises involving decimals.

**Course:**  
**TC3 Math Basics: Fractions - AASHTO**

**Description:** This course reviews fractions, which are numbers that represent part of the whole. This is the third course in the Math Basics Series for Highway Technicians, which has been designed to provide you with all of the basic math concepts you'll need on the job.

There are 11 modules that make up this series—each of which explains an introductory math concept in a quick, interactive micro-learning experience. These modules do occasionally reference one another and build upon previously explained math concepts. If you're unsure of any concepts explained in these modules, you can always go back and take previous modules. It's recommended that you start from the beginning and take all the modules in order; however, you are also welcome to take just one (or several) modules that are applicable to your training needs. The other topics are as follows:

• Arithmetic (TC3ED008-17-T1);
• Order of Operations (TC3ED009-17-T1);
• Decimals (TC3ED011-17-T1);
• Percentages (TC3ED012-17-T1);
• Ratios (TC3ED013-17-T1);
• Unit conversions (TC3ED014-17-T1);
• Mean (TC3ED015-17-T1);
• Area (TC3ED016-17-T1);
• Volume (TC3ED017-17-T1); and
• Slope (TC3ED018-17-T1).
Target audience: This course is for any individual who would like a basic technical math refresher, or an introduction to construction math in a transportation setting, including inspectors and technicians.
Learning outcomes: Upon completion of this course, participants will be able to:
- Define the different types of fractions;
- Solve problems involving fractions using addition, subtraction, multiplication, and division; and
- Convert decimals into fractions.

Course: TC3 Math Basics: Mean – AASHTO

Description: This course reviews the mean, or average, of numbers that may be used in a mathematical equation. This is the eighth course in the Math Basics Series for Highway Technicians, which has been designed to provide you with all of the basic math concepts you'll need on the job.
There are 11 modules that make up this series—each of which explains an introductory math concept in a quick, interactive micro-learning experience. These modules do occasionally reference one another and build upon previously explained math concepts. If you're unsure of any concepts explained in these modules, you can always go back and take previous modules. It's recommended that you start from the beginning and take all the modules in order; however, you are also welcome to take just one (or several) modules that are applicable to your training needs. The other topics are as follows:
- Arithmetic (TC3ED008-17-T1);
- Order of Operations (TC3ED009-17-T1);
- Fractions (TC3ED010-17-T1);
- Decimals (TC3ED011-17-T1);
- Percentages (TC3ED012-17-T1);
- Ratios (TC3ED013-17-T1);
- Unit Conversions (TC3ED014-17-T1);
- Area (TC3ED016-17-T1);
- Volume (TC3ED017-17-T1); and
- Slope (TC3ED018-17-T1).
Target audience: This course is for any individual who would like a basic technical math refresher, or an introduction to construction math in a transportation setting, including inspectors and technicians.
Learning outcomes: Upon completion of this course, participants will be able to:
- Calculate the mean based on construction-related scenarios.

Course: TC3 Math Basics: Order of Operations – AASHTO
**Description:** This course reviews the order of operations when solving a mathematical expression. The order in which you solve an equation is important because you can end up with completely different results depending on the order in which you do things. This is the second course in the Math Basics Series for Highway Technicians, which has been designed to provide you with all of the basic math concepts you'll need on the job. There are 11 modules that make up this series—each of which explains an introductory math concept in a quick, interactive micro-learning experience. These modules do occasionally reference one another and build upon previously explained math concepts. If you're unsure of any concepts explained in these modules, you can always go back and take previous modules. It's recommended that you start from the beginning and take all the modules in order; however, you are also welcome to take just one (or several) modules that are applicable to your training needs. The other topics are as follows:

- Arithmetic (TC3ED008-17-T1);
- Fractions (TC3ED010-17-T1);
- Decimals (TC3ED011-17-T1);
- Percentages (TC3ED012-17-T1);
- Ratios (TC3ED013-17-T1);
- Unit conversions (TC3ED014-17-T1);
- Mean (TC3ED015-17-T1);
- Area (TC3ED016-17-T1);
- Volume (TC3ED017-17-T1); and
- Slope (TC3ED018-17-T1).

**Target audience:** This course is for any individual who would like a basic technical math refresher, or an introduction to construction math in a transportation setting, including inspectors and technicians.

**Learning outcomes:** Upon completion of this course, participants will be able to:
- Determine the correct order of operations for a given math problem.

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**Course:** TC3 Math Basics: Percentages – AASHTO

**Description:** This course reviews percentages, which are regularly used in construction. In all applications of percentages, a percent means a part of the whole. It represents the part you have or want compared to the total amount. This is the fifth course in the Math Basics Series for Highway Technicians, which has been designed to provide you with all of the basic math concepts you'll need on the job. There are 11 modules that make up this series—each of which explains an introductory math concept in a quick, interactive micro-learning experience. These modules do occasionally reference one another and build upon previously explained math concepts. If you're unsure of any concepts explained in these modules, you can always go back and take previous modules. It's recommended that you start from the beginning and take all the modules in order; however, you are also welcome to take
just one (or several) modules that are applicable to your training needs. The other topics are as follows:

- Arithmetic (TC3ED008-17-T1);
- Order of Operations (TC3ED009-17-T1);
- Fractions (TC3ED010-17-T1);
- Decimals (TC3ED011-17-T1);
- Ratios (TC3ED013-17-T1);
- Unit conversions (TC3ED014-17-T1);
- Mean (TC3ED015-17-T1);
- Area (TC3ED016-17-T1);
- Volume (TC3ED017-17-T1); and
- Slope (TC3ED018-17-T1).

Target audience: This course is for any individual who would like a basic technical math refresher, or an introduction to construction math in a transportation setting, including inspectors and technicians.

Learning outcomes: Upon completion of this course, participants will be able to:
- Solve construction-related problems involving percentages.

**Course:** TC3 Math Basics: Ratios – AASHTO

**Description:** This course reviews ratios, which represent the relationship between two values. This is the sixth course in the Math Basics Series for Highway Technicians, which has been designed to provide you with all of the basic math concepts you'll need on the job.

There are 11 modules that make up this series—each of which explains an introductory math concept in a quick, interactive micro-learning experience. These modules do occasionally reference one another and build upon previously explained math concepts. If you're unsure of any concepts explained in these modules, you can always go back and take previous modules. It's recommended that you start from the beginning and take all the modules in order; however, you are also welcome to take just one (or several) modules that are applicable to your training needs. The other topics are as follows:

- Arithmetic (TC3ED008-17-T1);
- Order of Operations (TC3ED009-17-T1);
- Fractions (TC3ED010-17-T1);
- Decimals (TC3ED011-17-T1);
- Ratios (TC3ED013-17-T1);
- Unit conversions (TC3ED014-17-T1);
- Mean (TC3ED015-17-T1);
- Area (TC3ED016-17-T1);
- Volume (TC3ED017-17-T1); and
- Slope (TC3ED018-17-T1).
Target audience: This course is for any individual who would like a basic technical math refresher, or an introduction to construction math in a transportation setting, including inspectors and technicians.

Learning outcomes: Upon completion of this course, participants will be able to:
- Solve problems involving ratios given construction-related exercises.

Course: **TC3 Math Basics: Slope – AASHTO**

Description: This course reviews slope. The ground on which we construct our projects is not always perfectly flat; therefore, we often need to figure out the steepness or grade of an area of land. This is the eleventh and final course in the Math Basics Series for Highway Technicians, which has been designed to provide you with all of the basic math concepts you'll need on the job.

There are 11 modules that make up this series—each of which explains an introductory math concept in a quick, interactive micro-learning experience. These modules do occasionally reference one another and build upon previously explained math concepts. If you're unsure of any concepts explained in these modules, you can always go back and take previous modules. It's recommended that you start from the beginning and take all the modules in order; however, you are also welcome to take just one (or several) modules that are applicable to your training needs. The other topics are as follows:
- Arithmetic (TC3ED008-17-T1);
- Order of Operations (TC3ED009-17-T1);
- Fractions (TC3ED010-17-T1);
- Decimals (TC3ED011-17-T1);
- Percentages (TC3ED012-17-T1);
- Ratios (TC3ED013-17-T1);
- Unit Conversions (TC3ED014-17-T1);
- Mean (TC3ED015-17-T1);
- Area (TC3ED016-17-T1); and
- Volume (TC3ED017-17-T1).

Target audience: This course is for any individual who would like a basic technical math refresher, or an introduction to construction math in a transportation setting, including inspectors and technicians.

Learning outcomes: Upon completion of this course, participants will be able to:
- Determine the slope within given construction project scenarios.

Course: **TC3 Math Basics: Unit Conversion – AASHTO**

Description: This course reviews unit conversions. Converting the units of various numbers is a common occurrence in technical work. For example, units may need to be converted
to make addition and subtraction possible. This is the seventh course in the Math Basics Series for Highway Technicians, which has been designed to provide you with all of the basic math concepts you'll need on the job.

There are 11 modules that make up this series—each of which explains an introductory math concept in a quick, interactive micro-learning experience. These modules do occasionally reference one another and build upon previously explained math concepts. If you're unsure of any concepts explained in these modules, you can always go back and take previous modules. It's recommended that you start from the beginning and take all the modules in order; however, you are also welcome to take just one (or several) modules that are applicable to your training needs. The other topics are as follows:

- Arithmetic (TC3ED008-17-T1);
- Order of Operations (TC3ED009-17-T1);
- Fractions (TC3ED010-17-T1);
- Decimals (TC3ED011-17-T1);
- Percentages (TC3ED012-17-T1);
- Ratios (TC3ED013-17-T1);
- Mean (TC3ED015-17-T1);
- Area (TC3ED016-17-T1);
- Volume (TC3ED017-17-T1); and
- Slope (TC3ED018-17-T1).

Target audience: This course is for any individual who would like a basic technical math refresher, or an introduction to construction math in a transportation setting, including inspectors and technicians.

Learning outcomes: Upon completion of this course, participants will be able to:
- Solve unit conversion problems related to typical construction activities.

**Course:** TC3 Math Basics: Volume – AASHTO

**Description:** This course reviews volume, which is the quantity of an enclosed three-dimensional space. This is the tenth course in the Math Basics Series for Highway Technicians, which has been designed to provide you with all of the basic math concepts you'll need on the job.

