E-LEARNING CATALOG

A collection of online learning and resources from UNH T2 partners, affiliates, and sponsors

e-Learning with UNH T2

This collection of online webinars, videos, tools, and resources is provided to support New Hampshire's public works professionals in their professional development and training.

New Hampshire Technology Transfer Center

University of New Hampshire

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Contents

Introduction

University of New Hampshire's Technology Transfer Center (UNH T2) is the site of New Hampshire's Local Technical Assistance Program (LTAP) Center. Through our FHWA sponsors, state and national partners, affiliates, and LTAP friends, we've been able to create this listing of online courses and resources – also called eLearning, or Web-based training (WBT) – to enhance New Hampshire Public Works' professionals' training opportunities. Local road agencies and employees can use these courses in many ways; as part of a mandatory training plan, to increase their general professional development or knowledge, or to supplement classroom and other learning. This catalog provides detailed descriptions and links to almost 400 online courses, documents, and other resources, broken out by almost 30 transportation topics. Many of these courses and materials are generously made available at no-cost (FREE!) to our customers from our partners and sponsors! Access to this content, including any costs associated, is subject to change. While UNH T2 will do its best to maintain this catalog, please refer to the content's provider for additional information, or contact T2.Center@unh.edu.

About the Content

This catalog includes previously-recorded webinars, videos, Tailgate Talk resource documents, and on demand online training modules and webinars. This is in addition to the variety of in-person workshops and webinars UNH T2 and our partners host live! Please monitor our Training Calendar for upcoming events!

Accessing Content

The following providers (including some in conjunction with FHWA) are offering their online content at no cost for the dates indicates (subject to change). Please contact T2.Center@unh.edu to inquire about any necessary promotional codes, as applicable.

AASHTO Transportation Curriculum Coordination Council (TC3)

FREE ACCESS TO TC3 COURSES FOR LOCAL ROAD AGENCIES! EMAIL t2.center@unh.edu **FOR PROMO CODE!**

If a 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 this particular course qualifies under your State or board requirements.

SPECIAL INSTRUCTIONS: Please note that all TC3 courses are Flash based. Therefore, you must enable your browser to allow Flash for the AASHTO Store and AASHTO learning system that hosts TC3 courses. 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."

Through a special partnership with FHWA and TC3, local road agencies can access the TC3 online learning at **no cost!**

- You will need an AASHTO account to access the online training courses.
    - Please go to https://store.transportation.org/and select Register, and then enter your agency's email address to create an AASHTO account.
        - Access to TC3 learning modules free is easiest with a local agency or government email address, but let T2 staff know if you are using a personal email address or other non-government or non-municipal email address, or if you have any trouble accessing content with the promotional codes.
    - A YouTube video walks through the process at https://www.youtube.com/watch?v=NcFONY2R78s
- To gain unlimited access to the curriculum at no cost, contact T2.Center@unh.edu for the special local agency promotional code.
- After you have added a course to your cart you will be able to apply the promotion code in your cart
- To browse and gain access to the TC3 course offerings, go to https://tc3.transportation.org/.

Please note that the development of the TC3 Anti-icing/Road Weather Information System (RWIS) training series 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).

APWA Click, Listen, and Learn and APWA Members' Library

***NEW* APWA is offering access to its Member Library and Click, Listen, and Learn content FREE to all public works professionals through May 25, 2020!**

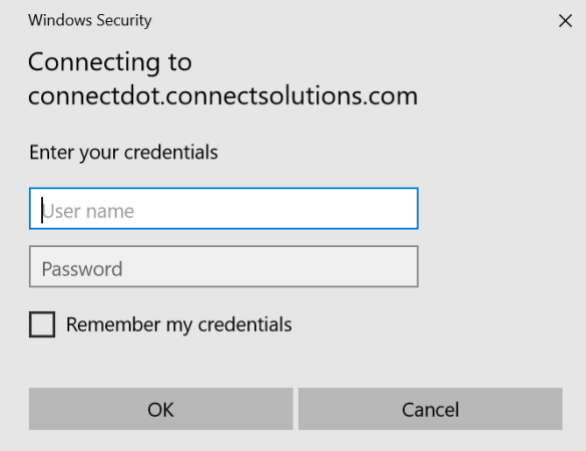
CLLs are APWA's webinar series of interactive internet educational programs. Each program is led by top experts in the field who convey new ideas, new methods, and new technologies in a fast-paced one-hour time frame.

Through NH LTAP's APWA membership, we are pleased to schedule a Lunch and Learn or other opportunity to review Click, Listen, and Learn content with your team! Contact Marilee LaFond to schedule.

Click for more info on APWA Click, Listen, and Learn

FHWA webinars

FHWA offers webinars and resources on a variety of transportation topics. If you're asked for your credentials, click Cancel and it should then switch to Adobe Connects.



Montana LTAP

The Montana LTAP at Montana State University offers a variety of recorded webinars on various safety and other topics

National Highway Institute (NHI)

NHI is celebrating 50 years of transportation training in 2020! To celebrate this, all web-based training courses are **free to access** for a limited time!

Click for more info on NHI

Ohio LTAP eLearning System

You will need to request access to the Ohio LTAP eLearning system. eLearning works best with the Chrome web browser. For further info, review these instructions.

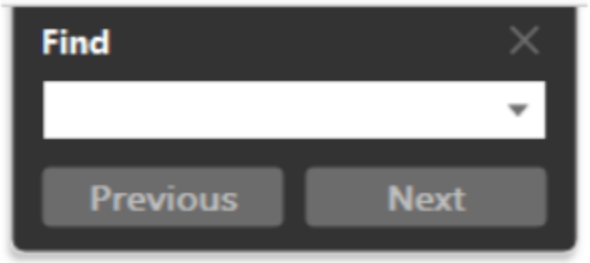
Technical or Other Difficulties Accessing e-Learning

While most users have no trouble enrolling in these online learning opportunities and successfully launch the courses to complete the training, there are occasional situations where a user's computer or network setting is incompatible with the e-learning. Please contact T2.Center@unh.edu if you have any trouble accessing this content, including trouble creating a user account, selecting and enrolling in courses, and accessing or completing courses. We're here to help, and if you are encountering difficulties with access, there's a strong chance someone else might encounter the same!

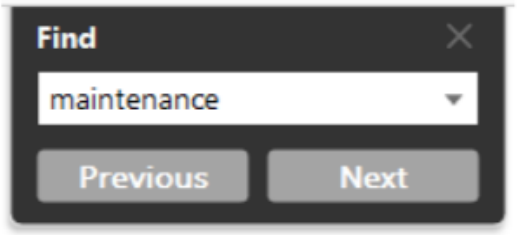
Using This Catalog

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:



Maintenance Training Series

Clicking on the "Next" button will then move to the next instance of the word where it's used in the Catalog (PDF document).

Have 30 minutes? You can still take some training! We've used the following symbols to identify quick hits of training, such as a Tailgate Talk or a webinar or learning module of 30 minutes or less, as well as to identify content that is mobile-friendly or a staff-recommendation.

Represents a short video, a Tailgate Talk, or other fast read

Represents a course title (webinar or other learning module) that is 15 minutes or less

Represents a course title (webinar or other learning module) that is 30 minutes or less

"Staff picks" - content we've reviewed and think is particularly relevant to New Hampshire's local road agencies

Mobile-friendly resource or learning module, that you can take from your mobile device

Future Updates

This catalog will be updated periodically to capture updated or additional courses and content access details. This version includes updates as of 4/1/2020. For the most current listing of available online courses and access details (including costs), please refer to the content providers' websites, or contact t2.center@unh.edu.

Bridge Preservation and Maintenance

2015 FHWA Replacement & Rehabilitation Costs for Structurally Deficient (SD) Bridges as captured on TSP2 Bridge Preservation Work Group site
The attached spreadsheet contains the 2015 FHWA replacement ad rehabilitation costs for SD bridges. National average unit costs for SD bridge replacement are $209/ft² for NHS and $188/ft² for non-NHS.

Bridge Corrosion Mitigation Topics from TSP2

Bridge Deck Preservation Topics from TSP2

Bridge Joints & Bearings Topics from TSP2

Bridge Local Agencies Topics from TSP2

Bridge Paint & Coatings Topics from TSP2

Bridge Scour & Emergency Response from TSP2

Bridge Maintenance Fundamentals from NHI (4.0 hrs.)
When the average citizen commutes to work or runs errands, they are relying on us, public transportation agencies, to keep their bridges safe and available for use. It is their expectation that we keep their bridges serviceable and at the lowest life-cycle cost possible. Bridge management systems will help your agency to efficiently balance the various bridge needs against available resources. The Bridge Management Fundamentals course describes a bridge management system and walks through the process of selecting and implementing the right bridge management software for your agency. Throughout the course, you will learn direct from agencies with mature and successful bridge management systems about how they get the most utility from their system.
Training Level: Basic
Target Audience:
The target audience includes Federal, State, and local bridge program managers; bridge management engineers; bridge management practitioners; transportation planners; and project planning and programming personnel. Additionally, transportation performance management team members, transportation asset management team members, bridge preservation and maintenance engineers, the financial management team, bridge inspectors, and bridge designers may benefit from this training. All participants should have knowledge of basic bridge terminology.
Learning Outcomes:

- Explain the need for a BMS
- Describe a typical BMS organizational structure
- Describe the seven components of a BMS
- Describe tools that are used as part of the bridge management process
- Describe an implementation plan for a comprehensive BMS
- Describe effective practices when using BMSs
- Identify successful applications of BMS components by agencies
- Describe the bridge management process as it relates to an agency business model
- Describe how to address risk

Bridge Maintenance Painting from NHI (4.0 hrs.)
NHI-130107B Maintenance Practices of Bridge Painting will support a geographically dispersed audience with varying amounts of experience and education who have responsibility for maintaining coatings of in-service bridges. Learners will gain basic knowledge of the corrosion process, paint and corrosion evaluations, maintenance coating design options, and the most frequently used methods for surface preparation and application of maintenance painting materials.
Training Level: Basic
Target Audience: Primarily members of Federal, State, and Local Departments of Transportation, as well as contractors performing work on behalf of these agencies, individuals involved in onsite bridge maintenance activities and those that supervise and manage these activities. This training is appropriate for those who possess basic knowledge of bridge maintenance activities and wish to gain specific expertise in bridge painting practices. Participants should possess basic knowledge of bridge maintenance and repair activities at a minimum before taking this course.
Learning Outcomes:

- Explain the importance of bridge painting as a bridge preservation activity

- Describe preventive maintenance coating systems used on bridges
- Describe current preventive maintenance bridge painting practices

Bridge Preservation Fundamentals from NHI (5.0 hrs.)
Bridge Preservation Fundamentals (130106A) provides the participant key bridge preservation strategies that can help assist in the planning and implementation of their own bridge preservation program. It is a six-lesson course that starts off with introducing definitions, terminology, and categories of bridge action. It also shares details on the benefits of timely bridge preservation and the consequences of deferred maintenance. This course discusses at length user best practices and activities related to deck preservation, superstructure preservation, and substructure preservation. This course also includes a lesson with detail on cost-effective culvert preservation practices.
This course is the first course in the three-course Bridge Preservation Web-based Training (WBT) series which includes Establishing a Bridge Preservation Program (130106B) and Communication Strategies for Bridge Preservation (130106C). This course series covers areas such as concepts of bridge preservation; how to establish and maintain a good bridge preservation program; best practices; common treatments and strategies; and resource management strategies (in-house vs. contract). The goal of the Bridge Preservation WBT Series is to provide training to bridge owners and those that are responsible for managing and maintaining the bridge inventory on the principles of planning and implementing successful bridge management and preservation programs.
Training Level: Basic
Target Audience: Individuals involved in the development, implementation, and delivery of a bridge preservation program. This course is intended for those with general knowledge and/or skills in the area of bridge maintenance and management principles and practices.
Learning Outcomes:

- Define activities and classifications related to bridge preservation, and associated work categories of rehabilitation, preventive maintenance, and systematic preventive maintenance
- Identify the benefits of timely bridge preservation activities, consequences of deferred maintenance, and strategies to transition bridge programs from reactive to proactive
- Determine cost-effective deck preservation practices and activities
- Determine cost-effective superstructure preservation practices and activities
- Determine cost-effective substructure preservation practices and activities
- Determine cost-effective culvert preservation practices and activities

Bridge Preservation Video as captured on TSP2 Bridge Preservation Work Group site (8 min.) 
Bridge Preservation – Bridge owners across the United States face significant challenges in addressing the needs of the aging infrastructure. This vide explains bridge preservation activities and which ones qualify for Federal funding. Also, learn how transportation agencies in four states established their bridge preservation programs and what advice they have for other agencies.

Bridge Preservation Guide from TC3 (1.5 hours)
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.
Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, III, and IV.
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.

Bridge Preservation Video Library from TSP2

Communication Strategies for Bridge Preservation from NHI (3 hrs.)
Training level: Basic
Target audience:
Individuals involved in communications with highway infrastructure stakeholders and the general public.
Learning objectives:

- Determine the strategies required to identify an agency champion and the target customers and stakeholders for a bridge preservation program
- Recognize strategies for developing bridge preservation messages that capture values, benefits and needs, intended for highway infrastructure stakeholders and the general public
- Determine strategies for communicating bridge preservation messages that capture values, benefits and needs, intended for highway infrastructure stakeholders and the general public
- Summarize key activities involved in performing market research, as it applies to a bridge preservation program.

Part 3 of the three-course Bridge Preservation Web-based Training (WBT) series which includes Bridge Preservation Fundamentals (130106A) and Establishing a Bridge Preservation Program (130106B).
This course series covers areas such as concepts of bridge preservation; how to establish and maintain a good bridge preservation program; best practices; common treatments and strategies; and resource management strategies (in-house vs. contract). The goal of the Bridge Preservation WBT Series is to provide training to bridge owners and those that are responsible for managing and maintaining the bridge inventory on the principles of planning and implementing successful bridge management and preservation programs.