There are 11 modules that make up this series—each of which explains an introductory math concept in a quick, interactive micro-learning experience. These modules do occasionally reference one another and build upon previously explained math concepts. If you're unsure of any concepts explained in these modules, you can always go back and take previous modules. It's recommended that you start from the beginning and take all the modules in order; however, you are also welcome to take just one (or several) modules that are applicable to your training needs. The other topics are as follows:
- Arithmetic (TC3ED008-17-T1);
- Order of Operations (TC3ED009-17-T1);
- Fractions (TC3ED010-17-T1);
- Decimals (TC3ED011-17-T1);
- Percentages (TC3ED012-17-T1);
- Ratios (TC3ED013-17-T1);
- Unit Conversions (TC3ED014-17-T1);
- Mean (TC3ED015-17-T1);
- Area (TC3ED016-17-T1); and
- Slope (TC3ED018-17-T1).

Target audience: This course is for any individual who would like a basic technical math refresher, or an introduction to construction math in a transportation setting, including inspectors and technicians.
Learning outcomes: Upon completion of this course, participants will be able to:
- Solve problems related to volume calculations.

Course: TC3 Math Basics for Construction Inspectors - AASHTO

Description: This course presents math instruction for construction inspectors in context. Instead of solving abstract math problems, participants will immerse themselves in typical inspection roles and learn how to approach math problems as they would in the real world.

This course is part of the Math Basics for Highway Technicians series, which offers participants with a wide range of situations requiring everything from basic arithmetic calculations to using complex formulas.

Target audience: The target audience for this training includes any individual who would like a basic technical math refresher, or introduction to math for construction inspection.

Learning outcomes: Upon completion of this course, participants will be able to:
- Solve mathematical problems related to construction inspection activities, including:
  - Grading and excavation;
  - PCC paving inspection;
  - HMA paving inspection; and
  - Structure inspection.

Course: TC3 Math Basics for Highway Technicians - AASHTO

Description: Course overview: The Math Basics Series for Highway Technicians has been designed to provide the basic math concepts you'll need on the job. The series provides participants with a basic math review (including a review of using a calculator, basic arithmetic addition, subtraction, multiplication, and division, as well
as reviewing order of operations, decimals, and fractions), and then presents math instruction in context. Instead of solving abstract math problems, participants will immerse themselves in typical construction-related roles and learn how to approach math problems as they would in the real world. There are 11 modules that make up this series, each of which explains an introductory math concept in a quick, interactive micro-learning experience. These modules occasionally reference one another and build upon previously explained math concepts.

Target audience: This course is for any individual who would like a basic technical math refresher, or an introduction to construction math in a transportation setting, including inspectors and technicians.

Learning outcomes: Upon completion of this series, participants will be able to:

- Perform basic technical mathematical operations manually and with a calculator;
- Convert units, including fractions, decimals, and percentages;
- Calculate ratios, slopes, and volumes; and
- Use basic arithmetic (addition, subtraction, multiplication, and division) to solve construction-related math problems.

**Course:** TC3 Math Basics for Maintenance Technicians - AASHTO

**Description:** This course presents math instruction for maintenance technicians in context. Instead of solving abstract math problems, participants will immerse themselves in typical maintenance technician roles and learn how to approach math problems as they would in the real world.

This course is part of the Math Basics for Highway Technicians series, which offers participants with a wide range of situations requiring everything from basic arithmetic calculations to using complex formulas.

Target audience: The target audience for this training includes any individual who would like a basic technical math refresher, or introduction to math for highway maintenance.

Learning outcomes: Upon completion of this course, participants will be able to:

- Solve mathematical problems related to maintenance activities, including:
  - Installing drainage ditches;
  - Mowing, seeding, and treating large areas;
  - Snow plowing and ice control; and
  - Highway repairs.

**Course:** TC3 Math Basics for Materials Technicians - AASHTO

**Description:** This course presents math instruction for maintenance technicians in context. Instead of solving abstract math problems, participants will immerse themselves in typical maintenance technician roles and learn how to approach math problems as they would
in the real world.

This course is part of the Math Basics for Highway Technicians series, which offers participants with a wide range of situations requiring everything from basic arithmetic calculations to using complex formulas.

Target audience: The target audience for this training includes any individual who would like a basic technical math refresher, or introduction to math for highway maintenance.

Learning outcomes: Upon completion of this course, participants will be able to:
- Solve mathematical problems related to maintenance activities, including:
  - Installing drainage ditches;
  - Mowing, seeding, and treating large areas;
  - Snow plowing and ice control; and
  - Highway repairs.

Course: **TC3 Micropile - AASHTO**

Description: This course instructs those in the construction industry on the installation and inspection of micropile, focusing on the inspection checkpoints during the installation process.

There are seven modules that make up this course. They are:
1. Introduction to Micropile;
2. Pre-construction Activities;
3. Fundamentals of Micropile Construction;
4. Drilling;
5. Reinforcement;
6. Grouting; and
7. Testing and Quality Control.

Learning outcomes: Upon completion of this course, participants will be able to:
- Define micropile;
- List the advantages of micropile construction;
- Describe when and why micropiles are used;
- Describe micropile pre-construction meeting activities;
- Summarize micropile pre-construction owner and contractor responsibilities;
- List the key steps in the micropile drilling process;
- List types of micropiles;
- Describe the various types of micropile drilling techniques;
- Summarize key inspection activities for micropile drilling;
- Describe the role of reinforcing steel in micropile construction;
- List the types of reinforcing steel used during micropile construction;
- Describe the process of installing reinforcing steel during micropile construction;
- Describe the importance of selecting the appropriate grouting mix during micropile construction;
• List the grouting equipment used during micropile equipment;
• Summarize micropile grout batching and mixing;
• Summarize the inspection of grout placement during micropile construction;
• Describe the key testing activities related to micropile construction; and
• Describe the key post-installation quality control activities applied during micropile construction.

Course: TC3 MSE Walls - AASHTO

Description: The Construction of Mechanically Stabilized Earth (MSE) Walls course contains 10 modules, and begins with an overview of what MSE walls are, how they work, and how they are constructed. The need for inspection is emphasized throughout this course. This course will also help participants understand what is considered in a design and what information is contained in a geotechnical report. Roles of the inspector/engineer and contractor are discussed along with relevant safety procedures. This course also familiarizes participants with typical project drawings and typical specifications. Finally, inspection requirements and methods are presented.

Target audience: This training is ideal for highway construction teams, specifically the highway workers and inspectors involved in the construction of MSE walls.

Learning outcomes: Upon completion of the course, participants will be able to:
Describe the planning behind, design of, and construction of MSE walls;
Explain the importance of inspections; and
Describe the role of the inspector.

Course: TC3 MTS Pavement Preservation Program - AASHTO / Maintenance Training Series

Description: Pavement preservation represents a major paradigm shift in the way many transportation agencies view and operate their highway networks. The Pavement Preservation Program course provides basic information on what comprises a pavement preservation program and how it is implemented. It places particular emphasis on changes in practice and the assignment of dedicated funding. Additionally, this course covers the benefits and challenges of a preservation program, as well as approaches to communicating its advantages to stakeholders. This training was developed as part of the Maintenance Training Series.

Target audience: This course is designed for those who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Learning outcomes: Upon completion of the course, participants will be able to:
Identify the benefits and challenges of implementing a pavement preservation
program; and
determine ways to develop support for a pavement preservation program.

**Course:** TC3 MTS Shaping and Shoulders - AASHTO / Maintenance Training Series

**Description:** Shoulders play an important role in both pavement performance and roadway safety. Maintaining shoulders in a proper and timely manner is a primary goal of transportation agencies. In an effort to assist agencies in meeting this goal, the Shaping and Shoulders course provides information on the maintenance of both paved and unpaved shoulders, including specific details on the maintenance of gravel shoulders. In addition to a discussion of the various types of shoulders, project selection considerations, and key maintenance issues, this training places shoulders and shaping into the context of an overall maintenance and pavement preservation program. This training was developed as part of the Maintenance Training Series.

Target audience: This course is designed for those who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify desirable characteristics of various types of shoulders;
- Identify project selection considerations for shaping and shoulders;
- Describe shoulder shaping and blading activities, including equipment requirements and construction activities; and
- Describe how a shoulder and ditching program forms the core of the overall maintenance and pavement preservation program.

**Course:** TC3 MTS Thin HMA Overlays and Leveling - AASHTO / Maintenance Training Series

**Description:** Thin hot-mix asphalt (HMA) overlays and leveling are common pavement treatments and can be a central part of a maintenance crew's activities. During the Thin HMA Overlays and Leveling course, participants will be introduced to the characteristics and purposes of thin HMA overlays as well as the placement of leveling courses. Each of these techniques is capable of improving the functionality of an otherwise structurally sound pavement. This training also covers information on the materials, personnel, and equipment needed for thin HMA overlays, items that should be considered when making project selection decisions, and guidance on proper mixture compaction. This information is designed to help participants improve project planning and execution for thin HMA overlays and leveling treatments. This training was developed as part of the Maintenance Training Series.
Target audience: This course is designed for those who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Learning outcomes: Upon completion of the course, participants will be able to:
- Determine the purpose of thin HMA overlays and leveling courses;
- Identify material components of HMA overlays;
- Identify personnel and equipment needed for HMA overlays and leveling construction;
- Identify project selection considerations for thin HMA overlays and leveling; and
- Identify how this treatment can be incorporated into an overall system preservation program.

Course: **TC3 MTS Base and Subbase Stabilization and Repair - AASHTO / Maintenance Training Series**

Description: Before preservation treatments can be applied, localized repairs may be necessary for a pavement's base or subbase. The Base and Subbase Stabilization and Repair course gives participants the knowledge they need to determine if the base or subbase must be stabilized or repaired, to select the appropriate stabilization and repair methods for a given project, and to ensure the repair is performed properly. This training reviews the failures and distresses that indicate structural deterioration exists in a roadway. The course also covers project selection and trade-off considerations through example roadway projects that give participants the opportunity to evaluate a roadway and determine if it is a candidate for reconstruction or repair. Participants can use this information, as well as guidance on design and construction, to make sound project planning decisions. This training was developed as part of the Maintenance Training Series.

Target audience: This course is designed for those who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify the symptoms of a localized base or subbase problem, which require greater depth of stabilization and repair than a hot-mix asphalt (HMA) or portland cement concrete (PCC) surface repair patch;
- Determine when it is appropriate to employ base or subbase repair on a preventive maintenance project; and
- Identify the most appropriate repair methods if base or subbase failures are identified in a project.
Course: TC3 MTS Roadway Drainage - AASHTO / Maintenance Training Series

Description: Course overview: Shoulder, ditch, and pipe or culvert maintenance activities are performed frequently throughout the year. These activities are critical for avoiding hazardous roadway conditions and extending the life of pavements by controlling water flow along maintainable pathways. This course provides information on the purpose, function, and components of roadway drainage systems. This course reviews the components of shoulders and ditches, the purpose of a roadway drainage inventory, and the permits used in roadway drainage maintenance. Examples of existing drainage inventories are provided. In addition, the benefits of proper water removal are discussed through examples of drainage system issues, such as ponding and washouts, in order to emphasize the connection between good drainage and roadway safety. This training was developed as part of the Maintenance Training Series.

Target audience: This course is designed for those who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify the purpose and function of roadway drainage systems;
- Identify eight components of roadway drainage systems;
- Identify the purpose of a roadway drainage inventory;
- Identify the purpose of permits in roadway drainage maintenance; and
- Identify the components of shoulders and ditches.

Course: TC3 MTS Outdoor Advertising - AASHTO / Maintenance Training Series

Description: The Highway Beautification Act (HBA) of 1965 mandated a State program, based on Federal rules and regulations, for improving motorists' visual experiences on the roadway. The HBA affects billboards and advertisements along State roadways. The Outdoor Advertising and Litter Control course familiarizes maintenance personnel with the rules and regulations governing placement and control of outdoor advertising along highway rights-of-way to ensure they are in compliance with the standards stipulated in the HBA. Additionally, the course covers litter control safety for public groups assisting State DOTs in litter pickup. Participants of this course will learn about the rules and regulations for maintaining and controlling outdoor advertising, guidance on administering an outdoor advertising program, the steps involved in the permitting process, and appropriate actions for non-compliance by sign owners. Additionally, participants are encouraged to compare the standards outlined in the HBA to their State's rules and regulations, which may include stricter provisions than those in the HBA. This training was developed as part of the Maintenance Training Series.
Target audience: This course is designed for those who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify Federal and State regulations, laws, ordinances, guidelines, and policies governing outdoor advertisement placement;
- Describe the permit process; and
- Describe the role of the maintenance supervisor in outdoor advertising control.

Course: TC3 MTS Roadside Vegetation Management - AASHTO / Maintenance Training Series

Description: Course overview: Vegetation management is much more than routine mowing of grass and trimming of bushes and trees. The Roadside Vegetation Management course explains the need for, and purpose of, good vegetation management. The course also underscores why vegetation management is a critical part of a roadway maintenance program. Participants of this course will learn about equipment and herbicides used for vegetation management, including an overview of mechanical vegetation control and the environmental controls and precautions needed when using herbicides as part of a noxious weed control program. This training was developed as part of the Maintenance Training Series.

Target audience: This course is designed for those who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Learning outcomes: Upon completion of the course, participants will be able to:
- Describe why vegetation control is important to roadway safety and performance;
- Identify the types of equipment used for mechanical vegetation control;
- Identify types of herbicide vegetation management methods, their use, environmental control, and precautions; and
- Describe the requirements of a noxious weed control program.

Course: TC3 MTS Weather-Related Operations - AASHTO / Maintenance Training Series

Description: Storm control is a major component of roadway maintenance in many areas of the country. State, municipal, and county agencies are responsible for providing safe, passable roadways even in severe weather. While the majority of the Weather-Related Operations course concentrates on snow and ice storms, many of the elements apply to other weather events as well. Tornadoes, hurricanes, and flooding all require
coordination and dedication of maintenance personnel. In any weather event, agencies need to restore roadways and bridges to ensure they are safe for motorists. Participants of this course will learn about the planning requirements for an effective storm response, including scheduling and training personnel, identifying equipment needs, executing dry runs, and the additional requirements posed by a multi-day storm event. This training assists participants with planning and responding effectively to all weather-related operations. This training was developed as part of the Maintenance Training Series.

Target audience: This course is designed for those who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify the elements of an effective storm response plan;
- Identify factors involved in scheduling personnel needs;
- Identify safety and training considerations for maintenance personnel who are involved in weather-related operations;
- Identify the types of equipment used in a snow and ice removal plan and their uses;
- and, Describe how to identify equipment needs for a particular storm.

Course: TC3 MTS Underground Storage Tanks - AASHTO / Maintenance Training Series

Description: The nation's underground storage tank (UST) systems consist of underground tanks and piping that store petroleum and other hazardous materials. This course addresses the procedures to install, operate, and remove USTs. Developed specifically for maintenance personnel, this course provides participants with an understanding of the Federal laws and regulations that govern UST systems. During the course, participants acquire the knowledge needed to successfully oversee UST installations and closures. Specifically, the course explores the requirements of industry installation and closure codes, leakage detection, spill and overfill prevention, corrosion protection, and ensuring a "clean" closure. This training was developed as part of the Maintenance Training Series.

Target audience: This course is designed for those who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Learning outcomes: Upon completion of the course, participants will be able to:
- Describe the regulatory framework governing the operation of underground storage tanks; Describe UST operations; Describe the process that must be followed to obtain satisfactory "clean closure" from the appropriate oversight agency; and Describe UST cleanup and removal operations.
Course: TC3 MTS Cultural and Historic Preservation - AASHTO / Maintenance Training Series

Description: Cultural and historic sites are often located within an area where maintenance activities are scheduled to be completed. This training teaches participants about regulations and concerns related to safeguarding cultural and historic sites from the potential impacts of highway maintenance activities. Examples of maintenance activities that can impact such sites include slope stabilization, shoulder or pavement widening, and vegetation control. Additional examples are presented during the course. This course assists participants with recognizing potential historic or cultural resources, verifying a site's cultural or historic status, and avoiding impacts to sites when carrying out maintenance activities. Since completing these tasks often requires additional expertise, resources for obtaining needed assistance are provided. This training was developed as part of the Maintenance Training Series.

Target audience: This course is designed for those who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify governing bodies and registries that should be consulted prior to commencing maintenance activities on sites of cultural and historic importance;
- Recognize what sorts of structures, landmarks, and properties could pose potential cultural and historic preservation issues;
- Describe how to avoid impacts to historic sites; and
- Describe the role of DOT in maintaining and enhancing cultural resources.

Course: TC3 Pavement Markings – AASHTO

Description: This course covers the various types of pavement markings, including retroreflective beads, tape, paint, thermoplastic, resins, and markers. The course not only covers the details of the materials and their application, but also the fundamentals of line markings and pavement marking project considerations. There are nine modules that make up this course. They are: Introduction to Pavement Marking; Basics of Line Markings; Project Considerations; Retroreflective Glass Beads; Paint; Tape; Thermoplastics; Resins; and Markers.

Target audience: The target audience for this training includes technicians (local, county and State owner agency), inspectors, supervisors, engineers, and contractors/consultants.

Learning outcomes: Upon completion of this course, participants will be able to:
- Describe the purpose of pavement markings;
- List the different colors and types of materials used in pavement markings;
- Summarize the general principles of longitudinal lines and transverse markings;
List common pre-installation considerations related to pavement markings;
List quality control considerations related to pavement markings;
Summarize the purpose and function of retroreflective glass beads in pavement markings, including their key characteristics;
List the key variables that should be considered during the application of retroreflective beads;
List the visual inspection checks related to retroreflective bead application;
Summarize the purpose and function of traffic paint;
List the various components of traffic paint;
Describe the key differences between water-borne and solvent-borne traffic paints;
Describe how paint markings are applied, including the key application considerations related to traffic paint;
Summarize the purpose and function of tape for pavement markings;
List the various components of tape;
List the key types of pavement tape and the related application considerations;
Summarize the purpose and function of thermoplastics for pavement markings;
Describe the key differences between the different types of thermoplastics;
List the various components of thermoplastic;
Describe how thermoplastic markings are applied, including key application considerations;
Summarize the purpose and function of resins for pavement markings;
Describe the key differences between epoxy-based and polyester-based resins;
List the various components of resins;
List the key application considerations related to resins;
Summarize the purpose and function of pavement markers;
Describe the different types of pavement markers and their distinguishing characteristics; and,
List the key application considerations related to pavement markers. Suggested Total Credit Hours (maximum) = 1.5. If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form. See also: Guidance for Engineers Regarding TC3 Courses.

Course: TC3 PCC Pavement Preservation Series: Concrete Overlays - AASHTO

Description: Course overview: This module is part of the curriculum from the Concrete Pavement Preservation Series, which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. This module discusses how preventative maintenance impacts pavement preservation, good candidates for preservation, and the benefits to pavement preservation.
Target audience: This training is designed for design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is
aimed at those who have some familiarity with concrete pavements and pavement preservation, it is also of value to those that are new to the field.

Learning outcomes: Upon completion of the course, participants will be able to:
Define concrete resurfacing;
Define bonded and unbonded overlays;
Identify the benefits of using concrete overlays;
Describe evaluation considerations; and
Describe primary design considerations;
Identify recommended materials;
Describe materials and construction activities; and
Identify limitations in the use of overlays.

Suggested Total Credit Hours (maximum) = 1.5. *If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.*
See also: Guidance for Engineers Regarding TC3 Courses.

**Course:**  
**TC3 PCC Pavement Preservation Series: Concrete Pavement Evaluation - AASHTO**

**Description:** Course overview: This module discusses how preventative maintenance impacts pavement preservation, good candidates for preservation, and the benefits to pavement preservation. This module also describes the common procedures associated with conducting thorough pavement evaluations. This module is part of the curriculum from the Concrete Pavement Preservation Series, which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies.

Target audience: This training is designed for design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it is also of value to those that are new to the field.

Learning outcomes: Upon completion of the course, participants will be able to:
Describe the need for a thorough pavement evaluation;
Name the common pavement evaluation components; and
Describe what information is obtained from each pavement evaluation component.

Suggested Total Credit Hours (maximum) = 0.7. *If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.*

**Course:**  
**TC3 PCC Pavement Preservation Series: Diamond Grinding and Grooving – AASHTO**
**Description:** Course overview: This module describes recommended procedures for surface restoration of portland cement concrete (PCC) pavements, specifically diamond grinding and diamond grooving operations. This module is part of the curriculum from the Concrete Pavement Preservation Series, which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies.

Target audience: This training is designed for design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it is also of value to those that are new to the field.

Learning outcomes: Upon completion of the course, participants will be able to:
- Differentiate between diamond grinding and diamond grooving and list the benefits of each;
- Identify appropriate blade spacing dimensions for grinding and grooving;
- Describe recommended construction procedures; and
- Identify typical construction problems and remedies.

Suggested Total Credit Hours (maximum) = 0.5. *If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.*

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**Course:** TC3 PCC Pavement Preservation Series: Dowel Bar Retrofit, Cross Stitching, and Slot Stitching - AASHTO

**Description:** Course overview: This module presents design and construction information on load transfer restoration (LTR), sometimes referred to as retrofitted load transfer. This course explains the difference between load transfer restoration (a generic term) and dowel bar retrofitting (DBR), which is a specific means of achieving LTR. There are other methods available, but DBR is the most proven.