Concrete Bridge Deck Patching from AASHTO TC Just-in-Time video (4 min.) 
This video covers bridge deck patching using concrete patches. These are normally small, immediate, and safety-related repairs that are completed by using fast curing concrete. This video has been provided courtesy of the Virginia Department of Transportation with permission for viewing on TC3's YouTube channel. Note that this video may include some state-specific verbiage; however, the content is beneficial to technical staff involved in highway operations regardless of geographic location. Anyone viewing this video should refer to their agency specifications and requirements, which they need to review and follow.

Dimensional Stability of Grout-Like Materials Used in Field-Cast Connections as captured on TSP2 Bridge Preservation Work Group site 
The wide use of grouts and grout-like materials in the construction industry is seen in applications such as joint sealing, structural repair, and connections in prefabricated bridge elements (PBEs). Currently, different types of grouts are available (e.g., epoxy-based, cementitious-based, etc.). The selection of the most appropriate grout type is commonly based on the application in which it is used and the desired performance. Grouts for transportation applications typically require high-performance properties such as rapid strength development and superior durability characteristics. However, dimensional stability issues (i.e., expansion and shrinkage) have been observed in various applications with different grout types but especially in cases where cementitious grouts were used, due mainly to their inherent shrinking behavior. This document provides information about the current approaches to quantifying the dimensional stability of grouts and grout-like materials, including those cementitious grouts known as "non-shrink cementitious grouts (NSCGs)," and highlights some of the limitations of the test methods currently in use. Additional material testing methods to better quantify dimensional stability are also proposed, as well as strategies to help mitigate some of the shrinkage observed in these types of materials.

Establishing a Bridge Preservation Program from NHI (4.0 hrs.)
Establishing a Bridge Preservation Program (130106B) focuses on efforts in developing a bridge preservation program. This course includes a lesson on the establishment of goals, objective and performance measures in a bridge preservation program. The course goes in-depth into the needs assessment and data management process, including the creation of a bridge preservation strategy, and it outlines the prioritization process. A lesson on budgeting and resource allocation describes the linkage between data to budgeting and resource allocation activities. The course also includes a lesson on work plan development and implementation with specific details on implementing network, corridor, and site specific strategies. The course concludes with a lesson on program monitoring.
This course is the second course in the three-course Bridge Preservation Web-based Training (WBT) series which includes Bridge Preservation Fundamentals (130106A) and Communication Strategies for Bridge Preservation (130106C). This course series covers areas such as concepts of bridge preservation; how to establish and maintain a good bridge preservation program; best practices; common treatments and strategies; and resource management strategies (in-house vs. contract). The goal of the Bridge

Preservation WBT Series is to provide training to bridge owners and those that are responsible for managing and maintaining the bridge inventory on the principles of planning and implementing successful bridge management and preservation programs.
Training Level: Basic
Target Audience: Key individuals involved in managing the development, implementation, and delivery of a bridge preservation program within a transportation agency. This course is intended for those with working knowledge and/or skills in the area of highway bridge infrastructure program management principles.
Learning Outcomes:

- Summarize the process of forming goals, objectives and performance measures for a bridge preservation program
- Determine the condition and needs assessment activities involved in a bridge preservation program
- Determine the budgeting and resource allocation activities involved in a bridge preservation program
- Determine the work plan development and implementation strategies involved in a bridge preservation program
- Determine program monitoring activities that are part of an effective bridge preservation program

Fundamentals of Bridge Maintenance from NHI (7.0 hrs.)
Teaches the participant the fundamental aspects of an effective bridge maintenance program.

- Module 1 - Introduction to Bridge Maintenance explains the importance of a balanced bridge maintenance program and the organizational structure, roles, and responsibilities of a bridge maintenance unit.
- Module 2 - Bridge Maintenance Management provides basic information about bridge inspections, reviews the general concept of Maintenance Management Systems (MMS) and Bridge Management Systems (BMS), reviews the various steps and activities involved in the proper planning and implementation of bridge maintenance program activities, discusses commonly used contracting bridge maintenance methods, and describes the principles of quality assurance and quality control measures used in bridge maintenance.
- Module 3 - Bridge Anatomy introduces bridge components, associated elements, and their intended functions, and also reviews common bridge types.
- Module 4 - Bridge Mechanics explains the bridge mechanics as it relates to different bridge components, introduces concepts such as redundancy and fracture critical details, and reviews basic hydraulic, scour and channel erosion concepts.
- Module 5 - Concrete Basics addresses the basic material properties of concrete; describes proper concrete mixing and testing processes; summarizes proper concrete placement, finishing and curing processes; and reviews proper methods for locating and removing unsound concrete.
- Module 6 - Maintenance of Bridge Ancillary Items examines general maintenance considerations and practices related to ancillary items often attached to bridges, such as utilities, and sign and lighting structures. This web-based training serves as a prerequisite to the 4-day instructor-led training NHI-130108 Bridge Maintenance.

Learning Outcomes:

- Review various bridge maintenance program management activities and tools used to facilitate the accomplishment of these activities
- Classify bridge components, associated elements, and their intended function for commonly used materials
- Review the fundamentals of bridge mechanics and behaviors
- Review the fundamental steps involved in using concrete as a repair material
- Describe general maintenance practices associated with bridge mounted sign and lighting structures
- Describe common organizational structures of transportation agencies, the role of the bridge maintenance unit and where it fits within such organizations, and the various cost-effective maintenance and preservation activities that these units perform

Training Level: Basic
Target Audience: Primarily members of Federal, State, and Local Departments of Transportation, as well as those contractors that perform work on behalf of these agencies. This training is primarily geared for individuals involved in onsite bridge maintenance activities and those that supervise the activities. This training is appropriate for those with basic knowledge of bridge maintenance and repair activities.

National Performance Management Measures – Assessing Pavement and Bridge Conditions for the National Highway Performance Program as captured on TSP2 Bridge Preservation Work Group site 
Section 1203 of the Moving Ahead for Progress in the 21st Century Act (MAP-21) declared that performance management will transform the Federal-aid highway program and refocus it on national transportation goals, increase accountability and transparency of the Federal-aid highway program and improve project decision making through performance-based planning and programming. Section 1203 of MAP-21 identifies the national transportation goals and requires the Secretary to promulgate a rule to establish performance measures in specified Federal-aid highway program areas. The FHWA is issuing three separate Notices of Proposed Rule Making (NPRMs) to meet this requirement, and this is the second NPRM.

This NPRM proposes to establish measures for State Departments of Transportation (State DOTs) to use to carry out the National Highway Performance Program (NHPP) and to assess the condition of the following: pavements on the National Highway System (NHS) (excluding the Interstate System), bridges on the NHS, and pavements on the Interstate System. The NHPP is a core Federal-aid highway program that provides support for the condition and performance of the NHS and the construction of new facilities on the NHS, and ensures that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS. This NPRM proposes regulations for the new performance aspects of the NHPP, which address: measures, targets, and reporting. The FHWA intends to make these performance aspects of the NHPP available to the public in a format that is easily understandable and accessible for download. This second NPRM also includes a discussion of the collective rule making actions FHWA has or intends to take to implement MAP-21 performance-related provisions.

Bridge Cleaning from TC3 (1.0 hrs.)
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.
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 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.

POCKET GUIDE A User's Guide to Bridge Cleaning as captured on TSP2 Bridge Preservation Work Group site 
This guide is to inform the reader of cleaning methods appropriate for the removal of debris and chemicals, natural or manufactured, that can accumulate on a bridge. The guide describes how to plan and execute a bridge cleaning operation considering best practices and introduces the reader to environmental protection, maintenance of traffic and safety requirements. The removal of animals from the structure and debris within the waterway are not within the scope of this guide.

Removal and Replacement of Bridge Coatings from TC3 (1.0 hrs.)
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.
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 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".

POCKET GUIDE A User's Guide to Removal and Replacement of Bridge Coatings as captured on TSP2 Bridge Preservation Work Group site
This guide has been developed to encourage a better understanding of the process to completely remove and replace bridge coatings for the structural steel elements of bridges in service. The guide describes how to plan and execute a coatings removal and replacement operation with an emphasis on the three primary activities of containment, surface preparation and painting. This

guide does not cover shop applied coatings or spot painting operations, however much of the information presented represents best practices for all bridge coating work.

Thin-Polymer Bridge Dock Overlay Systems from TC3 (1.0 hrs.)
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.
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 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.

POCKET GUIDE Thin-Polymer Bridge Deck Overlay System as captured on TSP2 Bridge Preservation Work Group site 
The contents of this guide on Thin-Polymer Bridge Deck Overlay Systems reflect the views of the Bridge Preservation Expert Task Group, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the Federal Highway Administration (FHWA). The content does not constitute a standard, specification, or regulation. FHWA does not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the object of this report.

UNH T2 Bridge Preservation Practices Guide
Please contact UNH T2 for a copy of this draft, working document exploring practices in local bridge preservation activities.

MnDOT Tests Drones for Bridge Inspections from Minnesota DOTA (2 min) 

Jesup South Bridge in Buchanan County, Iowa from Short Span Steel Bridge Alliance (8 min) 

EDC-3 2014 from USDOT FHWA (5 min) 

CDL Pre-Trip Inspection

CDL Pre-Trip Inspection from TC3 (2 hrs.)
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 your State, contact your State license agencies.
Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, and III.
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.

CDL Required Inspections NLTAPA Tailgate Talk 

Chainsaw Safety

Chainsaw Safety from Montana LTAP Safety Webinars  (0.5 hrs.)
Chainsaw safety, common injuries, safety features of chainsaws, operations, PPE, how to prevent accidents, and additional safety materials.

Chainsaw Reminder NLTAPA Tailgate Talk 
Information provided can help you to prevent chainsaw injuries before, during and after chainsaw work.

Hands-On Chainsaw Safety NLTAPA Tailgate Talk 

Chainsaw Safety Red Cross NLTAPA Tailgate Talk 

Six Tips for Chainsaw Safety NLTAPA Tailgate Talk 

Forestry and Logging Safety: 2 Part Training from U.S. Agricultural Safety and Health Centers 

How to Work with a Chainsaw – Tutorial from Husqvarna via YouTube (24 min.) 

Chainsaw Maintenance from UMass Transportation Center (1 hr) 

Innovation Chainsaw Demo from UMass Transportation Center (10 min) 

Communication

Attitude and Behavior NLTAPA Tailgate Talk 

Critical and Strategic Thinking Skills in Public Works from APWA Click, Listen & Learn  (1.0 hrs.)
Enjoy this exploration of critical and strategic thinking skills and how to apply them to public works management and leadership. You'll be given the framework for how to conduct a thinking self-assessment that will help you see where you stand in developing the required skills. Checklists and resources will be presented, and you will have the opportunity to engage in interactive and engaging dialogue about how to perceive and think strategically.
Learning Objectives:

- Explore critical and strategic thinking concepts and principles and see how they relate to public works leadership and decision making.
- Assess your thinking capabilities and see where you can focus your efforts to grow.
- Discover why the boss, your board or council, and your constituents ask so many questions.

Leadership from Montana LTAP Safety Webinars  (0.5 hrs.)
Ideas to consider for leadership, motivational information, and personal potential opportunities.

LTAP Centers' Safety Peer Exchange from the National Center for Rural Road Safety (1.5 hrs)
This webinar explored highlights from the LTAP Safety Peer Exchange that was held in Kansas City in September 2018. The four presentations included:

- Low Cost Solution Implementation with a Safety Circuit Rider Program;
- Louisiana's Regional Approach to Safety;
- Systemic Local Road Safety Initiatives; and

- Accessible Crash Data.

Webinar Outcomes:

- At the conclusion of this webinar, participants were able to:
- Identify low-cost safety solutions using a Safety Circuit Rider program.
- Summarize Louisiana's regional approach to safety.
- Understand the Systemic Local Road Safety Programs Connecticut has implemented.
- Understand how a Safety Circuit Rider can support these type of efforts.
- Identify the variety of safety data made available to local agencies in Washington State.

Target Audience:

This training was directed towards a very broad safety audience including, but not limited to, law enforcement, planners, engineers, first responders, elected officials, public health, tourism agencies, and safety culture experts. Participants should have some basic familiarity with transportation safety.

Marketing Safety: How to Tell Your Story and Move People to Action from the National Center for Rural Road Safety (1.5 hrs)

This webinar was co-hosted by the National Center for Rural Road Safety and the National LTAP & TTAP Association. It provided practical techniques for effective communication with stakeholders, leadership, and the public.

Webinar Outcomes:

- At the conclusion of this webinar, participants were able to:
- Explain five techniques for better communication and marketing
- Write an engaging "teaser" to describe their job/position
- Use a communications brief to plan outreach activities

Target Audience:

This training was directed towards a very broad safety audience including, but not limited to, law enforcement, planners, engineers, first responders, elected officials, public health, tourism agencies, and safety culture experts. Participants should have some basic familiarity with transportation safety.

Preparing the next generation of public works- equipping leaders with tools to engage your staff from APWA Click, Listen & Learn (1.25 hrs.) 

2016 Emerging Leaders Academy Presentation, Designated the Myron Calkins Excellence in Leadership Series

Aging and failing infrastructure networks combined with a retirement-ready workforce and a citizen-population with evolving needs will continue to pose unique challenges to the Public Works industry. Early engagement, development and recognition foster employee retention. An onboarding guide, employee development plan and a recognition program are key tools that drive manager engagement, propel employee performance and deliver timely appreciation. Presented by APWA's Emerging Leaders Class of 2015/16, this session will provide a toolbox to equip leaders with some of the industry's best practices to successfully build broad public support and develop a dedicated, talented workforce prepared to face these issues key to Public Works' future success. Take your organization from good to great with these simple and flexible tools that will transform employees and enhance the fabric of your organization.