This module is part of the curriculum from the Concrete Pavement Preservation Series, which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies.

Target audience: This training is designed for design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it is also of value to those that are new to the field.

Learning outcomes: Upon completion of the course, participants will be able to:
- List benefits and applications of load transfer restoration;
- Describe recommended materials and mixtures;
- Describe recommended construction procedures; and
- Identify typical construction problems and remedies.

Suggested Total Credit Hours (maximum) = 0.7. *If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.*
spend on the course, as documented on your Transcript Form.

Course: TC3 PCC Pavement Preservation Series: Full-Depth Repairs - AASHTO

Description: Course overview: This module covers the procedures for cast-in-place portland cement concrete (PCC) full-depth repair (FDR) of jointed concrete pavements (JCP), including jointed plain concrete pavements (JPCP) and jointed reinforced concrete pavements (JRCP). FDR techniques for continuously reinforced concrete pavements (CRCP) are discussed separately toward the end of the presentation. FDR is the cast-in-place concrete repairs that extend the full-depth of the existing slab.

This module is part of the curriculum from the Concrete Pavement Preservation Series, which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies.

Target audience: This training is designed for design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it is also of value to those that are new to the field.

Learning outcomes: Upon completion of the course, participants will be able to:
- List the benefits of full-depth repairs;
- Describe primary design considerations in terms of dimensions, load transfer, and materials;
- Describe recommended construction activities; and
- Identify typical construction problems and remedies.

Suggested Total Credit Hours (maximum) = 1.0. If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.

Course: TC3 PCC Pavement Preservation Series: Joint Resealing and Crack Sealing - AASHTO

Description: Course overview: This module covers joint resealing and crack sealing for concrete pavements. Joint resealing and crack sealing is defined as placement of an approved sealant material in an existing joint or crack to reduce moisture infiltration and prevent intrusion of incompressibles. This module is part of the curriculum from the Concrete Pavement Preservation Series, which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies.

Target audience: This training is designed for design engineers, quality control
personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it is also of value to those that are new to the field.

Learning outcomes: Upon completion of the course, participants will be able to:
- List the benefits of joint resealing;
- Describe desirable sealant properties and characteristics;
- Describe recommended installation procedures; and
- Identify typical construction problems and appropriate remedies.

Suggested Total Credit Hours (maximum) = 0.5. If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.

Course: TC3 PCC Pavement Preservation Series: Partial-Depth Repairs - AASHTO

Description: Course overview: This module covers the procedures for partial-depth repairs (PDR) on portland cement concrete (PCC) pavements. PDR is the removal and replacement of small, shallow areas of deteriorated PCC at spalled or distressed joints. This module is part of the curriculum from the Concrete Pavement Preservation Series, which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies.

Target audience: This training is designed for design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it is also of value to those that are new to the field.

Learning outcomes: Upon completion of the course, participants will be able to:
- List benefits and appropriateness of partial-depth repairs;
- List the advantages and disadvantages of different available repair materials;
- Describe recommended construction procedures; and
- Identify typical construction problems and appropriate remedies.

Suggested Total Credit Hours (maximum) = 0.5. If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.

Course: TC3 PCC Pavement Preservation Series: Paving Inspection

Description: Course overview: This course has been prepared to provide guidance and instruction to inspectors involved in the construction of Portland cement concrete (PCC) pavements. The important tasks involved in this work are explained and proper procedures are described.

Target audience: This training is designed for anyone involved in the process of
placement and inspection of PCC paving. It is applicable to anyone desiring a better understanding of activities and inspection procedures on PCC paving projects.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify the materials in a PCC mixture and the concrete properties;
- Comprehend design project plans and recognize the joints types and saw cuts;
- Identify the safety requirements and recognize safe traffic control practices;
- Recognize and comprehend the use of the equipment in a PCC paving project;
- Recognize various sub grade treatments;
- Inspect project tasks for compliance with pre-paving requirements, i.e., survey stakes, proof rolling, subgrade, and dowel baskets;
- Inspect project tasks for compliance with PCC paving requirements, i.e., string line, place and consolidate, finish, and texture; and
- Perform post-construction checks. Total Credit Hours (maximum) = 5.0.

**Course:** TC3 PCC Pavement Preservation Series: Preventive Maintenance and Pavement Preservation Concepts - AASHTO

**Description:** Course overview: This module is part of the curriculum from the Concrete Pavement Preservation Series, which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. This module discusses how preventative maintenance impacts pavement preservation, good candidates for preservation, and the benefits to pavement preservation.

Target audience: This training is designed for design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it is also of value to those that are new to the field.

Learning outcomes: Upon completion of the course, participants will be able to:
- Define pavement preservation and preventive maintenance;
- Describe characteristics of suitable pavements for preventive maintenance;
- Describe the importance of selecting and placing the right treatment and placing it at the right time; and
- List the benefits of pavement preservation.

Suggested Total Credit Hours (maximum) = 0.2. *If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.*

**Course:** TC3 PCC Pavement Preservation Series: Retrofitted Edge Drains - AASHTO

**Description:** Course overview: This module presents design and construction information on
retrofitted edge drains. This treatment is not as widely used as it once was, largely because it has limited applicability. Specifically, it must be targeted to those pavements that are 1) in good structural condition and 2) have bases with some degree of permeability that would allow water to be drained from beneath the pavement and to the edge drain. This module is part of the curriculum from the Concrete Pavement Preservation Series, which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies.

Target audience: This training is designed for design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it is also of value to those that are new to the field.

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

- List benefits of drainage;
- List components of edge drain systems;
- Describe recommended installation procedures; and
- Identify typical construction problems and remedies.

Suggested Total Credit Hours (maximum) = 0.5. If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.

Course: **TC3 PCC Pavement Preservation Series: Slab Stabilization and Slab Jacking - AASHTO**

Description: Course overview: This module covers the use of slab stabilization (also known as undersealing) and slab jacking of concrete pavements. Slab stabilization restores support beneath slabs where voids have been detected, and slab jacking is used to raise depressed or settled slabs. This module is part of the curriculum from the Concrete Pavement Preservation Series, which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies.

Target audience: This training is designed for design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it is also of value to those that are new to the field.

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

- List benefits of slab stabilization and slab jacking;
- Describe recommended materials and mixtures;
- Describe recommended construction steps for both procedures; and
- Identify typical construction problems and remedies for slab stabilization.

Suggested Total Credit Hours (maximum) = 0.5. If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually
spend on the course, as documented on your Transcript Form.

Course: TC3 PCC Pavement Preservation Series: Strategy Selection - AASHTO

Description: Course overview: This module provides guidance on the selection of concrete pavement preservation strategies. Based on a collective review of a number of recent published documents, this module covers the seven-step process that can be used to determine the most appropriate treatment (or combination of treatments) for a portland cement concrete (PCC) pavement. This module is part of the curriculum from the Concrete Pavement Preservation Series, which presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies.

Target audience: This training is designed for design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it is also of value to those that are new to the field.

Learning outcomes: Upon completion of the course, participants will be able to:
- Describe the treatment selection process;
- List the components of a life-cycle cost analysis; and
- List other factors that may enter the selection process.

Suggested Total Credit Hours (maximum) = 0.2. *If you are interested in claiming Credit Hours, please note that they must be supported by the Total Time you actually spend on the course, as documented on your Transcript Form.*

Course: TC3 Personal Protective Equipment (PPE) - AASHTO

Description: Course overview: The Personal Protective Equipment (PPE) course provides students with the knowledge and skills necessary for proper care and use of PPE. The course coverage includes eye and visibility protection, head protection, respirators, hearing protection, hand and foot protection, and fall protection. Participants will learn when training is necessary, the proper use and care of PPEs, and the skill necessary to use PPEs prior to performing work.

Target audience: This training would be beneficial to contractors, agencies, or anyone involved with construction and maintenance projects.

Learning outcomes: Upon completion of this course, participants will be able to:
- Understand when training or retraining in the proper use of PPE is necessary;
- Understand use, proper care, useful life, limitations, and timely disposal of PPE; and
- Demonstrate understanding of the necessary skills required for using PPE before performing work requiring the use of such equipment.
Course: **TC3 Pile Driving - AASHTO**

**Description:** Course overview: This course is designed to help participants prepare for the Pile Driving Inspector's Qualification Test. It was developed by the Florida Department of Transportation (FDOT) and adapted for general use by TC3. Inside you will find information on various topics that are necessary for a pile inspector to know. From the pile driving system to the inspector's role and responsibilities, there is a wealth of information presented in this tutorial that will provide you with the knowledge and tools to complete the qualification process. This course offers professional development hours (PDHs). You will see the PDHs on your course completion certificate, which also serves as documentation of your attendance. PDH requirements vary, therefore, it is up to you to determine whether or not this particular course qualifies under your State or board requirements. Training level: This training is recommended for the Transportation Curriculum Coordination Council levels II, III, and IV. Target audience: Federal, State, and local highway agency employees and consultant personnel who inspect foundations or major structures, as well as project managers and construction engineers responsible for pile driving construction inspection may benefit from this course. Learning outcomes: Upon completion of the course, participants will be able to: Explain the pile driving system, including pile types, hammers, cushions, jets, augers, leads, and others; Explain the pile driving process, from plans to installing pile foundation systems; and Describe the inspectors role in ensuring that the pile foundation is installed in accordance with the plans and specifications.

Course: **TC3 Pipe Installation, Inspection and Quality - AASHTO**

**Description:** Course overview: This course is focused on the three basic pipe materials: concrete, metal, and plastic. It contains important instructional material, procedures, and guidance that has been developed to maintain uniformity among pipe inspectors. This course will cover what you need to know, do, and look for during the inspection of pipe installation. This training provides an in-depth view of the basic materials used in pipe construction. The course modules will address the different types of pipe as well as the foundation work, bedding selection, placement, joint sealants, backfilling and documentation for concrete, metal and plastic pipe. The information in this training will help transportation professionals involved in the installation, inspection, and quality of pipe on highway construction projects improve their understanding of the factors that contribute to high-quality installations. Target audience: This course targets field personnel involved in all aspects of highway construction—from engineers to technicians. The ideal audience will have a mix of experience and responsibility levels so that agency-specific practices can be shared by more experienced participants with those who are newer to the field. The course materials are also appropriate for project manager/resident engineer involvement. Learning outcomes: Upon completion of the course, participants will be able to:
• Identify basic material pipe types;
• Recognize proper foundation and bedding requirements for pipe;
• Link different types of pipe with its required specifications for installation;
• Identify common errors to avoid when dealing with placement, joints, and backfilling of pipe; and
• Recognize the importance of accurate records and reporting.

Course: **TC3 Plan Reading: Basics - AASHTO**

**Description:** This training describes the foundational information needed to begin reading and understanding highway plans. The ability to read plans is essential for anyone involved in highway or bridge construction. This training includes an overview of the title page and its components, station numbers, townships, and quantity estimates. This course is part of the curriculum from the Plan Reading Series, 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. Target audience: This training is designed for those involved in the construction process and/or maintenance activities of highways and/or highway structures. It is applicable to anyone desiring a better understanding of plan reading.

Learning outcomes: Upon completion of the course, participants will be able to:
- Describe the components of a plan's title sheet;
- Calculate the distance between two station numbers;
- Explain how a township is designated in a plan; and
- Identify quantity estimates for given supplies and materials.

Course: **TC3 Plan Reading: Bridge Plans - AASHTO**

**Description:** This training reviews the information found in a bridge plan. The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training is part of the curriculum from the Plan Reading Series, 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. Target audience: This training is designed for those involved in the construction process and/or maintenance activities of highways and/or highway structures. It is applicable to anyone desiring a better understanding of plan reading.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify the major components of a bridge structure;
- Describe the information provided in a bridge plan; and
- Using a bridge plan, explain details of the project.
Course: TC3 Plan Reading: County Plans - AASHTO

Description: This training reviews the information found in a county plan. The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training is part of the curriculum from the Plan Reading Series, 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.

Target audience: This training is designed for those involved in the construction process and/or maintenance activities of highways and/or highway structures. It is applicable to anyone desiring a better understanding of plan reading.

Learning outcomes: Upon completion of the course, participants will be able to:
- Describe the information provided in a county plan; and
- Given a county plan, explain the details of the project.

Course: TC3 Plan Reading: Culvert Plans - AASHTO

Description: This training reviews the information found in a culvert plan. The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training is part of the curriculum from the Plan Reading Series, 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.

Target audience: This training is designed for those involved in the construction process and/or maintenance activities of highways and/or highway structures. It is applicable to anyone desiring a better understanding of plan reading.

Learning outcomes: Upon completion of the course, participants will be able to:
- Identify the major components of a culvert;
- Describe the information provided in a culvert plan; and
- Using a culvert plan, explain details of the project.

Course: TC3 Plan Reading: Erosion and Sediment Control Plans - AASHTO

Description: This training reviews the information found in the Erosion and Sediment Control Plans section of a highway plan. The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training is part of the curriculum from the Plan Reading Series, 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.

Target audience: This training is designed for those involved in the construction process and/or maintenance activities of highways and/or highway structures. It is applicable to anyone desiring a better understanding of plan reading.

Learning outcomes: Upon completion of the course, participants will be able to:
Describe the information provided in the erosion and sediment control plans; and explain the erosion and sediment control items used in the plan.

Course: **TC3 Plan Reading: Grading Plans - AASHTO**

*Description:* This training reviews the information found in the Grading Plans section of a highway plan. The ability to read plans is essential for anyone involved in highway or bridge construction. This training is part of the curriculum from the Plan Reading Series, 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.

*Target audience:* This training is designed for those involved in the construction process and/or maintenance activities of highways and/or highway structures. It is applicable to anyone desiring a better understanding of plan reading.

*Learning 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; and
- Describe the different elements that can be depicted in plan and profile sheets.

Course: **TC3 Plan Reading: Right-of-Way Plans - AASHTO**

*Description:* This training reviews the information found in right-of-way plans for a highway project. The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training is part of the curriculum from the Plan Reading Series, 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.

*Target audience:* This training is designed for those involved in the construction process and/or maintenance activities of highways and/or highway structures. It is applicable to anyone desiring a better understanding of plan reading.

*Learning outcomes:* Upon completion of the course, participants will be able to:
- Explain the purpose of right-of-way plans;
- Explain when right-of-way is needed;
- Describe the information provided in right-of-way plans;
- Describe when land is acquired for easements;
- Explain how parcels are used in right-of-way plans; and
- Describe how utilities will be handled for the project.

Course: **TC3 Plan Reading: Traffic Control Plans – AASHTO**
Description: This training reviews the information found in the Traffic Control Plans section of a highway plan. The ability to read plans is essential for anyone involved in highway or bridge construction. This training is part of the curriculum from the Plan Reading Series, 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.

Target audience: This training is designed for those involved in the construction process and/or maintenance activities of highways and/or highway structures. It is applicable to anyone desiring a better understanding of plan reading.

Learning outcomes: Upon completion of the course, participants will be able to:
- Describe the information provided in the traffic control plans;
- Identify signs to be used in the project; and
- Identify sign locations.

Course: TC3 Plant Production of Asphalt Mix - AASHTO

Description: This course focuses on the basic aspects of plant operation including batch and drum plants, cold feeds, proportioning, control systems, silos and batchers, binder storage, scales and load outs.

There are five modules that make up this course. They are:
1. Introduction to Plant Production of Asphalt
2. Plant Fundamentals
3. Asphalt Materials
4. Plant Operation
5. Inspection Duties and Checks

Target audience: This course targets agency plant inspectors/technicians and industry quality control (QC) technicians involved in highway construction projects. This course is also a good refresher for supervisors and managers who are involved in plant production.

Learning outcomes: Upon completion of this course, participants will be able to:
- Define asphalt;
- Summarize the asphalt manufacturing process flow;
- Describe the safety issues related to the plant production of asphalt;
- Explain asphalt plant certification procedures;
- Contrast the different asphalt plant types;
- List the various types of asphalt plant equipment;
- Describe the sourcing materials used for asphalt production;
- Summarize stockpiling considerations related to asphalt materials;
- Explain the considerations related to asphalt mix design;
- Describe the key personnel involved in asphalt plant production;
- Explain plant operation activities including loading, hauling, and sampling and testing;
• Describe troubleshooting strategies related to asphalt segregation and coating; and
• Describe the key duties and checks related to the inspection of asphalt production.

Course:  **TC3 QA: Basic Statistical and Probability Concepts - AASHTO**

Description:  This course covers the fourth phase of statistical analysis: interpreting the data. The first three phases of statistical analysis have concentrated on collecting, organizing, and analyzing sample data. While all three previous phases are important, it is even more important to understand how the information provided by the sample data is used to generalize about the population or lot from which the sample data was obtained. This last phase is crucial to writing and interpreting comprehensible and defensible specifications.

This course is part of the TC3 series on Quality Assurance. The QA Series is made up of 16 different courses—each of which presents a different concept within QA. This series begins with introductory information about QA programs and specifications and works its way into implementing a QA program at your agency.

Training level: This training is recommended for the Transportation Curriculum Coordination Council levels III and IV.

Target audience: The target audience for this training includes agency, contractor, or consultant personnel that are involved with the statistics included in quality assurance and quality control.

Learning outcomes: Upon completion of this course, participants will be able to:
• Define statistical inference, probability, and probability distributions; and
• Identify various probability distributions.

Course:  **TC3 QA: Calculating Statistical Values to Analyze Data - AASHTO**

Description:  This course focuses on the third phase of statistical analysis: analyzing the data or the quantitative analysis of data. All four phases of statistical analysis are important, but this phase provides the basic information that will be used to write a comprehensible quality assurance (QA) specification.

This course is part of the TC3 series on Quality Assurance. The QA Series is made up of 16 different courses—each of which presents a different concept within QA. This series begins with introductory information about QA programs and specifications and works its way into implementing a QA program at your agency.

Training level: This training is recommended for the Transportation Curriculum Coordination Council levels III and IV.

Target audience: The target audience for this training includes agency, contractor, or consultant personnel that are involved with the statistics included in quality assurance and quality control.

Learning outcomes: Upon completion of this course, participants will be able to:
• Calculate mean or average, population standard deviation, sample standard
deviation, variance, and coefficient of variation; and
• Determine degrees of freedom.

Course: **TC3 QA: Measuring Variability and Understanding Its Sources - AASHTO**

Description: This course covers variability in highway materials and provides an understanding of precision, accuracy, and bias. This course is very important because it introduces one of the most misunderstood aspects of highway materials and construction: variability. This course is part of the TC3 series on Quality Assurance. The QA Series is made up of 16 different courses—each of which presents a different concept within QA. This series begins with introductory information about QA programs and specifications and works its way into implementing a QA program at your agency.

Training level: This training is recommended for the Transportation Curriculum Coordination Council levels III and IV.

Target audience: The target audience for this training includes agency, contractor, or consultant personnel that are involved with the statistics included in quality assurance and quality control.

Learning outcomes: Upon completion of this course, participants will be able to:
• Describe how to measure variability;
• Differentiate between information provided by split and independent samples, and state appropriate uses for each; and
• Explain how precision and bias statements are measures of repeatability.

Course: **TC3 QA: Normal Distribution (The Normal Curve) and Related Calculations – AASHTO**

Description: This course covers the most common distribution found in materials and construction: the normal curve. Numerous measurements that occur in highway construction distribute themselves about some average value with the majority of the measurements grouped near the mean. The normal distribution, therefore, is the most important probability distribution for the case of highway materials and construction. This course is part of the TC3 series on Quality Assurance. The QA Series is made up of 16 different courses—each of which presents a different concept within QA. This series begins with introductory information about QA programs and specifications and works its way into implementing a QA program at your agency.

Training level: This training is recommended for the Transportation Curriculum Coordination Council levels III and IV.

Target audience: The target audience for this training includes agency, contractor, or consultant personnel that are involved with the statistics included in quality assurance and quality control.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain the importance of the normal distribution; and
• Relate the concept of probability to the calculation of risks.

Course: **TC3 QA: Quality Control, Using Control Charts – AASHTO**

**Description:** A quality control plan (QCP) is a project-specific document prepared by the contractor that identifies all QC personnel and procedures that will be used to maintain all production and placement processes “in control” and meet the agency specification. This covers how to use QCPs, as well as how they help to ensure success in a project.

This course is part of the TC3 series on Quality Assurance. The QA Series is made up of 16 different courses—each of which presents a different concept within QA. This series begins with introductory information about QA programs and specifications and works its way into implementing a QA program at your agency.

Training level: This training is recommended for the Transportation Curriculum Coordination Council levels III and IV.

Target audience: The target audience for this training includes agency, contractor, or consultant personnel that are involved with the statistics included in quality assurance and quality control.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain various ways in which a quality control plan can be developed and used to maintain the quality of a product or service;
• Describe a typical quality control plan;
• Relate variability to quality control;
• Describe different types of control charts and their applications; and
• Establish and calculate control chart limits.

Course: **TC3 Quality and Durability Issues Related to Cold Weather Concreting - AASHTO**

**Description:** This course covers the fundamentals and consequences of cold weather concreting and the precautions needed to ensure quality concrete production and placement depending on the type of concrete and application. Best practices related to construction and inspection of cold-weather concreting activities are also discussed.