Succession Planning & Servant Leadership: A Multi-Generational Perspective from APWA Click, Listen, Learn (1.0 hrs.) 

In the near future, employees across all levels of public works will become retirement eligible. Having a clear plan in place to identify and develop future leaders who can fill their roles is critical to the success of any public works agency.

Learning outcomes:

- Explain succession planning and servant leadership.
- Apply succession planning and servant leadership principles based on real life successes.
- Implement a progressive and inclusive culture that will aid in attracting and retaining the future workforce.

Virtual Public Involvement by FHWA (1.5 hrs.)

Public engagement during transportation planning and project development can accelerate project delivery by identifying issues early. Virtual public involvement techniques, such as telephone town halls, online meetings, and social media, offer convenient, efficient, and low-cost methods for informing the public, encouraging participation, and receiving input.

When you talk, is anyone listening? Strategies for Getting Your Message Heard by APWA Click, Listen, Learn (0.75 hrs.)

Communication is not a one-size-fits-all activity, for example, knowing when to stop talking is an underused strategy that can be highly effective. This session is a must for those needing strategies for effective communication with elected officials, employees, citizens and the media.

How Miscommunication Happens and How to Avoid It (4 min.) 
Have you ever talked with a friend about a problem, only to realize that he just doesn't seem to grasp why the issue is so important to you? Have you ever presented an idea to a group, and it's met with utter confusion? What's going on here? Katherine Hampsten describes why miscommunication occurs so frequently, and how we can minimize frustration while expressing ourselves better.

Brene Brown on Blame (3.5 min) 
You are probably a bit of a blamer - most of us are. But why should we give it up? In this witty sequel to our most watched RSA Short, inspirational thinker Brené Brown considers why we blame others, how it sabotages our relationships, and why we desperately need to move beyond this toxic behavior.

Lunch 'n Learn: Social Media for Public Works from UNH T2 (1 hr.) 

Confined Space

Confined Space Entry and Rescue from OSHA
The grantee (Ozarks Technical Community College) conducted training that addressed confined space entry and rescue for workers and employers at small manufacturing companies in south central and southwest Missouri. Training topics include how to identify a confined space, potential hazards such as oxygen deficiency, types of required personal protective equipment, and emergency rescue procedures. Training materials included PowerPoint presentations, quizzes, and student handouts.

Confined Space Killers are Invisible and Silent NLTAPA Tailgate Talk 

Culvert Installation

Application for Rehabilitation of Culverts from TC3 Job Aid 

Culvert Installation, Excavation, and Inspection on Low Volume Roads from Montana LTAP (0.5 hrs.) 
Proper installation, Trenching, Inspection

Culvert Hydraulic Analysis and Design Program from NHI (2 hrs.)
This web-based training uses a combination of text, graphics, examples, animations, and workshop problems in its six primary lessons:

1. HY-8 Overview
2. Conventional Design Scenarios
3. Rehabilitative Linings/Common Pitfalls in the Use of HY-8
4. Special Geometries
5. Energy Dissipation
6. Project File Management and Report Generation

Upon completing the course, participants will be able to apply the HY-8 software to analyze and design culverts in many commonly encountered situations. Note: NHI 135094, Culvert Hydraulic Analysis and Design Program (HY-8) (Web-Based) is a prerequisite for Course 135080, Hydrologic Analysis and Modeling with WMS. Mastery of the concepts covered in this WBT is important to successful completion of Course 135080.
Training level: Basic
Target audience: Federal, state, and local hydraulic engineers, highway designers and design consultants who have responsibility for the analysis, design, and review of culverts. Length of service with an organization or status within an organization would not be a factor in that this training could apply to anyone that has a need for hands-on use of HY-8.
Learning outcomes:

- List the primary capabilities of HY-8
- Identify inlet and outlet control situations from the culvert summary tables
- List the material types used in culverts
- List the material shapes that may be analyzed within HY-8

- Select a culvert from a list of available culverts that satisfies headwater and outlet velocity criteria by using HY-8.
- Predict the effect of lining material (new or rehabilitated) on headwater
- Identify common pitfalls in using HY-8 in conventional design scenarios
- Identify situations appropriate for application of special culvert geometries
- Identify situations requiring energy dissipation to mitigate scour or high outlet Velocities.
- Select an appropriate energy dissipator by using HY-8.
- Identify the steps to generate customized HY-8 reports. NHI web-based Training Course 135094, Culvert Hydraulic Analysis and Design Program (HY-8), provides training on the use of the Federal Highway Administration's (FHWA) HY-8 computer program to complete culvert analysis and design calculations commonly performed by Civil Engineers and others involved in roadway design.

Culvert Hydraulics from US DOT FHWA (0.75 hrs.) 

Culvert Installation and Maintenance for Local Agencies from Minnesota LTAP
The course will provide students with a basic understanding of the principles of culvert theory, design, location, planning, scheduling. permitting, and typical installations. It also outlines culvert inventory, inspection, repair, and rehabilitation methods. The course is made up of six lessons, each containing a narrated presentation, video clips, reading, opportunities to check your understanding, and a quiz.
Target audience: This course was developed for engineers, supervisors, and technicians who regularly work with culverts. It is geared toward individuals who install and maintain culverts as well as those who perform simple designs.
Learning outcomes:

- Introduction to culverts: principles and basic understanding
- Culvert theory
- Culvert installation planning
- Common culvert installations
- Trenchless installation
- Repair and rehabilitation methods
- Inventory, inspection, and maintenance

Culvert Installation, Bedding, and Backfill Inspection Checklist from AASHTO TC3 Job Aids 
The checklist summarizes some important points that you should remember while inspecting for culvert installation, bedding, and backfill. Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Effective Culvert Repair Practices webinar from FHWA (1.5 hours)
The webinars enable you to:
• Learn and share successful innovation practices
• Discuss transportation ideas and issues with transportation partners around the country

Pipe Installation, Inspection, and Quality from NHI (7 hours)
This course is focused on the three basic pipe materials. They are Concrete, Metal, and Plastic.
This course 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 is directed toward intermediate level technicians, to give them 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.
Training level: Intermediate
Target audience:
This course targets field personnel involved in all aspects of highway construction from engineers to inspectors and 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 also are appropriate for project manager/resident engineer involvement.
Learning outcomes:

- 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

- Recognize the importance of accurate records and reporting

Safe Installation of Drainage Pipe NLTAPA Tailgate Talk 

Safe Installation of Drainage Pipe NLTAPA Tailgate Talk 

Municipal Culvert Assessment from UMass Transportation Center (1.25 hrs.) 

Data Driven Safety Analysis

Data Driven Safety Analysis EDC Exchange Webinar from FHWA (1.5 hrs.)

Data-Driven Safety Analysis (DDSA) for Local Roads from FHWA (1.5 hrs)

DDSA in Project Development Process (06/17) from FHWA (5 min.) 
Transportation professionals across the country are using the latest safety analysis tools to make more informed project development decisions, better target their investments, and reduce severe crashes on their roadways. Watch this video to learn how you can too!

DDSA in Safety Management Process (06/17) from FHWA (4 min.) 
Data-Driven Safety Analysis (DDSA) is a new approach to safety investment that transportation agencies are using throughout their safety management processes. DDSA allows them to make more informed decisions, better target their investments, and reduce severe crashes on their roadways.

Introduction to Data Driven Safety Analysis from FHWA (1.5 hrs.)

Safety Data Mining from FHWA (1.5 hrs.)

Data-Driven Safety Analysis Overview 2016 from USDOT FHWA (8 min) 

Drones

All About Drones: Rules, Riggings, Routines, and Results from FHWA (1.5 hrs.)

Unmanned Aircraft Systems (UAS) Awareness from Ohio LTAP (1 hr.)
Course Goals:

- Understand the meaning ofr “Unmanned Aircraft System (UAS)”.
- Be familiar with types of drones.
- Understand UAS as it fits into the larger landscape of “autonomous aviation technologies”.
- Be familiar with types of drone operations.
- Be familiar with general licensing requirements.

Erosion Control

Erosion & Sediment Control for Construction from TC3 (3.5 hrs.)
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.
Training level: This training is recommended for the TC 3 levels I, II, III, and IV.

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 dos and don'ts related to erosion and sediment control; and
  explain how erosion and sediment control activities are enforced

Erosion & Sediment Control for Construction Inspector Checklist from AASHTO TC3 Job Aids 
This checklist is an important and helpful tool to use when inspecting erosion and sediment control. This checklist can be used to ensure that you have addressed all of the important items that should be considered.
Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Soils and Your Roads and Streets Streets from Cornell Local Roads Program (1 hr.) 

Soil Erosion & Sediment Control from Ohio LTAP Center (0.5 hrs.) 

Erosion and Sediment Webinar from Cornell Local Roads Program (1 hr.) 

Roadway Drainage Webinar from Ohio LTAP Center (1 hr.) 

- **Part I**
- **Part II**
- **Part III**

Ethics

Ethics Awareness from TC3 (3.5hrs.)
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.
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.

Ethics Awareness for the Transportation Industry from NHI (1 hr.)
The training 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.
Training level: Basic
Target audience: This course is primarily intended for inspectors and technicians.
This training is designed for Level I and Level II State and local public agency personnel and their industry counterparts involved in the construction, maintenance and testing process for highways and structures. Level I or Entry refers to employees/ trainees with little to no experience in the subject area and perform his/her activities under direct supervision. Level II or Intermediate refers to

employees that understand and demonstrate skills in one or more areas of the entry level and perform specific tasks under general supervision.
Learning outcomes:

- 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
- Explain the consequences when rules and regulations are not followed
- 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.

Ethics, or Doing the Right Thing from APWA Click, Listen & Learn (1.5 hrs.)
Public works employees must maintain their performance so that it results in public trust and confidence. Obtaining that trust filters into both official conduct and personal affairs. Find out how to balance this relationship and "give off the impression" that you have forged an ideal set of ethics for both yourself and your organization.
Ethics are personal, how will you evaluate those grey areas? How do you make good decisions when there are no good choices?
Learning outcomes: Participants, at the end of the program, will be able to:

- Identify their ethical line and the importance of thinking through scenarios and being prepared to act ethically
- Walk the talk with behaviors saying more about ethics than words.
- Seemingly small actions can have big and long-lasting consequences.
- Represent yourself, your organization, your family and your profession understanding why ethical behavior is so important in today's climate of mistrust of government and sensationalistic media.

What Would You Do? – Ethical Choices from Cornell Local Roads Program (1.0 hrs.)

Excavations and Trenching

Applications for New Trenchless Technology Installations from AASHTO TC3 Job Aids

Construction Safety: Excavation & Trenching from TC3 (0.5 hrs.)
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.

Earthwork Series Earth Materials as Engineering Materials from TC3 (1.5 hrs.)
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. The Earth Materials as Engineering Materials is part of the Earthwork Series.
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; and
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

- Identify the components and types of soil;
- Identify the soil characteristics that effect 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.

Earthwork Series: Excavation from TC3 (3 hrs.)

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. **Excavation is the fourth part of the five-part Earthwork Series**.

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.

Excavations are Serious Business NLTAPA Tailgate Talk 

Earthwork Series: Fill Placement from TC3 (4 hrs.)

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. **Fill Placement is the fifth part of the five-part Earthwork Series.**

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.

Earthwork Series: Grades and Grading from TC3 (3 hrs.)

This course 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. **Grades and Grading is the third part of the five-part Earthwork Series.** 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.

Earthwork Series: Site Preparation from TC3 (1.5 hrs.)
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. **Site Preparation is one of the modules included in the Earthwork Series**.
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.

Field Identification of Soils Guide from AASHTO TC3 Job Aids 
Field inspectors/technicians should be able to make an approximate identification of soil based on experience, visual aspects, and physical characteristics. Below is a guide to help you in determine the characteristics of soil. Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Inspector Responsibility Checklist (Trenchless Technology) from AASHTO TC3 Job Aids 
Detailed planning by the engineer and the contractor, followed by execution of the plan, is required for a successful new or rehabilitation installation. The inspector and safety engineer should perform the following activities to ensure a safe and successful construction process. Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your state agency's standards and specifications when using these guidelines.

Inspector Responsibility Checklist (Earthworks Series - Site Prep) from AASHTO TC3 Job Aids 

Trench Safety from Tailgate Talk 

Trench Safety and Gravel Pit Concerns from Montana LTAP Safety Webinars (0.75 hrs.)
This webinar covers safety issues with trenching and soil classifications when dealing with culvert placement and excavations such as gravel pits. Several scenarios are provided where actual stories of people who were buried by trench walls collapsed on them. Other discussions included soil types A, B, C and protective measures for workers in the trench of sloping and benching, and shoring and shielding.

Trenching and Excavation Safety from Montana LTAP Safety Webinars (0.5 hrs) 
Information provided covers general excavation safety, soil types and the importance of knowing what soil you are working in, protective systems that can be used, atmospheric hazards, and other hazards workers may encounter.

Trenching Checklist from Tailgate Talk 

Trenching Safety from Tailgate Talk 

Trenching Safety Rules from Tailgate Talk 

Trenching Shoring Basics from Tailgate Talk 

Trenchless Technology from TC3 (5.5 hrs.)
Various applications are covered including jack and bore, sliplining, 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:

- Introduction to Trenchless Technology;
- Trenchless Technology Applications;
- Permits for Trenchless Projects; and
- 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.

First Aid and General Safety

ABC's of First Aid from Montana LTAP Safety Webinars (0.75 hrs.)
Various First Aid methods are examined and what is available for the following types of incidents: ABC = Airway, Breathing, Circulation; Broken Bones & Slings & Splints; Heat Exhaustion & Heat Stroke & Burns; Rattlesnake Bites & Tick Bites & Bee Stings; First Aid Kits

Back Safety and Fall Prevention from Montana LTAP Safety Webinars (0.5 hrs.)
Ergonomics, slips, trips, and falls

Back, Hand, & Eye Safety (PPE) from Montana LTAP Safety Webinars (0.75 hrs.)
Topics covered: •Heavy Equipment Operators - Most Common Injuries on Insurance Claims

- Back Protection and Prevention for Equipment Operators
- Importance of 3-Point Contact for Ingress/Egress
- Basics of Hand Safety – Use of Correct Hand Protection
- Eye and Face Protection

Blood Safety from NLTAPA Tailgate Talk

Bloodborne Pathogens from TC3 (1 hr.)
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:

- 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.