There are three modules that make up this course. They are:
- Introduction to Cold Weather Concreting;
- Effects of Temperature, Moisture, and Mix Properties; and
- Planning, Placement, Protection, and Curing.

Target audience: This course targets members of the transportation industry, particularly departments of transportation and consultant groups that include inspectors, engineers, supervisors, and project managers.
Learning outcomes: Upon completion of this course, participants will be able to:
Define cold weather concreting and associated terminology;
Explain the rationale and considerations related to cold weather concreting;
Describe how concrete strength and durability is affected by temperature and moisture levels;
Summarize the application of admixtures and aggregates with relationship to cold weather concrete mix design;
Describe the importance of planning prior to cold weather concreting;
Explain necessary pre-construction planning information that needs to be determined;
Summarize cold weather concreting placement considerations;
Describe temperature protection and moisture control techniques applied during cold weather concreting; and
Explain best practices related to curing concrete in cold weather.

Course: **TC3 Quality Assurance Concepts - AASHTO**

**Description:** The Federal Highway Administration (FHWA) has established requirements that each State Transportation Department must develop a quality assurance (QA) program that is approved for projects on the National Highway System. This course provides an introduction to QA programs and concepts, and why they are important. This course is made up of five lessons:
- Quality Assurance Programs;
- Measurements and Calculations;
- Significant Figures;
- Accuracy and Precision; and
- Tolerance.
Target audience: The target audience for this training is anyone involved with an agency or organization’s quality assurance program. Learning outcomes: Upon completion of this course, participants will be able to: Define quality assurance program; Compare mass, force, and weight; Explain how significant figures are used in measurement and calculation; Compare accuracy and precision; and Define tolerance in mathematical operations.

Course: **TC3 Quality Management Systems - AASHTO**

**Description:** This course covers the activities involved in establishing and implementing a laboratory quality management system based on AASHTO R 18. The course content covers both the management and technical requirements. Through this course, participants will become familiar with the expectations set forth in R 18 and learn some tricks of the trade to comply with this practice. There are six modules that make up this course. They are:
1. Introduction;
2. General Laboratory Structure;
3. Training and Evaluation;
4. Technical Requirements and Equipment;
5. Internal Audits and Management Reviews;
6. Testing and Reporting Activities, Corrective Actions, Record Retention; and
7. Suggestions for Establishing and Implementing a Quality Management System.

Target audience: This course is intended for novice and experienced lab managers from both industry and agency DOTs, quality managers, and any assurance staff.

Learning outcomes: Upon completion of this course, participants will be able to:
• List the benefits of implementing a quality management system;
• Explain the purpose of R 18, including key terms that are covered;
• List the general laboratory structure requirements outlined in R 18;
• List the position description requirements (general and job-specific) that should be maintained by a lab;
• Summarize the roles of the lab technical and quality managers;
• Describe the key training and competency evaluation activities that should be performed;
• Describe how training records are recorded and maintained;
• List some lab measurement-related considerations;
• Explain the importance of establishing general laboratory equipment and specific-item equipment procedures within a lab;
• Describe the difference between calibration, standardization, checks, and maintenance;
• Describe how lab equipment records should be kept;
• List some of the required lab sample management activities outlined in R 18;
• Explain why it is important to maintain quality test records and reports;
• List some of the activities a lab can perform to further assure quality results;
• List some of the key activities involved in effective internal audits and management reviews;
• Describe how corrective actions should be performed;
• List what records should be maintained, per R 18; and
• List some useful suggestions for establishing and implementing a quality management system.
QA specifications.
This course is part of the TC3 series on Quality Assurance. The QA Series is made up of 16 different courses—each of which presents a different concept within QA. This series begins with introductory information about QA programs and specifications and works its way into implementing a QA program at your agency.
This course offers professional development hours (PDHs). You will see the PDHs on your course completion certificate, which also serves as documentation of your attendance. PDH requirements vary, therefore, it is up to you to determine whether or not this particular course qualifies under your State or board requirements.
Training level: This training is recommended for the Transportation Curriculum Coordination Council levels III and IV.
Target audience: The target audience for this training includes agency, contractor, or consultant personnel that are involved with quality assurance and quality control.
Learning outcomes: Upon completion of this course, participants will be able to:
• Compare percent within limits (PWL) with average absolute deviation (AAD); and
• Evaluate data to establish acceptable quality level (AQL) and rejectable quality level (RQL) as well as an operating characteristic (OC) curve.

Course: **TC3 Random Sampling of Construction Materials - AASHTO**

Description: This course introduces the basics of construction material sampling, including why random, unbiased sampling is so important for quality control. It also covers types of sampling and then applies what you’ve learned in real-world scenarios. This course is made up of three lessons:

1. The Significance of Sampling;

2. Straight Random Sampling vs. Stratified Random Sampling; and
3. Real World Examples of Random Sampling.

Target audience: The target audience for this training is anyone involved with the sampling of construction materials. Learning outcomes: Upon completion of this course, participants will be able to: Explain the need for random sampling; Compare straight random sampling and stratified random sampling; and Give an example of straight random sampling using random numbers.

Course: **TC3 Recognizing Roadside Weeds - AASHTO**

Description: Course overview: The first step in determining an appropriate weed control strategy is to identify the weed plant. There are numerous plants growing along many roadsides that can be considered weeds. This is a basic course in the area of weed identification. Most weeds are territorial to different climates and regions, therefore, it is difficult to
nationwide identify weeds that are dealt with by different State DOTs. This training focuses specifically on southeastern States and is organized in alphabetical order of the weeds that will be covered. For more information on how to stop the migration of weeds, contact your State vegetation management program.

Target audience: This course is designed for entry level individuals working in vegetation management.

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

• Understand the definition of a weed;
• Describe the reasons for weed control; and
• Identify several of the most common weeds.

Course: TC3 Removal and Replacement of Bridge Coatings - AASHTO

Description: This course encourages a better understanding of the process to completely remove and replace bridge coatings for the structural steel elements of bridges in service. This training emphasizes containment, surface preparation, and painting. The structural steel for a bridge is painted primarily to resist corrosion but can also be painted for aesthetic purposes.

The original coating is often fully or partially shop applied as part of the original construction and when combined with bridge preservation activities such as bridge cleaning and joint repairs, the original coating should perform well for many years. Invariably, exposure to chlorides from deicing operations or a coastal climate, failed drainage systems, UV light, foreign chemicals, and debris all conspire to degrade the coating system. Without proper maintenance, the coating will eventually require a complete replacement.

Target audience: The target audience for this training is the technician performing the removal and replacement of bridge coatings; however, it is also good information for supervisors.

Learning outcomes: Upon completion of this course, participants will be able to:

• Describe a site assessment for performing removal and/or replacement of bridge coatings;
• Explain containment versus recovery;
• Describe the coating removal methods in bridge surface preparation;
• Define "anchor profile";
• List the best practices for coating application;
• Explain the causes of coating failures; and
• Define "hold points".

Course: TC3 Repair of Bridge Concrete Substructure Elements - AASHTO

Description: This course was developed to provide a better understanding of the process to repair
bridge concrete substructures. This course covers the most common repairs for concrete bridge elements and provides checklists for various elements that comprise the substructure of a bridge. The course is based on the content in the Pocket Guide for Repair of Bridge Concrete Substructure Elements. This course offers professional development hours (PDHs). You will see the PDHs on your course completion certificate, which also serves as documentation of your attendance. PDH requirements vary, therefore, it is up to you to determine whether or not this particular course qualifies under your State or board requirements. Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, III, and IV. Target audience: The target audience for this training is contractors and inspectors performing or inspecting repair on bridge substructures. This course is also a good review for managers and engineers. Learning outcomes: Upon completion of this course, participants will be able to:
• Explain the process for damage assessment of a bridge substructure;
• Describe the difference between structural repairs and surface repairs;
• Describe the various element repairs performed on a bridge substructure; and
• List the specialized methods used to repair substructures.

Course: TC3 Revegetation During Construction - AASHTO

Description: Course overview: When it comes to stabilizing disturbed construction sites, vegetation is a key component for several reasons. Vegetation protects the soil surface, reduces stormwater runoff, increases infiltration, anchors the soil, and intercepts soil and contaminant particles before they enter a storm sewer or conveyance system. This training provides information on topsoil, compost, sodding and seeding for erosion control, fertilizer, watering, and soil retention blankets. This course covers the fundamental principles necessary to ensure successful revegetation and describes the most common revegetation methods used in the field. Lastly, the role of the inspector on revegetation projects is discussed. Target audience: The target audience for this training is contractors, consultants, or agencies who are performing seeding, sodding, hydraulic mulching, erosion control, and/or stabilization efforts on a highway construction project. This training is also useful for inspectors who are involved in revegetation efforts. Learning outcomes: Upon completion of this course, participants will be able to:
• Describe the fundamental principles necessary to ensure successful revegetation;
• List the common revegetation methods used in the field; and
• Explain items that the inspector needs to watch for during the contractor’s revegetation efforts.

Course: TC3 Roller Compacted Concrete Pavements - AASHTO

Description: Course overview: The Roller Compacted Concrete (RCC) Pavements course provides
detailed overviews of RCC properties and materials, mixture proportioning, structural design issues, and production and construction considerations, plus troubleshooting guidelines and an extensive reference list for more comprehensive information. This course contains six modules. Module 1 is an introduction in RCC covering the characteristics, benefits, limitations, selection considerations, and typical uses. Module 2 discusses the property differences between RCC and conventional mixes, material requirements, and testing. Module 3 covers mix proportioning of RCC. Module 4 gets into structural design of RCC pavements. Module 5 acquaints the student with the production and proper handling and storage of materials, mixing and batching, and production planning. Module 6 covers the actual construction of a RCC pavement. All of the modules for this training were developed from the August 2010 "Guide for Roller-Compacted Concrete Pavements", which is available from the Portland Cement Association website at www.cement.org/pavements. Target audience: This training is intended for agencies, contractors, materials suppliers, and others. It provides a thorough introduction to and updated review of RCC and its many paving applications. Learning outcomes: Upon completion of the course, participants will be able to:
- Define RCC key elements and common uses;
- Define RCC properties and materials;
- Describe RCC mix proportioning;
- Describe structural design of RCC pavement;
- Identify RCC production; and
- Identify RCC pavement construction.

Course: **TC3 Rockfall Stabilization - AASHTO**

Description: Course overview: This course will introduce the key concepts in rockfall stabilization, including tools and methods used in stabilization and reinforcement. The purpose of this course is to familiarize the construction inspector with current techniques utilized in stabilizing rock slopes with respect to rockfall. This course contains six modules:
- Module 1: Introduction;
- Module 2: Scaling;
- Module 3: Rock Reinforcement and Drainage;
- Module 4: Surface Stabilization;
- Module 5: Rockfall Containment Systems on Slope; and
- Module 6: Rockfall Barriers Along Edge of Road.
Target audience: Federal, State, and local highway agency employees and consultant personnel who are involved in the stabilization of rock slopes, as well as construction inspectors responsible for rockfall stabilization may benefit from this course.

Course: **TC3 Safe Use of Basic Carpentry Tools, Module 1 of 3 - AASHTO**
Description: Course overview: Carpentry tools are a common part of our day-to-day lives and are present in nearly every industry. These tools help us to easily perform tasks that otherwise would be difficult or impossible. On the other hand, these simple tools can be hazardous and have the potential for causing severe injuries when used or maintained improperly. Special attention toward carpentry tool safety is necessary in order to reduce or eliminate these hazards.

In the process of removing or avoiding the hazards, workers must learn to recognize the hazards associated with the different types of tools and the safety precautions necessary to prevent those hazards. This is a basic course in the safe use of carpentry tools – it does not go into regulatory compliance or manufacturer's instructions. For more information on hand and power operated tool safety, contact your State safety office or the tool manufacturer. This training will cover the proper use and maintenance of carpentry tools. The first of the three modules is:

- Module 1: Handsaws, Ladders, Screwdrivers and Squares.

Course: TC3 Safe Use of Basic Carpentry Tools, Module 2 of 3 - AASHTO

Description: Module 2: Hammers, Sledge Hammers, Pry Bars, Rulers, and Levels. This is a basic course in the safe use of carpentry tools – it does not go into regulatory compliance or manufacturer's instructions. For more information on hand and power operated tool safety, contact your State safety office or the tool manufacturer.

Course: TC3 Safe Use of Basic Carpentry Tools, Module 3 of 3 - AASHTO

Description: Module 3: Portable Power Tools. This is a basic course in the safe use of carpentry tools – it does not go into regulatory compliance or manufacturer's instructions. For more information on hand and power operated tool safety, contact your State safety office or the tool manufacturer.

Course: TC3 Safe Use of Hand and Power Operated Tools - AASHTO

Description: Course overview: Hand and power tools are a common part of our day-to-day lives and are present in nearly every industry. These tools help us to easily perform tasks that otherwise would be difficult or impossible. On the other hand, these simple tools can be hazardous and have the potential for causing severe injuries when used or maintained improperly. Special attention toward hand and power tool safety is necessary in order to reduce or eliminate these hazards. In the process of removing or avoiding the hazards, workers must learn to recognize the hazards associated with the different types of tools and the safety precautions necessary to prevent those hazards.
This training will cover the proper use and maintenance of hand tools and a variety of power tools. This is a basic course in the safe use of hand and power operated tools – it does not go into regulatory compliance or manufacturer’s instructions. For more information on hand and power operated tool safety, contact your State safety office or the tool manufacturer.

Course: **TC3 Safety Orientation, Part 1 of 2 - AASHTO**

**Description:** Part 1 of 2. Course overview: This training provides a general safety awareness orientation. Remember the motto: "Do it safely, or don't do it!" Prevention of injury and safeguarding health is the responsibility of everyone – both management and employees. The safety and health of employees is the overriding concern in all phases of operations. Completion of the first module will provide you with a general awareness of policy, responsibilities, what to wear, tools, hazards, and personal protective equipment (PPE).

Course: **TC3 Safety Orientation, Part 2 of 2 - AASHTO**

**Description:** Part 2 of 2. The second module of this course covers proper housekeeping practices, critical elements of hazard communication, confined spaces, procedure for lockout or tagout, and components of health and safety policies. Learning outcomes: Upon completion of the 2-part course on Safety Orientation, participants will be able to:
- Identify the reasons for having a safety policy;
- Describe the employee and supervisor responsibilities at the workplace;
- Identify what is appropriate and safe to wear to work;
- Describe the different types of tools and the proper ways to use them;
- Describe standard operating procedures to control for hazards;
- Identify the components of PPE;
- Identify proper housekeeping practices;
- Describe the critical elements of hazard communication;
- Define confined spaces;
- Describe the procedure for lockout or tagout; and
- Identify the important components of health and safety policies.

Course: **TC3 Shop Drawings - AASHTO**

**Description:** This course focuses on the foundational information needed to begin reading and understanding shop drawings. This includes an overview of the title page and its components, the bill of materials, including quantities and dimensions of materials. There are three modules that make up this course. They are: Introduction to Shop Drawings; Steel Structure Shop Drawings; and Concrete Structure Shop Drawings.
Course: TC3 Spot, Zone, and Overcoating Existing Bridge Coatings - AASHTO

Description: This course was designed for bridge preservation practitioners undertaking spot, zone, and overcoat painting projects. These coating strategies can extend the service life of the original coating and are normally simpler to implement than full removal and replacement. For this reason, they can offer economic and environmental advantages when site-specific details are appropriate.

Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, III, and IV.

Target audience: The target audience for this training is the technician performing spot, zone, and overcoating existing bridge coatings; however, it is also good information for supervisors and managers.

Learning outcomes: Upon completion of this course, participants will be able to:

- Explain the difference between spot, zone, and overcoating of bridge coatings;
- Define site assessments and condition assessments;
- Explain the tape test and the pull-off test;
- Describe the traffic control and personal protective equipment (PPE) required for bridge coating work;
- Explain the need for containment systems and rigging;
- Describe the process for surface preparation; and
- Describe the process for coating application.

Course: TC3 Structure Inspection: Subsurface - AASHTO

Description: This course provides an overview of the subsurface and foundation-related features of structures that need to be monitored and inspected during construction. The focus is on the inspection of structures specifically related to the geotechnical connection between the structure and earth. The Subsurface course is the first course in the Construction Inspection of Structures Series. The Construction Inspection of
TC3 / AASHTO Courses

Course: **TC3 Structure Inspection: Substructures - AASHTO**

Description: The Substructures course is the second course in the Construction Inspection of Structures Series. This course provides an introduction to substructures and key inspection elements, specifically the components that support the girders or beams of the superstructure deck, such as abutments, bents, and piers. Topics include general construction considerations, reinforcement and falsework, bridge drainage, cast-in-place, precast, 3D technology, and as-builts. The Construction Inspection of Structures Series consists of four separate, standalone courses that provide introductory information on foundations (below the ground), substructures (below the bearings), superstructures (above the substructure), and rehabilitation (repair of structures). The other three courses in the series are: Construction Inspection of Structures Series: Substructures; Construction Inspection of Structures Series: Rehabilitation and Maintenance; and Construction Inspection of Structures Series: Superstructures.

Target audience: This course is designed for individuals with an interest in bridge construction in the following roles: minimal experience and/or entry level construction engineers, inspectors, and technicians. This training is focused toward the technicians and inspectors, but is also an excellent refresher for supervisors and managers.

Learning outcomes: Upon completion of this course, participants will be able to:

- Explain the key types, activities, and safety practices involved in subsurface construction;
- Describe the activities that are done to prepare the subsurface for construction;
- Explain how falsework and temporary work bridges are utilized during subsurface construction;
- Explain how piles are used to establish bridge foundations;
- Describe the inspection activities that should be performed during pile foundation construction;
- Explain how drilled shafts are used to establish bridge foundations
- Describe the inspection activities that should be performed during drilled shaft foundation construction;
- Explain how spread footings are used to establish bridge foundations; and
- Describe the inspection activities that should be performed during spread footing foundation construction.
Structures Series: Subsurface; Construction Inspection of Structures Series: Rehabilitation and Maintenance; and Construction Inspection of Structures Series: Superstructures.

Target audience: This course is designed for individuals with an interest in bridge construction in the following roles: minimal experience and/or entry level construction engineers, inspectors, and technicians. This training is focused toward the technicians and inspectors, but is also an excellent refresher for supervisors and managers.

Learning outcomes: Upon completion of this course, participants will be able to:
- Identify the key types, activities, and safety practices involved in substructure construction;
- Describe how falsework and forms are used to prepare the substructure for bridge construction;
- Identify the different types of retaining walls and their applications;
- Explain how retaining walls are inspected during construction;
- Describe the different types of abutments and their applications;
- Explain how abutments are inspected during construction.

Course: **TC3 Structure Inspection: Superstructures - AASHTO**

Description: This course provides an introduction to superstructures and key inspection elements, specifically the section of the structure above the substructure. Content for this course includes those parts of the bridge supported by the substructure (everything from the girders/beams up, including the bearing devices). Topics include general construction considerations, bearing installation, beam erection, post tensioning, bridge deck construction, barrier walls and railings, and bridge drainage. The Superstructures course is the third course in the Construction Inspection of Structures Series. The Construction Inspection of Structures Series consists of four separate, standalone courses that provide introductory information on foundations (below the ground), substructures (below the bearings), superstructures (above the substructure), and rehabilitation (repair of structures). The other three courses in the series are:
- Construction Inspection of Structures Series: Subsurface;
- Construction Inspection of Structures Series: Substructures;
- Construction Inspection of Structures Series: Rehabilitation and Maintenance.

Target audience: This course is designed for individuals with an interest in bridge construction in the following roles: minimal experience and/or entry level construction engineers, inspectors, and technicians.

Learning outcomes: Upon completion of this course, participants will be able to:
- Identify the key activities and safety practices involved in the construction of superstructures;
- Describe the types of bearings that are installed on the superstructure, including how they are installed and inspected;
- Explain how beams are erected and inspected for the superstructure;
Explain pre-stressing and post tensioning of tendons and how they are inspected;
Describe how the bridge deck is constructed and inspected;
Explain the purpose of barrier walls and railings on the superstructure and how they are inspected; and
Describe the important bridge drainage practices related to the construction of the superstructure, as well as how bridge drainage systems should be inspected.

Course: **TC3 Structure Inspection: Rehabilitation and Maintenance - AASHTO**

Description: The Rehabilitation and Maintenance course is the fourth and final course in the Construction Inspection of Structures Series. This course addresses several of the key inspection elements that should be considered for rehabilitation and maintenance. Like a home, once built a structure needs to be maintained. This course covers topics including general construction considerations, demolition, bridge repair, joint installation and replacement, rehabilitation inspections, and coatings. The Construction Inspection of Structures Series consists of four separate, standalone courses that provide introductory information on foundations (below the ground), substructures (below the bearings), superstructures (above the substructure), and rehabilitation (repair of structures). The other three courses in the series are: Subsurface; Substructures; and Superstructures.