Carbon Monoxide Safety from NLTAPA Tailgate Talk 

Ergonomics from Montana LTAP Safety Webinars (0.5 hrs.) 
Information provides proper ergonomics associated with driving. The webinar identifies common work related muscular disorders, risk factors, and ergonomic control methods for eliminating or reducing issues from sitting for prolonged periods.

Hand & Eye Safety PPE from Montana LTAP Safety Webinars (0.5 hrs.) 
Your hands and your eyes are continually exposed to work hazards. In this safety webinar, Montana LTAP staff cover Personal Protection Equipment for hands and eye safety; different types of physical trauma and chemical contact to hands and various glove choices and glove maintenance; five types of eye and face protection, including ANSI Z87 regulatory eye glasses/goggles; other training resources available.

Hand Tool Safety from NLTAPA Tailgate Talk 

Hearing Protection from NLTAPA Tailgate Talk 

Hearing Safety, What's the Buzz from Montana LTAP Safety Webinars (0.5 hrs.) 
How important is your hearing? This 30-minute webinar covers aspects of the human ear and how it functions as well as how to prevent hearing loss through using PPE; controlling high noise levels in the work place; understanding loud equipment and OSHA Decibel Limits; importance of audiometric testing; and being proactive in your work place.

High Visibility Safety Apparel from NLTAPA Tailgate Talk 

Ladder Safety from NLTAPA Tailgate Talk 

Ladder Safety Sign-In Sheet from NLTAPA Tailgate Talk 

Ladder Safety Checklist Handout from NLTAPA Tailgate Talk 

Ladder Safety Handout from NLTAPA Tailgate Talk 

Ladder Safety Instructions from NLTAPA Tailgate Talk 

OSHA Fact Sheet: Extension Ladder from NLTAPA Tailgate Talk 

OSHA Fact Sheet: Step Ladder from NLTAPA Tailgate Talk 

OSHA Falling Off Ladders Can Kill from NLTAPA Tailgate Talk 

OSHA Quick Card Portable Ladder from NLTAPA Tailgate Talk 

PPE (Personal Protective Equipment) from Montana LTAP Safety Webinars (0.5 hrs.) 
Information provided includes: Personal Protective Equipment for hands, eyes, ears, head, and winter solutions for cold weather.

PPE Equipment Safety from Montana LTAP Safety Webinars (0.5 hrs.) 
Information provided covers varying aspects of PPE: Hand Safety, Eye Safety, Hearing Safety, Head Safety, and Winter PPE.

Slips, Trips, and Falls from Montana LTAP Safety Webinars (0.5 hrs.) 
Review of important aspects of keeping workers' backs safe in the workplace and importance of being aware of ingress/egress of equipment. Topics include 3-Point Contact, Common Injuries on Insurance Claims for Heavy Equipment Operators, Back Protection, Shop Safety, Slips-Trips-Falls, other training resources.

Slips, Trips, and Falls and Back Safety from Montana LTAP Safety Webinars (0.5 hrs.) 
Information provided includes: Back Safety Basics: 3-Point Contact, Ingress/Egress on Equipment, Most Common Injuries, Your Back and Equipment Operators, Slips in Shops, Safety Manual, MT LTAP Videos and DVD's on Slips, Trips, and Falls and Back Safety

Workplace Electrical Practices from Tailgate Talks (0.1hr.) 

Flagger and Work Zone Safety & Awareness

ADA in Temporary Traffic Control Webinar – Part 1 from Ohio LTAP Center (1 hr.) 

High-Visibility Garments from TC3 (1.0 hrs.)
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:

- 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.

Flagger from TC3 (1.0 hr.)
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.
Learning outcomes: Upon completion of the course, participants will be able to:

- Identify the responsibilities of a flagger;
- Describe the proper ways to place signs;
- Describe the proper position for flagging;
- Define the flagging procedures for stop, slow, and proceed;
- Identify the correct procedures for various flagging situations; and
- Describe the proper conduct in flagging.

Flagger Certification ATSSA from ATSSA (4.0 hrs.)
The flagger's role is to protect project personnel and provide safe, courteous, and authoritative directions to traffic seeking passage through the work area. This course will teach students standard flagger control references, proper flagging signals procedures, and

standard flagger practices for various situations. Upon successful completion of the course, students will receive an ATSSA Flagger Certification card.

Flagger Training Proper Conduct Checklist from AASHTO TC3 Job Aids 
Describe the proper ways to place signs; In addition to the traffic control procedures, there are several safety rules for proper conduct that need to be followed at all times to ensure a safe environment for motorists and co-workers.
Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Flagging Basics for a Two Lane Roadway from Ohio LTAP Center (0.75 hrs.) 

Flagging Basics Webinar from Ohio LTAP Center (1 hr.) 

Flagging Procedures Checklist from AASHTO TC3 Job Aids 
This checklist covers three flagging tools and the procedures that are used for each tool.
Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Flagging Tips and Rules of Conduct from AASHTO TC3 Job Aids 
Define the flagging procedures for stop, slow, and proceed; The following are flagging tips that will help you successfully perform your responsibilities when flagging and rules of conduct to ensure you maintain a professional and assertive demeanor. Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Glossary of Terms- Maintenance of Traffic for Technicians from AASHTO TC3 Job Aids 
Provides helpful terms associated with traffic control zones. Remember to always double-check with your State or agency for standards, specifications, and definitions.

High-Visibility Garments from AASHTO TC3 (1.0 hrs.)
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.

Job Site Housekeeping from NLTAPA Tailgate Talk 

Maintenance of Traffic for Technicians from TC3 (5.0 hrs.)
The Maintenance of Traffic for Technicians training presents information about the placement of, field maintenance required for, and inspection of traffic control devices. In addition, drafting work zone traffic control plans and flagger operations are discussed. This training is divided into five modules:

1. General Terms and Procedures;
2. Traffic Channelizing and Control Devices;
3. Traffic Control Zones;
4. Flagger Operations; and
5. Traffic Control Zone Operations

Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, and III.
Target audience: This training is designed for all people with duties that include direct responsibility for placement of work zone traffic control devices, direct responsibility for field maintenance of work zone traffic control devices, inspection of the placement or

operational function of work zone traffic control devices, and drafting or electronic generation of work zone traffic control plans.
Learning outcomes: Upon completion of the course, participants will be able to:

- Identify the correct placement of work zone traffic control devices;
- Perform field maintenance of work zone traffic control devices;
- Inspect placement or operational functions of work zone traffic control devices;
- Generate work zone traffic control plans; and
- Explain the basics of flagging.

Maintenance of Traffic for Supervisors from NHI (5.0 hrs.)
The Maintenance of Traffic for Supervisors Web-based training presents information about the placement of, field maintenance required for, and inspection of traffic control devices. In addition, drafting work zone traffic control plans and flagging are discussed. This training focuses on the design of a traffic control plan, and how and why one needs to operate and implement traffic control in the work zone.
We've broken this training into five modules:
1. Fundamental Principles of Temporary Traffic Control Zones
2. Temporary Traffic Control Devices
3. Traffic Control Zones
4. Transportation Management Plans
5. Flagger Operations

Training Level: Basic
Target Audience:
This training is designed for personnel with responsibility or authority to decide on the specific maintenance of traffic requirements to be implemented. These positions include engineers responsible for work zone traffic control development and work site traffic supervisors. The target audience could be geographically dispersed, in need of immediate training or information, or not have access to travel funds.
Learning Outcomes: Upon completion of the course, participants will be able to:

- Describe how to create clear, organized traffic control plans
- Identify acceptable temporary traffic control devices
- Determine good and bad flagging techniques

Portable Generator from NLTAPA Tailgate Talk 

Safe and Effective Use of Law Enforcement in Work Zones from NHI (2.0 hrs.)
The purpose of this course is to provide basic knowledge to help save lives, avoid work zone crashes, and improve safety when working in a work zone. This course will provide tips for safe practices for law enforcement officers (LEO's) in work zones as well as providing for a safer work zone environment. This Web-based training will educate participants on the standards and guidelines related to temporary traffic control in work zones; the role of LEO's in work zones; the components of a typical work zone; and the proper practices and procedures related to the use of law enforcement officers in work zones.
Training Level: Basic
Target Audience:
133119 Safe and Effective User of Law Enforcement Personnel in Work Zones is a Web-based training course designed for LEO's. Specifically, this course targets state troopers, state, county, municipal officers, and highway patrol officers who will participate in work zone activities. Describe the role of LEO's in work zones
Learning Outcomes:

- Explain proper practices and procedures related to the use of LEO's in work zones
- Explain safe operating practices of LEO's working in a Temporary Traffic Control (TTC) zone

Safety on a New Jobsite NLTAPA Tailgate Talk 

Steps to Pedestrian Safety in a Distracted Age from Cornell Local Roads Program (1 hr.) 

Temporary Traffic Control for Low Volume Roads from Montana LTAP's Safety Webinars (0.5 hrs.) 
Work zone safety: what determines low volume roads in a temporary traffic work zone; understanding temporary traffic control as seen in Chapter 6 of the MUTCD; various TTC signs to be used for low volume roads in a work zone; ANSI 2 or ANSI 3 required safety vests; when are flaggers assigned to a work zone; the importance of keeping your flaggers certified and the liability issues if you don't; review of the five parts of a work zone.

Temporary Traffic Control Zone Map from AASHTO TC3 Job Aids 
A completed temporary traffic control (TTC) zone map.

Working Safely in Work Zones from TC3 (1.0 hrs.)
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.
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.

Work Zone Flagger Training video from AASHTO TC3 Just-in-Time videos (.5 hrs.) 

Work Zone Safety and Flagging Tutorial from Cornell Local Roads Program
The purpose of this tutorial is to provide the fundamentals of work zone safety and to explain the basic concepts of flagging in a work zone. This includes reminders about proper flagging equipment, placement of flaggers, appropriate use of standard signaling devices, and methods of traffic control.
Target Audience:
This tutorial is intended as refresher training for New York State rural town, county, and village public works crews, Highway Superintendents, and their seasonal laborers. This tutorial may also be useful to New York State utility workers, law enforcement officers, and emergency response teams who occasionally need to redirect traffic. It is not intended to replace comprehensive instruction on the topic.
This tutorial has recently been checked to be sure it meets the current 2009 National MUTCD and the 2011 NYS Supplement to the National MUTCD.

- Lesson 1
- Lesson 2
- Lesson 3
- Lesson 4

If you would like to test your knowledge of work zone safety, click on any of the lessons above and review the questions.

Work Zone Safety for Low Volume Roads from Montana LTAP (0.5 hrs.) 
Do you have an MUTCD? The Manual on Uniform Traffic Control Devices is the standard for our nation. Within the MUTCD is Chapter 5 for low volume road signage. For 30 minutes, Sam Gianfrancisco, MT LTAP Field Engineer, along with Shawna Page, High Country Safety Training, and Steve Kurk, Town of Manhattan, cover temporary traffic control, flagging issues, and importance of wearing correct retroreflective apparel to keep all safe in a work zone. You can use the electronic version of the 2009 MUTCD.

Work Zone Safety Tutorial from Minnesota LTAP 
The purpose of this tutorial is to offer a convenient opportunity for new, seasonal, or temporary staff to learn about the fundamentals of work-zone safety and the basic concepts of the work-zone area before arriving at the job site. This tutorial addresses many of the hazards inherent in road and street work and how these dangers can be minimized to keep motorists, pedestrians, and employees safe. The online tutorial was designed to provide work-zone employees with an understanding of the most basic aspects of safety in a work zone and encourage them to develop safe habits. It begins with how a worker should prepare before entering the work zone, and it doesn't end until the worker is off site and out of the work-zone area.
Learning Outcomes:

- Define "work zone"
- Identify three things you need to know before working in traffic
- Identify the component parts of a work zone
- Explain how to safely exit traffic flow and enter the work zone
- Identify safety techniques to use in the work zone
- Explain how to safely exit the work zone and re-enter traffic flow

Target Audience: Construction, maintenance, and utility workers, though the training material is not limited to these groups. The tutorial is designed to introduce seasonal or temporary employees to the roadway experience and enhance the formal training they will receive. Additionally, this tutorial serves as an excellent refresher for existing staff.

Work Zone Safety Tutorial from Montana LTAP (0.5 hrs.)
Information provided includes: A basic outline regarding work zone safety methods, temporary traffic controls, and short term work sites on roads and street.

Work Zone Traffic Control from Ohio LTAP Center (1.5 hrs.)

- **Part 1**
- **Part 2**
- **Part 3**
- **Part 4**
- **Part 5**

Pedestrian Work Zone Barricades & the MUTCD from UMass Transportation Center (1 hrs.)

- Presentation PDF

Temporary Traffic Control Zones from USDOT FHWA (14 min)

- Part 1
- Part 2

When Luck Runs Out – Flagger Training from Iowa DOT (23 min)

Access Permits from Iowa DOT (2 min)

Funding

Accelerated Innovation Deployment (AID) Demonstration from FHWA (1.5 hrs.)