Target audience: This course is designed for individuals with an interest in bridge construction in the following roles: minimal experience and/or entry level construction engineers, inspectors, and technicians. This training is focused toward the technicians and inspectors, but is also an excellent refresher for supervisors and managers.

Learning outcomes: Upon completion of this course, participants will be able to:
- Explain the key safety practices and activities involved in the rehabilitation and maintenance of structures;
- Explain key inspection considerations of structural rehabilitation and repair;
- List some key repair activities related to concrete and steel structures, as well as decks;
- Describe how demolition is performed for bridge rehabilitation activities;
- Explain what rehabilitation activities are performed related to joints; and
- Describe how coatings are used as part of bridge rehabilitation and maintenance activities.

Course: **TC3 Superpave for Construction - AASHTO**

Description: The Superpave for Construction course contains information for field construction personnel on the Superpave mix design system and the control of field-produced hot mix asphalt (HMA). There are two modules in this course. The first module introduces Superpave HMA design testing and analysis. It covers design testing procedures, design analysis methods, and includes calculations to analyze the
volumetrics of paving samples. Module 2 covers relevant volumetric examples, including the use of phase diagrams to calculate volumetric properties. This course is an excellent learning tool to assist in understanding corrective actions for volumetric parameters.

Target audience: This training is targeted to intermediate and advanced technicians from both contractor and agency employment, who are involved in construction of pavements using Superpave.

Learning outcomes: Upon completion of the course, participants will be able to:
- Describe the benefits of Superpave over previous mix design methodologies;
- Understand Superpave mix design procedures and testing;
- Understand mix design analysis methods;
- Perform the calculations necessary to analyze the volumetrics of paving samples for comparison;
- Describe how to use phase diagrams to calculate volumetric properties;
- Describe factors that can influence key mass-volume relationships and calculations;
- Understand corrective action for volumetric parameters; and
- Calculate and evaluate volumetric properties through example problems.

Course: **TC3 Superpave Mix Design Process and Analysis - AASHTO**

**Description:** This training will give hot mix asphalt (HMA) materials engineers and/or materials technicians a better understanding of Superpave mix design process and analysis. The training will also give a better understanding of volumetrics for those who perform mix designs (typically technicians) and those who analyze the data (typically engineers).

Module 1: Mix Design. This module will describe the design of asphalt concrete mix and how Superpave mix design is analyzed.

Module 2: Volumetrics. This module will cover asphalt mixture volumetrics and volumetric properties using phase diagrams. Target audience: This training is targeted to those who are responsible for the laboratory testing and evaluation of Superpave mix designs.

Learning outcomes: Upon completion of the course, participants will be able to:
- Describe the procedures involved in the Superpave mix design;
- Recall how to select the proper materials for a Superpave mix;
- Describe how Superpave mix is compacted;
- Define HMA volumetric terms;
- Describe factors that can influence key mass-volume relationships and calculations; and,
- Describe how to use phase diagrams to calculate volumetric properties.

Course: **TC3 Thin-Polymer Bridge Deck Overlay Systems - AASHTO**
Description: The Thin-Polymer Bridge Deck Overlay Systems course was developed to give the user a better understanding of the use of thin-polymer overlay (TPO) systems for the preservation of concrete bridge decks. It is intended to educate the designer, owner, contractor, and inspectors about thin-polymer overlay installation best practices. By acting with a better understanding of their designed intent, the bridge owner can capitalize on the potential benefits of these overlay systems.

Target audience: The target audience for this training includes maintenance staff and contractors working on thin-polymer bridge deck overlay system projects.

Learning outcomes: Upon completion of this course, participants will be able to:

• List the reasons a thin-polymer overlay (TPO) system might be used on a bridge deck;
• Explain a condition assessment of a bridge deck;
• Explain the preparation process for a TPO;
• Describe the pre-application and staging process for a TPO; and
• Describe the application process for a TPO.

Course: TC3 Transportation Asset Management Overview - AASHTO

Description: Course overview: This training explains the basics of asset management and why it is important. This training will provide new terms and new ways of thinking about what you're already doing. More importantly, you'll understand why it's so important to be strategic and systematic when you're responsible for managing huge numbers of assets.

This training contains the following lessons:

• Lesson 1: What is Transportation Asset Management? This lesson will explain the concept of asset management, give examples of how asset management is used in the planning process, and explain how current asset management practices have been impacted by past transportation needs.

• Lesson 2: Asset Management Principles and Practices. This lesson lists the categories of activity that inform spending decisions, explains how policy goals and objectives impact asset management, relates planning and programming to managing assets, describes how asset management principles apply to program delivery, explains why system monitoring is necessary, and explains how quality data and analysis impact asset management.

Target audience: This course is intended for 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. In addition, those 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.
Learning outcomes: Upon completion of the course, participants will be able to:
• Explain what transportation asset management is and why it is important; and
• Describe the asset management principles and practices used to make informed spending decisions.

Course: TC3 Trenchless Technology - AASHTO

Description: Course overview: This course provides an introduction to trenchless technology, including its purpose and history, and explains the applications, permitting considerations, construction practices, and inspection guidelines. Various applications are covered including jack and bore, slip-lining, pipe jacking, horizontal directional drilling (HDD), cured-in-place pipe (CIPP) lining for culvert rehab, lining with cementitious or polymer materials for pipe and manholes, moles (hole hammers), micro tunneling, tunnel boring machine (TBM), and tunnel liner plates. This course contains four modules:
• Module 1: Introduction to Trenchless Technology;
• Module 2: Trenchless Technology Applications;
• Module 3: Permits for Trenchless Projects; and
• Module 4: Construction and Inspection of Trenchless Projects.
Target audience: This course is ideal for individuals with new positions or needing a refresher in using and working with trenchless technology. This course also serves as an introduction for engineers that are not familiar with trenchless technology. Project members that are responsible for writing and submitting permits for trenchless technology on projects may also benefit from this course.
Learning outcomes: Upon completion of this course, participants will be able to:
• Explain what trenchless technology is and when it is used;
• Describe the evolution of trenchless technology;
• Describe the different trenchless technology applications for new installations;
• List the capabilities/limitations of different trenchless technology methods;
• Identify which trenchless technology should be used in a given situation;
• Explain site investigation goals, methods, and outcomes;
• Describe basic requirements for permitting;
• List best practices for completing permits for trenchless technology projects;
• Describe general guidelines for trenchless technology construction;
• Describe the trenchless construction inspection activities to be performed by the inspector and contractor;
• List construction practices the inspector should be aware of for each trenchless application;
• Describe the risks associated with trenchless technology projects; and
• Explain the difference between plans and as-built drawings.
Course: TC3 Utilization Management Concepts for State DOT Equipment Fleets - AASHTO

Description: Course overview: In an era of ever-tightening equipment budgets, the term “utilization management” has become the go-to strategy for squeezing greater cost-efficiencies out of equipment fleets, without diminishing service levels to customers. Utilization management involves ensuring the optimal number of properly specified equipment items are available and work ready for DOT personnel.

This course contains five modules. They are:
1. Importance of Utilization Management and Associated Challenges;
2. Introduction of Concepts, Terms, Definitions, and Approaches;
3. Eight Elements for Equipment Fleet Utilization Review and Management;
4. Establishing Utilization Standards or Thresholds and Measuring; and
5. Strategic Approaches to Enhance Outcomes.

This training was made possible through a partnership between the AASHTO Equipment Management Technical Services Program (EMTSP) and the TC3. A Technical Working Group, comprised of AASHTO EMTSP Oversight Panel Members and AASHTO EMTSP Education Subcommittee Members, oversaw the development of this course content.

This course offers professional development hours (PDHs). You will see the PDHs on your course completion certificate, which also serves as documentation of your attendance. PDH requirements vary, therefore, it is up to you to determine whether or not this particular course qualifies under your State or board requirements.

Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, III, and IV.

Target audience: This course was developed for the purpose of promoting, supporting, and providing professional development opportunities for agency fleet employees. Although some content may be more applicable to higher levels within the fleet organization such as fleet managers or fleet analysts, the course will still be engaging to fleet employees at all levels within the agency.

Learning outcomes: Upon completion of this course, participants will be able to:
• Explain and demonstrate to agency stakeholders the importance of utilization management practices for equipment fleets;
• Describe utilization management and measurement concepts, terms, definitions and approaches;
• Explain the eight elements for equipment fleet utilization review and management;
• Explain the importance of thoroughly understanding the agency’s mission, programs, activities and defined levels of service prior to establishing initial utilization standards, thresholds, and measurements; and
• Utilize various strategic approaches to enhance equipment fleet utilization outcomes.
Course: TC3 Warm Mix Asphalt - AASHTO

Description: Course overview: This course provides an overview of warm mix asphalt placement for quality control technicians and inspectors. This course briefly describes the production process of warm mix asphalt as it compares to hot mix asphalt, as well the financial and environmental benefits of warm mix asphalt, and what inspectors should look for during plant production. The placement and compaction process of warm mix asphalt is also covered. This course emphasizes effective communication between contract personnel and State DOTs, as well as quality control plan requirements, including target temperatures for compaction.

Target audience: The target audience for this training includes quality control and field personnel, such as technicians and inspectors of State DOTs, as well as contractors and consultants.

Learning outcomes: Upon completion of this course, participants will be able to:
- Define warm mix asphalt;
- Explain the difference between warm and hot mix asphalt;
- Describe how warm mix asphalt is produced, including any special processing equipment;
- Describe how warm mix asphalt is placed;
- List key details that technicians and inspectors should be aware of during the application process;
- Describe the compaction process for warm mix asphalt; and
- Explain how quality control and acceptance is performed once completed.
Unmanned Aircraft Systems (UAS) Courses

Course: UAS Awareness Course

Description: This course is designed to introduce transportation professionals and others interested in Unmanned Aerial Vehicles (UAS) to what UAS are, how they are used in transportation applications, and what types of UAS are available. This is a foundational knowledge course. Those interested in learning more about UAS and about the licensing process are encouraged to also complete the UAS Pilot Licensing Course. This course is a prerequisite for the UAS Pilot Licensing Course as information shared in the awareness course is built upon in the pilot licensing course.

Course: UAS Remote Pilot Certification Training

Description: This training, which builds upon the introductory UAS Awareness Course, provides fundamental knowledge needed in preparing for the UAS Remote Pilot Certification Exam. This 4-module series is intended for anyone interested in studying for and completing the UAS Remote Pilot Certification Exam to obtain their commercial UAS Remote Pilot license.

- Module 1: FAA Regulations
- Module 2: Aviation Fundamentals
- Module 3: UAS Operations
- Module 4: Remote Pilot Resources

This is a great place to start for eligible persons (per FAA requirements) who would like to fly UAS for work-related applications.
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