Asset Management Plans and Periodic Evaluations of Facilities Repeatedly Requiring Repair and Reconstruction Due to Emergency Events from TSP2 Bridge Preservation Work Group
The FHWA is issuing this final rule to address three new requirements established by the Moving Ahead for Progress in the 21st Century Act (MAP-21). First, as part of the National Highway Performance Program (NHPP), MAP-21 adopted a requirement for States to develop and implement risk-based asset management plans for the National Highway System (NHS) to improve or preserve the condition of the assets and the performance of the system. Second, for the purpose of carrying out the NHPP, MAP-21 requires FHWA to establish minimum standards for States to use in developing and operating bridge and pavement management systems. Third, to conserve Federal resources and protect public safety, MAP-21 mandates periodic evaluations to determine if reasonable alternatives exist to roads, highways, or bridges that repeatedly require repair and reconstruction activities. This rule establishes requirements applicable to States in each of these areas. The rule also reflects the passage of the Fixing America's Surface Transportation (FAST) Act, which added provisions on critical infrastructure to the asset management portion of the NHPP statute.

Asset Management for Roads and Slopes from FHWA (1.5 hrs.)

EDC 5: Project Bundling from FHWA (1.5 hrs.)

Estimating and Understanding the Costs of Highway Projects from Cornell Local Roads Program (1.0 hrs.)
Estimating projects costs does not have to be overly complicated but is critical to budgeting and planning. In this session David will provide an overview of a simple way to perform a cost estimate and show some examples of how to determine the costs of your highway projects.

Estimating and Understanding the Costs of Highway Projects Handout from Cornell Local Roads Program

Funding Research to Solve Local Transportation Issues from Ohio LTAP eLearning (0.75 hrs.)

Grant Writing – How to get started from Ohio LTAP eLearning (0.5 hrs.)
Video addresses Funding Research to Solve Local Transportation Issues

Introduction to Innovative Finance Strategies from FHWA (1.5 hrs.)

Review of Ways to Link Funding to Conditions of Highway Bridges from TSP2 Bridge Preservation Work Group
The U.S. Government Accountability Office has released a report that examines trends in the condition, managing, and funding of the nation's bridges.

What Funding. Where. How to build support for it. from APWA Click, Listen, and Learn (0.75 hrs.)
Examine examples of how communities successfully market initiatives for capital improvements. The key to the success of these funding initiatives is the outreach strategies that build understanding within the community.

Garage Safety

Compressed Air Safety NLTAPA Tailgate Talk

Dangerous Cleaning Concoctions NLTAPA Tailgate Talk

Electrical Safety NLTAPA Tailgate Talk

Electrical Safety Webinar from Montana LTAP- Safety Webinars (0.5 hrs.)
Information provided includes: Electricity & the human body, types of electrical burns, overhead power line safety, and how to avoid an electrical injury.

Fire Proofing your Shop from Montana LTAP- Safety Webinars (0.5 hrs.)
Information provided includes: fire protection, fire extinguishers, fire prevention, wildfire preparedness, and program tenants and resources

Fire Safety NLTAPA Tailgate Talk

Good Housekeeping NLTAPA Tailgate Talk

Hazard Communication Checklist from AASHTO TC3 Job Aids
Hazard communication refers to the obligation of employers to communicate to employees, and to tell them about any hazards which may be in the workplace. Below are the items that should be covered in hazard communication. Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Hazards of Solvents NLTAPA Tailgate Talk

Potential Job Hazards Checklist from AASHTO TC3 Job Aids
The checklist is covering potential hazards you may encounter and safeguards to prevent or minimize each hazard. Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Sick Building Syndrome NLTAPA Tailgate Talk

Smoke Detectors: A Life Saving Warning NLTAPA Tailgate Talk

Teamwork Prevents Accidents NLTAPA Tailgate Talk

The Deadly Dozen NLTAPA Tailgate Talk 

Using and Storing Acetylene Gas NLTAPA Tailgate Talk  

Gravel Roads

Butch Says e-Series: Gravel Roads from UNH T2 

- Part 1
- Part 2

Dust management from FHWA (1.5 hrs.)

Geosynthetics in Transportation Applications from Ohio LTAP Center (0.5 hrs.) 

Gravel Road Maintenance from FHWA (1.5 hrs.)
There are over 1.6 million miles of unpaved roads in the United States.
Heavy rains, freezing and thawing, and the constant wear and tear from cars and trucks all take their toll on a gravel road. The first step toward successfully maintaining a gravel road is to restore its smooth surface.
Mr. Ken Skorseth, Retired SD LTAP Field Operation Manager, will share innovations in the gravel road maintenance and rehabilitating industry. Focusing on:

- New Ways of Stabilizing roads
- New Method of Dust Control
- New Equipment for Maintaining Gravel Roads
- New Surface Materials

These gravel road maintenance techniques will help your agency to achieve a smoother and better gravel road - the smoother, the better - is the ultimate goal.

Gravel Road Maintenance and Design from Minnesota LTAP
Target audience: Supervisors, operators, and township officials responsible for maintaining gravel roads and anyone interested in gravel road maintenance.
Learning outcomes:
The properly shaped gravel road

- Distresses in gravel roads
- Drainage
- Adding gravel
- What is good gravel
- Turning a poor gravel road into a good one
- Shaping the roadway
- Dust control
- Equipment innovations

Summary and conclusion: This course helps supervisory personnel and operators better understand the materials, techniques, and equipment needed for maintaining gravel roads. It will also review new techniques and ideas in gravel road maintenance. The course is made up of 10 lessons, each containing a narrated presentation, video clips, reading assignments, a quiz, time to reflect on what has been learned, and time to develop an action plan.

Gravel Road Materials and Specifications from Montana LTAP Safety Webinars (0.75 hrs.)
Topics covered: Keys to Longevity of Gravel Roads; Montana's Standard Prism Design; Gravel Road Gradation Requirements and Plasticity; Using Sieve Analysis to Understand Gravel Specifications; Process for Obtaining and Handling Good Gravel; and Calculating Gravel Volume.

Gravel Roads from APWA Click, Listen, Learn (1.5 hrs.) 

This program will address the latest in gravel road maintenance techniques, road and equipment safety, gravel gradation and how to select the right equipment.

Gravel Roads Design and Maintenance Training Course Webinar from Ohio LTAP Center (1.5 hrs) 

- **Part 1**
- **Part 2**
- **Part 3**
- **Part 4**

Gravel Roads Drainage, Maintenance and Design from Minnesota LTAP (1.0 hrs.) 
This webinar, offered by the Minnesota Local Technical Assistance Program (LTAP), features three gravel road experts, who share their knowledge and experience with the importance of properly designing and maintaining a gravel road for effective drainage.
Target audience: Supervisory personnel, operators, and anyone responsible for managing a gravel road system.

Unpaved Road Dust and Stabilization Solutions from FHWA (1.75 hrs.)

Gravel Road Maintenance from UMass Transportation Center (1 hr) 

Gravel Road Maintenance from AMK Production Services (20 min) 

Unpaving Guide from the National Center for Rural Road Safety (1.5 hrs)
This webinar featured information on converting distressed paved roads to engineered unpaved roads. Information was shared on how to identify a candidate road for unpaving, how to conduct a road investigation, unpaved road design considerations, specific information on converting roads from paved to unpaved, lifecycle cost information and tools, and information and tools to aid in communicating unpaving with the public.
Webinar Outcomes:

- Identify poorly performing paved roads that are candidates for conversion to an unpaved surface.
- Compare maintenance and surfacing options to make the best decision for your agency.
- Convert a distressed paved road to an engineered unpaved road.

Target Audience:
This training was directed towards a very broad safety audience including, but not limited to, law enforcement, planners, engineers, first responders, elected officials, public health, tourism agencies, and safety culture experts. Participants had some basic familiarity with transportation safety.

Green Infrastructure

$tretching your Green Infrastructure Dollars: Case studies in maintenance costs and Level of Service- Facilitator Guide from APWA Click, Listen, Learn (1.0 hr.) 
Case studies from two communities will be presented by different speakers. Over the last 20 years, the City of Ann Arbor, Michigan has built 124 rain gardens and bio-swales in public spaces. Although rain gardens have been successful at reducing pollutant loads, our 30 acres of green stormwater infrastructure created a new challenge: maintenance. In 2015, the City of Ann Arbor and the Washtenaw County Water Resources Commissioner's Office collaborated to formalize the maintenance of the 124 rain gardens. Maintenance schedules and expenditures for each rain garden have been implemented and refined over the last three years. Three case studies will be highlighted showing varied plant designs, spillways and public support. For each case study, a multi-pronged approach has proven successful in implementing the maintenance plan. The variety of rain gardens installed in Ann Arbor have provided the opportunity to learn many lessons and rules of thumb for design. Recommendations for designs that can simplify maintenance, focusing on plant selection, spillway design, size considerations and public involvement will be detailed. The lessons learned from maintenance in Ann Arbor's rain gardens can be used to improve designs, create realistic budgets and foster positive partnerships.
Learning Outcomes:

- identify different level of service goals to consider during design.
- estimate costs for long term green infrastructure maintenance.

- identify key design considerations for minimizing green infrastructure maintenance.

BOC Technical Webinar Library from Eversource
BOC Technical Webinars offer practival maintenance solutions by industry experts and are available to watch at any time that suits your schedule. There are more then 60 webinars for you facilities staff to choose from. Topics include:

- Smart Buildings Technologies and Practices
- Common Opportunities for Low Cost Operational Improvement
- Communication and Occupant Engagement
- Commissioning and other Tune Ups
- Energy Efficient Operation of Building HVAC Systems
- Measuring and Benchmarking Energy Performance

Guardrail Design, Installation, Maintenance and Inspection

Guardrail Basics from TC3 (2.0 hrs.)
"Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, and III.
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. Explain the purpose of guardrail systems;
Describe the components of a guardrail system;
Describe the information that can be found in common guardrail references (NCHRP 350, MASH, etc.);
Explain why it is necessary to update guardrail standards and performance requirements over time;
Describe the clear zone concept;
List the factors that can impact the clear zone distance; and
Define length of need. 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.
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."

Guardrail Installation & Inspection from TC3 (2.5 hrs.)
Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, and III.
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. Compare 27-inch and 31-inch guardrail;
Describe how guardrails are installed in standard sections, terminal end sections, curbs, and transitions;
List important considerations for guardrail placement (depth, post length, soil support, deflection, height, etc.);
Explain important considerations for the installation of median barriers;
Describe the general process for guardrail inspection, including reading and interpreting plans;
Explain what should be documented during new guardrail installation inspection (including in the inspector daily report/daily diary); and
In a given guardrail installation situation, explain what you would do next. 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.
This course is divided into two modules:
Module 1: Guardrail Installation Systems and Placement covers 27- and 31-inch guardrail heights. The sections of a guardrail are discussed, as well as considerations for guardrail placement, including depth, soil support, deflection, etc. The considerations for median barriers are also explained.

Module 2: New Guardrail Installation Inspection describes guardrail inspection and explains what should be documented along the way. Scenarios are presented for various guardrail installation situations.
This is the second course in the Guardrail Series, which also consists of the following courses:
Guardrail Basics; and
Guardrail Maintenance and Repair.
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.

Guardrail Maintenance & Repairs from TC3 (2.0 hrs.)
Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, and III.
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. Explain the purpose of guardrail systems;
Describe the components of a guardrail system;
Describe the information that can be found in common guardrail references (NCHRP 350, MASH, etc.);
Explain why it is necessary to update guardrail standards and performance requirements over time;
Describe the clear zone concept;
List the factors that can impact the clear zone distance; and
Define length of need. 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.
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.

Guardrail Repair Checklist from AASHTO TC3 Job Aids 
A checklist is an important and helpful tool to use when guardrail maintenance and repair work is being done. This checklist can be used to ensure you have addressed all of the important repair items that should be considered. Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your state agency's standards and specifications when using these guidelines.

Inspection of Standard Guard Rail Inspections from AASHTO TC3 Job Aids 
There are several items that need to be checked before a guardrail is installed. Use the following checklist and questions as a guide. The technician/inspector should review the applicable Standard Road Plans, and answer "yes" or "no" to the following:
Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Proper Inspection of Guardrail Sections from AASHTO TC3 Job Aids 
In the standard section of a guardrail, inspection of and repairs to each part of the guardrail is critical. Below is a checklist to help you examine each section. Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your state agency's standards and specifications when using these guidelines.

Type A Turned-down Guardrail Ends Update Webinar from Ohio LTAP eLearning (1.0 hrs.) 

Heavy Equipment Safety and Operation

Back Up Safety from Montana LTAP Safety Webinars (0.5 hrs.)
Information provided includes: Varying aspects of backing up safety; rear blind zones; preventing accidents; driving back overs; major risk factors and causes; and backing up skills and policies.

Backing Safety from NLTAPA Tailgate Talk

Backing Trouble from NLTAPA Tailgate Talk

Construction Equipment Safety Video from ConstructionEquipment.com (0.25 hrs.)
The Construction Industry Safety Initiative (CISI) has created a series of safety videos with the purpose of improving safety performance within construction firms and the industry as a whole. Working safely around equipment requires planning and proper training. The first video, titled "CISI - Human Equipment Interface," addresses how to implement a proper safety plan in order to eliminate construction incidents. Some of the most pertinent safety tips include getting the operator's attention before approaching construction equipment. According to CISI, eye contact is not enough; construction workers are strongly urged to alert operators through hand signals. Assigned spotters are also vital to the construction safety process, especially when dealing with congested project areas. CISI suggests including posters within the equipment to remind operators of the machine's blind spots. The video also stresses the importance of maintaining windows and mirrors to ensure strong visibility, particularly during changing weather conditions.

Construction Safety: Earthmoving Equipment & Motor Vehicles from TC3 (0.5 hrs.)
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.

Defensive Driving from Montana LTAP Safety Webinars (0.5 hrs.)
Information includes: occupant protection, distracted or impaired driving, wildlife crossings, blind spots, and collision prevention.

Driver Operator Safety from NLTAPA Tailgate Talk

Dump Truck Safety from Montana LTAP Safety Webinars (0.5 hrs.)
Information provided includes: dump truck safety hazards, daily truck inspections and safety measures, backing up dump trucks, and dump truck best practices.

Fork Lift Safety from Montana LTAP Safety Webinars (0.5 hrs.)
Due to recent inquiries for forklift certification from local governments, this webinar contains a two-part training session regarding forklift safety issues. Safety issues included forklift design, controls and instrumentation; forklift versus car; pre-inspection necessity; load stability and the fulcrum point; hazards concerning forklift loads; and importance of forklift training for crew members.

Front End Loader Safety from Montana LTAP Safety Webinars (0.5 hrs.)
For this webinar, safety aspects are reviewed when operating a front end loader: • Review Front End Loader Design • Pre-Start Inspection and Procedures • Safety Concerns when driving the Front End Loader • Remembering those general safety operating procedures • Stockpiling with the Front End Loader and Safety Concerns when Digging Banks • Efficient Loading Cycles • Hand Signals

Heavy Equipment from Tailgate Talks

Heavy Equipment Hazards from NLTAPA Tailgate Talk

Load Securement from Montana LTAP Safety Webinars (0.75 hrs.)
Provided information includes real life experiences on the following: Overview of proper loading, positioning, and securing; Why have a properly secured load; Force of Gravity Percentages regarding weight of cargo; Different types of securement approaches; Understanding Working Load Limits of Tie-downs; Observations of damaged or weakened tie-down components.

Loader Exterior Inspection from AASHTO TC Just-In-Time video (5 min.)

Loader in Cab Operation from AASHTO TC Just-In-Time video (4 min.)

Loader Operation from AASHTO TC Just-In-Time videos (6 min.)

Motor Grader Safety Checklist from NLTAPA Tailgate Talk

Operators Pre Start Motor from Ohio LTAP Center (1 hr.)

Preventing Runovers and Backovers from OSHA Grant
2-hour and 4-hour training on preventing backovers and runovers (struck-by incidents) in roadway work zones to workers in the heavy and highway construction industries. Training material includes an instructor guide, a student workbook, and a series of PowerPoint presentations. Materials are in English and Spanish.

Skid Steer Loader Cab Controls from AASHTO TC Just-In-Time videos (5 min.)

Skid Steer Loader Interior Inspection from AASHTO TC Just-In-Time videos (10 min.)

Skid Steer Loader Operation from AASHTO TC Just-In-Time videos (8 min.)

Skid Steer Safety from Montana LTAP Safety Webinars (0.5 hrs.)
Information provided covers skid steer parts, safety concerns, visibility, center of gravity, and training.

Tractor PTO's and Drivelines NLTAPA Tailgate Talk

Truck Driving Safety from Montana LTAP Safety Webinars (0.5 hrs.)
This webinar discusses the importance of the Seven Step Vehicle Inspection/Tire Inspection; 3-point Contact and Backing Safety; Points on Controlling Speed; Managing Driving Space; Winter Issues; Distracted Driving; and Review of Air Brake Systems.

Unsafe Equipment NLTAPA Tailgate Talk

Walk Arounds, Waste Oil, and Split Rim Tire from Montana LTAP Safety Webinars (0.5 hrs.)
Information includes: Internal and external inspections, uses for used oil, and split rim tires.

Leadership

Aspiring to Public Works Leadership? from APWA Click, Listen, Learn (1.75 hrs.)
Do you aspire to be a leader in your organization or professional association? Then this interactive learning opportunity is for you! You will meet dedicated professionals who have held leadership positions in their agencies or companies and who have also served as leaders at both the chapter and national levels of APWA. They'll involve you in discussions about setting your own personal leadership goals and offer insight into the challenges and rewards the lie ahead for you.
Learning Objectives:

- Discover the successes and challenges that lie ahead on your path to leadership.

- Gain insight into what you really want by asking, "Why do I want to be a leader?"
- Discover how to avoid the pitfalls of leadership and benefit from "pearls of wisdom" offered by those who have been there.

Budget Basics from Cornell Local Roads Program (1 hr.)

Grant Writing- How to Get Started from Ohio LTAP Center (1 hr.)

Highway School – Duties of a Highway Superintendent from Cornell Local Roads Program (1 hr.)

Running Your Highway Department Webinar from Cornell Local Roads Program (1 hr.)

Social Media for Public Works from UNH Technology Transfer Center (1 hr.)

Tips to Improve Public Speaking Instantly from Florida LTAP Center (1 hr.)

When to Replace Your Equipment from Cornell Local Roads Program (1 hr.)

Math for Public Works

Math Basics for Maintenance Technicians from TC3 (1.5 hrs)
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.
Training level: This training is recommended for the Transportation Curriculum Coordination Council levels I, II, and III.
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. 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.

Math Basics Series for Highway Technicians: Introductory Math Concepts - **11 part math module series** from TC3 (3.5 hrs.)
The Math Basics Series for Highway Technicians has been designed to provide you with all of 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. Its recommended that you start from the beginning and take all the modules in order. The topics covered in this series are as follows:

1. Arithmetic (TC3ED008-17-T1);
2. Order of operations (TC3ED009-17-T1);
3. Fractions (TC3ED010-17-T1);
4. Decimals (TC3ED011-17-T1);
5. Percentages (TC3ED012-17-T1);
6. Ratios (TC3ED013-17-T1);
7. Unit conversions (TC3ED014-17-T1);
8. Mean (TC3ED015-17-T1);
9. Area (TC3ED016-17-T1);
10. Volume (TC3ED017-17-T1); and
11. Slope (TC3ED018-17-T1).

Participants who wish to complete all 11 trainings in this series should enroll in this course. Those who are interested in specific topics may enroll in each training individually.
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:

- 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.

Understanding Car Crashes: It's Basic Physics from IIHA (22 min)

Mowing & Roadside Vegetation

Brush Chippers NLTAPA Tailgate Talk

Brush Vegetation NLTAPA Tailgate Talk

Butch Says eSeries: Roadside Mowing & Safety from UNH Technology Transfer Center (0.75 hrs.)

Chipper Injuries NLTAPA Tailgate Talk

Chipper Operations from AASHTO Just-in-Time videos (4 min.)

Cutting Brush and Vegetation NLTAPA Tailgate Talk

Cutting Brush and Vegetation NLTAPA Tailgate Talk

Cutting Tool Safety NLTAPA Tailgate Talk

Cutting Tools NLTAPA Tailgate Talk

Maintenance Training Series: Roadside Vegetation Management from NHI (1.0 hrs.)
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 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. To access all the courses in the series, enroll in the 134109 course.
Training level: Basic
Target audience: This course is designed for State, regional, and county personnel 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:

- 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
- Describe the requirements of a noxious weed control program

Mobile Equipment and Weed Mowing Safety from Montana LTAP Safety Webinars (0.5 hrs.)
Reviews the importance of being trained, PPE when weed mowing or when on mobile equipment, understanding slope or incline danger, why pack a first aid kit and have knowledge of heat exhaustion, Brush fire concerns, mowing extremely tall grass and mowing noxious weeds.

Mower Safety NLTAPA Tailgate Talk

Riding Mower Safety NLTAPA Tailgate Talk

Right-of-Way Mowing NLTAPA Tailgate Talk 

Right-of-way Permit Application Checklist from AASHTO TC3 Job Aids 
The following is typical information required in most right-of-way (ROW) permit applications. Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your state agency's standards and specifications when using these guidelines.

Roadside Mowing Tips NLTAPA Tailgate Talk 

Rotary Mower Operation from Ohio LTAP Center (0.5 hrs.) 

String Trimmer Safety NLTAPA Tailgate Talk 

Walk-Behind Mower Safety NLTAPA Tailgate Talk 

Weed Mowing Safety from Montana LTAP Safety Webinars (0.5 hrs.) 
Information provided includes: PPE when weed mowing or when on mobile equipment, understanding slope or incline danger, why you should pack a first aid kit and have knowledge of heat exhaustion, brush fire concerns and mowing extremely tall grass and mowing noxious weeds

Weed Mowing Safety & Mobile Operations from Montana LTAP Safety Webinars (0.5 hrs.) 
Information provided includes: Importance of being trained, PPE when weed mowing or when on mobile equipment, understanding slope or incline danger, why pack a first aid kit and have knowledge of heat exhaustion, Brush fire concerns, mowing extremely tall grass and mowing noxious weeds.

Pavement Construction, Management, and Preservation

Aggregate Sampling Basics from TC3 (1.0 hrs.)
The Aggregate Sampling Basics course covers 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:

- Define aggregates;
- Describe aggregate processing; and
- Describe aggregate sampling.

Highway and Structure Construction: Basic Materials from TC3 (3.0 hrs.)
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:

- 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.

Bond of Field-Cast Grouts to Precast Concrete Elements from TSP2 Bridge Preservation Work Group 
The performance of connections between prefabricated concrete elements constructed using field-cast cementitious grouts and grout-like materials is becoming a focus area for accelerated bridge construction (ABC) projects. These connections are required to provide sufficient strength and long-term performance equal to or better than the adjacent concrete elements that they are connecting to assure adequate stress transfer and long-term performance throughout the life of the bridge. Many aspects need to be taken into consideration when specifying the material to make these connections. The FHWA has issued a TechNote focusing on the aspects related to the bonding interface between the previously cast concrete element and the field-cast connection grouts, including test methods, factors affecting bond, and best practices for detailing and construction.

Chip Seal Best Practices from TC3 (3.0 hrs.)
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; and
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:

- 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.

Cold Weather Concreting for Transportation Agencies from FHWA (1.25 hrs.)

Cold-in-Place Recycling from TC3 (4.0 hrs.)
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:

- 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.

Common Pavement Maintenance Techniques from Cornell Local Roads Program (1 hr.) 
A one-hour video presentation easily accessible from YouTube. Corresponding workbook is found here in addition.

Concrete Pavement Preservation Series from TC3 (12 hrs.)
This Concrete Pavement Preservation Series presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. It concentrates primarily on strategies and methods that are applicable at the project level, and not at the network level, where pavement management activities function and address such issues as prioritizing and budgeting.

To streamline registration and enable you to take some or all of these courses when it best suits your schedule, TC3 created this new series option that automatically registers you for all 11 of the following modules. You can also take any of the modules individually and independently of the others- hyperlinks are included for each separate module also.

Module 1: Preventive Maintenance and Pavement Preservation Concepts (TC3MN002-15-T1);
Module 2: Concrete Pavement Evaluation (TC3MN003-15-T1);
Module 3: Slab Stabilization and Slab Jacking (TC3MN004-15-T1);
Module 4: Partial-Depth Repairs (TC3MN005-15-T1);
Module 5: Full-Depth Repairs (TC3MN006-15-T1);
Module 6: Retrofitted Edge Drains (TC3MN007-15-T1);
Module 7: Dowel Bar Retrofit, Cross Stitching, and Slot Stitching (TC3MN008-15-T1);
Module 8: Diamond Grinding and Grooving (TC3MN009-15-T1);
Module 9: Joint Resealing and Crack Sealing (TC3MN010-15-T1);
Module 10: Concrete Overlays (TC3MN026-15-T1); and
Module 11: Strategy Selection (TC3MN011-15-T1).

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;
- List the major components of a pavement evaluation and the types of information gained from each;
- Identify the purpose and suitable application of various concrete pavement preservation treatments;
- Describe recommended materials and construction/installation practices for each treatment; and
- List factors to consider in the selection of concrete pavement preservation treatments.

Crack Seal Best Practices from ND LTAP 
Crack sealing/filling is a cost effective pavement maintenance tool that can be effectively completed by county workers or contractors. Knowing how to most effectively employ this technique is important, as failure of this product is costly, especially in low budget situations. This review includes some researched best practices from NDDOT, FHWA, and other sources.

Flexible Pavement Preservation Treatment Series from TC3 (14.0 hrs.)

FHWA, in partnership with Caltrans, the National Center for Pavement Preservation, and the Transportation Curriculum Coordination Council (TC3) created the Pavement Preservation Treatment Construction Guide (PPTCG) as a resource for agency and industry pavement preservation practitioners.

This course is designed to provide participants with an introduction to the PPTCG so that they can better use it to familiarize themselves with general information on pavement preservation concepts and techniques. The guide covers basic pavement preservation concepts, as well as information on specific treatments to extend the life of asphalt pavements. The module topics are, as follows, and each module is also offered as individual trainings (accessed by clicking the individual hyperlink within the module line):

1. Introduction to Pavement Preservation (AT-TC3PP003-16-T1);
2. Materials (AT-TC3PP004-16-T1);
3. Crack Sealing and Fillings (AT-TC3PP005-16-T1);
4. Localized Pavement Repairs (AT-TC3PP006-16-T1);
5. Chip Seals (AT-TC3PP007-16-T1);
6. Fog Seals (AT-TC3PP008-16-T1);
7. Slurry Seals (AT-TC3PP009-16-T1);
8. Micro-Surfacing (AT-TC3PP010-16-T1);
9. Thin Functional HMA Overlay (AT-TC3PP011-16-T1);
10. Ultra-Thin HMA Bonded Wearing (AT-TC3PP012-16-T1); and
11. Selecting the Right Treatment (AT-TC3PP013-16-T1).

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:

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

Pavement Preservation Terminology from ND LTAP

Communication is critical for an agency to have a successful pavement preservation program. Often we assume that everyone we are working with understands the jargon we use. This document contains definitions for some of the treatments and measures used to establish a successful pavement preservation program. Clear communication and clearly defined terminology are keys to building a successful team.

PCC Portland Cement Concrete Series from TC3 (12.0 hrs.)

The Concrete Series 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.

To streamline registration and enable you to take some or all of these courses when it best suits your schedule, TC3 created this new series option that automatically registers you for all 11 modules (as follows). You can also take any of the modules separately and independently of the others by clicking on the hyperlinks below.

- Module 1: Design of Pavement (TC3MS003-15-T1);
- Module 2: Hardened Concrete Properties- Durability (TC3MS004-15-T1);
- Module 3: Fundamentals of Materials Used for Concrete Pavements (TC3MS005-15-T1);
- Module 4: Incompatibility in Concrete Pavement Systems (TC3MS006-15-T1);
- Module 5: Mix Design Principles (TC3MS007-15-T1);
- Module 6: Early Age Cracking (TC3MS008-15-T1);
- Module 7: Basics of Cement Hydration (TC3MS009-15-T1);
- Module 8: Fresh Properties (TC3MS010-15-T1);
- Module 9: Construction of Concrete Pavements (TC3MS011-15-T1);
- Module 10: QCQA for Concrete Pavements (TC3MS012-15-T1); and
- Module 11: Troubleshooting for Concrete Pavements (TC3MS013-15-T1).

Target audience: This training is intended as both a training tool and a reference to help concrete paving engineers, quality control personnel, specifiers, contractors, suppliers, technicians, and tradespeople bridge the gap between research and practice regarding optimizing the performance of concrete for pavements.
Learning outcomes: Upon completion of the course, participants will be able to:

- Explain concrete pavement construction as a complex, integrated system involving several discrete practices that interrelate and affect one another in various ways;
- Recognize and implement technologies, tests, and best practices to identify materials, concrete properties, and construction practices that are known to optimize concrete performance;
- Identify factors that lead to premature distress in concrete, and learn how to avoid or reduce those factors; and
- Apply appropriate how-to and troubleshooting information.

PCC Portland Cement Concrete Pavement Construction Series from TC3 (6.0 hrs.)
Improving and maintaining the quality of concrete is an important aspect of keeping pavements safe and long lasting. This training provides participants with an overview of the entire Portland cement concrete (PCC) paving and restoration process: setting forms, mixing, hauling, curing, and applicable repair techniques. This training is presented in several modules:

1. Construction Quality;
2. PCC Production Overview;
3. Slipform Paving;
4. Fixed-Form Paving;
5. Pavement Curing, Sawing, and Joint Sealing Operations; and
6. Concrete Pavement Restoration.

This training focuses on the proper methods for construction of concrete paving and pavement restoration techniques with an emphasis on cause and effect.
Target audience: This training is designed for contractors, technicians, and inspectors who are involved in daily pavement operations for the placement and restoration of PCC pavements. Participants should have some working knowledge of concrete pavement construction.
Learning outcomes:

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

Driving Surface Aggregate by FHWA (1.25 hrs.)

FHWA Guidance on Highway Preservation and Maintenance from FHWA 
The FHWA has updated its guidance on highway preservation and maintenance activities to be consistent with MAP-21 and the FAST Act. The following guidance memoranda have been superseded:

- Pavement Preservation Definitions, September 12, 2005,
- Preventive Maintenance Eligibility, October 8, 2004, and
- Preventive Maintenance Questions and Answers, December 16, 2004.

Full Depth Reclamation (FDR) from TC3 (4.5 hrs.)
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:

- 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; and
- List criteria for acceptance and payment for FDR pavements.

Hot-in-Place Recycling from TC3 (2.5 hrs)

This training was developed by the Transportation Curriculum Coordination Council (TCCC) in partnership with AASHTO and NHI. 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 course contains three modules:

1. Introduction to Hot In-Place Recycling
2. Pre-Production Inspection
3. Full Production Pavement Recycling

Training Level: Basic

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:

- Explain the purpose, benefits, and use of HIR;
- Identify the purpose and use of HIR designs and the equipment used for its applications;
- Identify the preparation and planning steps necessary for an HIR application; and
- Describe the production, evaluation, steps necessary for an HIR application. Internally Cured Concrete webinar

Maintenance Training Series from TC3 (12.0 hrs)

The Maintenance Training Series was created to train individuals responsible for the maintenance of our nation's roadways. The series consists of 11 self-paced, Web-based trainings on various maintenance operations topics, ranging from the conceptual (pavement preservation) to the practical (management of underground storage tanks).

Participants who wish to complete all 11 trainings in the Maintenance Training Series should enroll in course TC3MN014-16-T1. Those who are interested in specific topics may enroll in each training individually. The trainings included in the series are listed below and will each take approximately 1 hour to complete.

- Pavement Preservation Program (AT-TC3MN015-16-T1)
- Shaping and Shoulders (AT-TC3MN016-16-T1)
- Thin HMA Overlays and Leveling (AT-TC3MN017-16-T1)

- Base and Subbase Stabilization and Repair (AT-TC3MN018-16-T1)
- Roadway Drainage (AT-TC3MN019-16-T1)
- Outdoor Advertising (AT-TC3MN020-16-T1)
- Roadside Vegetation Management (AT-TC3MN021-16-T1)
- Weather-Related Operations (AT-TC3MN022-16-T1)
- Basics of Work Zone Traffic Control (AT-TC3MN023-16-T1)
- Underground Storage Tanks (AT-TC3MN024-16-T1)
- Cultural and Historic Preservation (AT-TC3MN025-16-T1)

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: Learning outcomes have been established at the module level. Please see the individual modules for the specific learning outcomes.

Pavement Marking from Delaware LTAP's e-newsletter
The Local Agency's Survivor's Guide for Signs and Pavement Markings

Pavement Preservation from APWA Click, Listen, and Learn – **Must be using Firefox or Google Chrome to access** (Select Pavement Management on the right hand side menu and click Pavement Preservation to view video)
Pavement preservation is a cost-effective set of practices that extend pavement life and improve safety and motorist satisfaction while saving public tax dollars. This program will focus on:
Money aspects --such as costs, available resources, dedicated funding, etc; Engineering/ technology items: such as project selection, picking the right treatment for the right road at the right time; Management issues: developing a pavement preservation program and Pavement management-- such as data collections, data analysis After viewing this program participants will be better able to: Recognize the benefits of investing in pavement preservation Estimate the value of pavement preservation techniques Set up data collection processes "

Pavement Preservation: When, Where, and How from FHWA (2.0 hrs.)
It takes a team of technology savvy workers who can develop innovative ways to maintain roads. Specifically, understanding the tools needed to preserve pavement: ultra-thin lift, micro surfacing, slurry seals, and chip seals. Do you use and apply these tools? EDC 4 Initiative: Pavement Preservation: When, Where, & How The best way to engage in discussion and learn about pavement preservation is by attending the upcoming webinar. Topics of discussion include: operation costs, safety improvement, user satisfaction, pavement condition and treatment and timing. Knowledge is Key. Our goal for presenting this webinar is to provide your team with the technology savvy skills to preserve your road network. Participate, Learn, and Innovate. Join planners, program managers, traffic engineers, and operations and maintenance staff around the Nation in launching this innovation.

Pothole Patching from AASHTO TC3 Just-in-Time videos (5.5 min.) 

Road Millings from Montana LTAP (0.5 hrs.) 

- Brief discussion on when to pave
- Basic Use of Road Millings
- Importance of Preparing and Shaping Gravel Road
- Dump Trucks and Uses
- Steps for Laying Out Millings
- Reclamite or Not
- Options and Review.

Mitch Urdahl, Gallatin County Road Supervisor, also provided informative comments on road millings in his county.

Tools for Pavement Preservation - HOW from FHWA (1.5 hrs.)
Protecting roadway investments by applying regular pavement preservation treatments prevents road deterioration.
With intentional and cyclic lesser-cost preservations that restore pavement to like new condition, agencies avoid the reconstruction and rehabilitation higher cost of fixing the 'worst-first.' Learn to keep roads smooth and safe with established preservation methods and escape the crisis stage. Please join in on this webinar to hear how Pavement preservation programs based on the 3Rs—right treatment, right pavement, and right time—have been proven to extend pavement life while saving money.

The New "Little Greenbook" and Local Highway Geometric Standards from Cornell Local Roads Program (1.0 hrs.) 
Presented by Cornell Local Roads Program Director David Orr, PE.

AASHTO just released the next version of the "Little Greenbook" which now includes roads and streets up to 2,000 vehicles per day and includes some details for bicycles and pedestrians. David will review the new guide and the local highway standards developed by Cornell which can be used for most local roads and streets.

The New "Little Greenbook" and Local Highway Geometric Standards Handout from Cornell Local Roads Program 

Ultra-High Performance Concrete (UHPC) for Local Agencies from FHWA (1.25 hrs.)

Unified Soil Classification System from AASHTO TC3 Job Aids  
The Unified Soil Classification System uses a two-letter system to name different soil types. The chart below also includes a plasticity chart that is used to determine the classification of fine-grained soils. Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Warm Mix Asphalt from TC3 (2.0 hrs.)
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.
Learning Outcomes:

- 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

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

Hot-applied, Pourable, Self-adhesive, Rigid Asphalt from UMass Transportation Center (1 hr) 

Construction During COVID-19 from UMass Transportation Center (1 hr) 

Concrete Sidewalk ABCs from UMass Transportation Center (1.75 hrs.) 

- Presentation PDF
- Presentation Handout PDF

Surface Treatments from Pavement Preservation & Recycling Alliance
This training includes 9 different types of surface treatments, covering the entire process of construction.

- Fog Seal
- Rejuvinating Fog Seal
- Slurry Seal
- Micro Surfacing
- Ultra Thin Lift HMA
- Cape Seal
- Chip Seal
- Crack Seal
- Scrub Seal

Pre-Treatments from Pavement Preservation & Recycling Alliance
This training includes 2 different pre-treatments.

- Tack Coat

- Prime Coat

Recycling & Reclamation from Pavement Preservation & Recycling Alliance
This training includes 5 different recycling and reclamation topics.

- Cold Paning & Micro Milling
- Hot In-Place Recycling
- Cold In-Place Recycling
- Cold Central Plant Recycling
- Full Depth Reclamation

Base Treatments from Pavement Preservation & Recycling Alliance
This training includes 2 base treatments.

- Base Stabilization
- Soil Stabilization & Soil Modification

Low-Cost Safety Improvements for Unpaved Roads from USDOT FHWA (5 min) 

Low-Cost Safety Improvements: Longitudinal Pavement Markings from USDOT FHWA (4 min) 

Paving the Way to Connected Automation – Cooperative Adaptive Cruise Control from USDOT FHWA (6 min) 

Plan Reading

Plan Reading: Basics from TC3 (1.0 hr.)
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:

- 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.

Plan Reading: Bridge Plans from TC3 (1.5 hrs.)
This training is provided by the Transportation Curriculum Coordination Council (TCCC) in partnership with NHI to review the basics for highway plan reading. This course is primarily intended for inspectors and technicians. The ability to read plans is essential for anyone involved in highway and/or bridge construction. This training reviews the information found in a bridge plan. This training is part of the curriculum from the Plan Reading Series (FHWA-NHI-134108) which covers both basic plan reading instructions, as well as, providing a more in-depth level of instruction for anyone seeking more information and/or a review of plan reading.
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:

- 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.

Plan Reading: Culvert Plans from TC3 (1.5 hrs.)
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.
Training Level: Basic
Target Audience: This training is designed for FHWA, State, and local agencies and their industry counterparts involved in the construction process of highways and/or bridges. It is applicable to anyone desiring a better understanding of plan reading. This course is primarily intended for inspectors and technicians.
Learning Outcomes:

- Identify the major components of a culvert
- Describe the information provided in a culvert plan
- Using a culvert plan, explain details of the project

Erosion & Sediment Control Plan Reading from TC3 (0.5 hrs.) 
This training reviews the information found in the Erosion and Sediment Control Plans section of a highway plan.
Target Audience: The ability to read plans is essential for anyone involved in highway and/or bridge construction. 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.
Training level: This training is recommended for the TC3 levels II, III, and IV.

- Describe the information provided in the erosion and sediment control plans; and
- Explain the erosion and sediment control items used in the plan.

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.

Plan Reading: Grading Plans TC3 (1.5 hrs.)
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:

- 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.

Plan Reading: Traffic Control Plans from TC3 (0.5 hrs.) 
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:

- Describe the information provided in the traffic control plans;
- Identify signs to be used in the project; and
- Identify sign locations.

Public Relations for Public Works

Essential Work Town Hall from Cornell Local Roads Program (1.0 hrs.) 
Join David and a group of expert panelists for an open discussion on what constitutes essential work for local highway and public works departments.

Public Relations from Montana LTAP Safety Webinars (0.5 hrs.) 

This webinar reviews communication avenues for local governments dealing with the public. Topics included Listening Skills, Communication Process, Fine Line between listening and abuse, managing expectations, snow plow policy, and problem solving.

Someone is Going to DIE!! Did that Get Your Manager's Attention? from APWA Click, Learn, Listen (0.5 hrs.)
Ever think that the public service departments (i.e. Police and Fire) get all the glory, but what people don't realize is without YOU, they are not able to do their jobs? If that pothole is not filled, if that pipe is failed, if that road is impassible after a storm, if the fire is in the woods and the fire department can't get to it without YOUR help, if the traffic signals are not operational, if the stop sign is down, if that police car is in the shop. Who is called to come to the rescue? We need to change our mindsets; we need to have our public service departments advocating for us. But how do we get them to do that? They dramatize how people will DIE if they don't have that new fire truck or new police station to service the public. Well, we can be just as dramatic. Use them to help your cause. Come to our interactive session to creatively think of ways to be heard and get what you need.
Learning Objectives: Persuade the public service departments to be on your side. Advocate your cause with a little help from your public service departments. Initiate creative ways to band together with your public service departments.

Use of Crowdsourcing to Advance Operations from FHWA (1.5 hrs.)
Crowdsourcing turns transportation system users into real-time sensors on system performance, providing low-cost, high-quality data on traffic operations, conditions, and patterns. Current data sources in traffic operations often come from fixed sensors that monitor traffic conditions at fixed locations. The use of crowdsourced data turns transportation system users with smartphones and other mobile data sources into traffic sensors that significantly increase the data volume and geographic coverage. Agencies using crowdsourced data can provide earlier incident notification for quicker responses and integration into traveler information and ATM systems to optimize travel.

How Your DPE is Dealing with COVID-19 from UMass Transportation Center (0.75 hr)

Roadway Safety

A New Approach to Safety Analysis – Washington DOT (06/17) from FHWA (5 min.)
Data-Driven Safety Analysis (DDSA) is a collection of new tools and techniques that enables transportation agencies to make more informed decisions, better-target safety investments, and reduce severe crashes on their roadways. Watch this video to learn how WSDOT has incorporated DDSA into all of its project planning and processes.

Americans with Disabilities Act & Local Road Agencies (Creating Facilities for All Users) from NDLTAP
The Americans with Disabilities Act (ADA) was signed into law by President H.W. Bush in July 1990. This civil rights act is intended to prohibit discrimination against individuals with disabilities so that every individual can participate in all areas of public life. Everyone benefits from accessible facilities—moms/dads pushing strollers, delivery people using wheeled carts and those who have temporary disabilities due to an injury or medical procedure.

Automated Traffic Signal Performance Measures (ATSPM) from FHWA (1.5 hrs.)
Get ahead of the traffic signal complaints, by finding maintenance and operations problems and resolving them before the phone rings. Timing is everything! Learn how local agencies across the nation are using Automated Traffic Signal Performance Measures (ATSPMs) to improve the management, operation and maintenance of signalized intersections. Presenters will discuss the application of High-Resolution Data to support objectives and performance-based traffic signal maintenance and operations to improve safety and mobility.

Basics of Conducting a Roadway Safety Audit (RSA) from Ohio LTAP Center (1 hr.)

Case Studies | ADA Training from MaineDOT (1 hr.)

Comabting Roadway Departure RwD Crashes from Ohio LTAP Center (1.5 hrs.)

Complete Streets Implementation from Ohio LTAP Center (1 hr.)

Crash Modification Factors Clearinghouse from Crash Modification Factors Clearinghouse

Creating a Vision Zero Action Plan from Ohio LTAP Center (1 hr.)

Curve Warning Signs Save Lives from FHWA  
In a typical year, over 36,000 people die on the nation's highways. Over 25 percent of these traffic fatalities occur on horizontal curves. The average crash rate for horizontal curves is about three times that of other types of highway segments. Curve warning signs are a low cost effective way to reduce these crashes. *Must flip through this storyboard using the arrows*.

Expections | ADA Training from MaineDOT (1 hr.) 

FoRRRwD on All Public Roads: Funding and Data to Identify Projects from the National Center for Rural Road Safety (1.5 hrs.)
Rural roadway departures make up a third of U.S. traffic fatalities—about 30 people a day. The Every Day Counts round five (EDC-5) initiative, Focus on Reducing Rural Roadway Departures (FoRRRwD), features four pillars: Addressing All Public Roads, Systemic Approach, Safety Action Plans, and Proven Countermeasures. This webinar focused on the first pillar.

Rural Agencies and Tribes, learned what you can do, where you are, with what you have, to reduce rural roadway departures.

FoRRRwD on All Public Roads: Systemic Approach – Risk Factors for RWD from the National Center for Rural Road Safety (1.5 hrs)
An FHWA EDC-5 Webinar in collaboration with NLTAPA and the National Center for Rural Road Safety

Rural roadway departures make up a third of U.S. traffic fatalities—about 30 people a day. The Every Day Counts round five (EDC-5) initiative, Focus on Reducing Rural Roadway Departures (FoRRRwD), features four pillars: Addressing All Public Roads, Systemic Approach, Safety Action Plans, and Proven Countermeasures. This webinar focused on the second pillar, the Systemic Approach.

State, local, and tribal agencies – discover how agencies have used different approaches to identify locations that are at high risk for roadway departure crashes in the future with varied levels of roadway data.

Topics Include:

- Data-rich example
- Data-limited example
- Tribal example

High Friction Surface Treatment from FHWA (1.0 hrs.)
Reviews federal lands experience using HFST on projects.

High Friction Surface Treatment Best Practices from TC3 (3.0 hrs.)
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.
Target Audience: This course is designed for technicians, inspectors, and supervisors with an interest in high friction surface treatments.
Learning Outcomes:

- 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.

Implementing a Local Road Safety Plan from the National Center for Rural Road Safety (1.5 hrs)
A LRSP cannot reach the goal of reducing traffic related fatalities and serious injuries if it is not implemented. Recognizing the challenges State, local, Tribal and regional agencies face, this report, Implementing a Local Road Safety Plan (LRSP) provides guidance and examples of how to successfully address and accomplish LRSP implementation. This report developed by the Federal Highway Administration (FHWA) details steps to successfully implement a plan. A large number of States and local agencies have

developed the plan, but find it difficult to go from development to implementation. The report provides the strategies several states and local agencies have used to address these challenges and overcome barriers to successfully implement their plan and achieve positive reductions in traffic related fatalities and serious injuries.

Introduction to Local Road Safety Plans Webinar from Ohio LTAP Center (1 hr.) 

Rural Road Safety Attitude – Get One! Webinar (1.0 hr.)
Did you know there are now 20 proven safety countermeasures which can be selected and implemented to help reduce crashes on your roadways? Most of these countermeasures can be used on rural roadways to drive down the number of fatalities and serious injury crashes. Join the Ohio Safety Circuit Rider, Ray Brushart, as he provides an overview of the countermeasures which apply to rural roadways. Learn how you can apply the countermeasures; what funding is available and how to use the information to get your own rural road safety attitude!

Local Road Safety Plan (07/18) from FHWA (2.5 min) 
Over the last few years, FHWA estimates that approximately 40 percent of the nation's roadway fatalities occurred on local roads. So what are local agencies doing to change this trend and make their roads safer? They're making a plan. A Local Road Safety Plan.

Local Road Safety Plans Infographic from FHWA 

Low Volume Road Signage from Montana LTAP Safety Webinars (0.5 hrs.) 
Do you have an MUTCD? The Manual on Uniform Traffic Control Devices is the standard for our nation. Within the MUTCD is Chapter 5 for low volume road signage. For 30 minutes, Sam Gianfrancisco, MT LTAP Field Engineer, along with Shawna Page, High Country Safety Training, and Steve Kurk, Town of Manhattan, cover temporary traffic control, flagging issues, and importance of wearing correct retroreflective apparel to keep all safe in a work zone. Use the electronic version of the 2009 MUTCD at this site: http://mutcd.fhwa.dot.gov/

LRSP Part #1: Local Road Safety Plan Implementation from the National Center for Rural Road Safety (1.5 hrs.)
This webinar featured noteworthy practices from the LRSP Implementation Peer Exchange held in Bismarck, North Dakota. In addition, this webinar showcased counties that have begun implementation of LRSPs. These counties highlighted the methodologies and processes used to begin implementing their plans locally by describing types of safety projects, funding opportunities, and strategies to streamline safety projects.
Webinar Outcomes:

- At the conclusion of this webinar, participants were able to:
- Identify some barriers that can affect the implementation of LRSPs
- Identify strategies to streamline safety project implementation
- Identify economical solutions for saving lives
- List methodologies or processes towards implementation

Target Audience:
This training was directed towards a very broad safety audience including, but not limited to, law enforcement, planners, engineers, first responders, elected officials, public health, tourism agencies, and safety culture experts. Participants should have some basic familiarity with transportation safety.

LRSP Part #2: A Roadmap to Getting Home Safely from the National Center for Rural Road Safety (1.5 hrs)
This webinar featured information on how to begin a Local Road Safety Plan and provided case studies from the county, state and FHWA Division Office perspective.
Webinar Outcomes:

- At the conclusion of this webinar, participants were able to:
- Summarize variations of development of Local Road Safety Plans
- Contrast agency approaches to supporting development of LRSPs
- List resources for development of LRSPs

Target Audience:
This training was directed towards a very broad safety audience including, but not limited to, law enforcement, planners, engineers, first responders, elected officials, public health, tourism agencies, and safety culture experts. Participants had some basic familiarity with transportation safety.

Maintenance Training Series: Shaping and Shoulders from NHI (1.5 hrs.)
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 training 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. To access all the trainings in the series, enroll in the 134109 course.
Course Objectives:

- Identify project selection considerations for shaping and shoulders
- Describe shoulder shaping and blading activities, including equipment requirements and construction activities
- Describe how a shoulder and ditching program forms the core of the overall maintenance and pavement preservation program

TRAINING LEVEL: Basic
TARGET AUDIENCE: This course is designed for State, regional, and county personnel 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. Identify desirable characteristics of various types of shoulders.

Motorcycle Safety from the National Center for Rural Road Safety (1.5 hrs)
In recognition of Motorcycle Safety Awareness month, the Safety Center's May webinar focused on motorcycle safety. The webinar focused on the safety needs, challenges, and countermeasures for both riders and drivers. It featured case studies and lessons learned from both South Dakota and Oklahoma.
Webinar Outcomes:

- At the conclusion of this webinar, participants were able to:
- Summarize motorcycle safety statistics
- Demonstrate an understanding of motorcycle safety challenges
- Identify countermeasures to improve motorcycle safety
- Restate the resources available for motorcycle safety
- Identify best practices in South Dakota
- Describe the benefits of the Oklahoma Safer Riders program

Target Audience:
This training was directed towards a very broad safety audience including, but not limited to, law enforcement, planners, engineers, first responders, elected officials, public health, tourism agencies, and safety culture experts. Participants were expected to have some basic familiarity with transportation safety.

Multi-Disciplinary Speed Management from the National Center for Rural Road Safety (1.5 hrs.)
This webinar stressed the importance of targeted traffic enforcement of speeders and feature speed management techniques and resources from a multi-disciplinary panel of speakers including the Governors Highway Safety Association, the Law Enforcement Liaison Program, Institute of Transportation Engineers, and the Vision Zero Network.
Webinar Outcomes:

- Describe behavioral highway safety trends and countermeasures in speed management;
- Illustrate the importance of targeted traffic enforcement of speeders; and
- Identify resources available for speed management.

Target Audience:
This training was directed towards a very broad safety audience including, but not limited to, law enforcement, planners, engineers, first responders, elected officials, public health, tourism agencies, and safety culture experts. Participants should have some basic familiarity with transportation safety.

Read the Signs Tailgate Talk from NLTAPA 

Reducing Rural Roadway Departures from FHWA (1.5 hrs.)

Roadway Departure Countermeasures - Module 2, Implementation Approaches from Ohio LTAP e-Learning
Discusses several types of strategies that are used to address traffic crash problems, and introduces the Systemic (or Systematic) safety approach.

Roadway Departure Countermeasures - Module 3, Roadway Delineation Part 1 from Ohio LTAP e-Learning
Part I of Module 3 discusses traffic control standards and pavement markings.

Roadway Departure Countermeasures - Module 3, Roadway Delineation Part 2 from Ohio LTAP e-Learning
Part II discusses traffic signing and additional delineation treatments.

Roadway Departure Countermeasures - Module 4, Pavement and Geometric Part 1 from Ohio LTAP e-Learning
Part I of Module 4 discusses rumble strips and rumble stripes.

Roadway Departure Countermeasures - Module 4, Pavement and Geometric Part 2 from Ohio LTAP e-Learning
Discusses improving friction for pavement surfaces.

Roadway Departure Countermeasures - Module 5, Improve Recovery Area from Ohio LTAP e-Learning
Module 5 describes strategies for improving the roadside recovery area to help reduce crashes.

Roundabouts Update Webinar from Ohio LTAP Center (1.5 hrs.) 

ROUTES Initiative and Rural Safety Data from the National Center for Rural Road Safety (1.5 hrs.)
This webinar featured an overview of the US DOT's Rural Opportunities to Use Transportation for Economic Success (ROUTES) initiative, which is focused on improving the access to and impact of DOT funding for rural transportation safety and infrastructure. The webinar provided a presentation of some of the Department's most recent studies and data on rural safety, and what implications these may have for best use of transportation resources.
Webinar Outcomes:

- Identify the contributions of rural transportation infrastructure to national transportation performance.
- Compare rural and urban safety data
- Distinguish rural safety needs
- Interpret new rural safety data
- Identify implications for rural safety resources

Target Audience:
This training was directed towards a very broad safety audience including, but not limited to, law enforcement, planners, engineers, first responders, elected officials, public health, tourism agencies, and safety culture experts.

Rural Multimodal Planning from the National Center for Rural Road Safety (1.5 hrs.)
This webinar explored why and how rural communities and small towns should apply more multimodal planning. An efficient and equitable transportation system must be diverse in order to serve diverse travel demands, including when travelers cannot, should not, or prefer not to drive. This presentation described current demographic and economic trends that are increasing demands for walking, bicycling and public transit in rural communities. Serving these demands provides economic, social and environmental benefits, including more independent mobility for non-drivers; consumer savings and affordability (savings to lower-income households); improved economic opportunity and fairness; increased traffic safety; improved public fitness and health; reduced public infrastructure costs; environmental protection; and more local economic development. A variety of specific policies and programs can help create more diverse and efficient transport systems which allow travelers to use the most appropriate mode for each trip. This presentation was based on research described in the report, "Rural Multimodal Planning" (www.vtpi.org/rmp), and related documents.
Target Audience**:**
This training was directed towards a very broad safety audience including, but not limited to, law enforcement, planners, engineers, first responders, elected officials, public health, tourism agencies, and safety culture experts. Participants had some basic familiarity with transportation safety.

Safe Systems for Rural Users from the National Center for Rural Road Safety (1.5 hrs.)
This webinar introduced principles of Safe Systems and provided context for the Safe Systems approach in relation to other traffic safety initiatives (such as Vision Zero) and paradigms. Through various examples and case studies, we highlighted processes, practices, and components of Safe Systems applications in rural settings and described the state of research and practice in advancing systems approaches in rural areas.
Webinar Outcomes:

- Describe the safety, health, and mobility needs of rural populations
- Summarize core principles of Safe Systems
- Differentiate Safe Systems practices from other approaches to roadway management
- Illustrate specific Safe Systems processes or practices in rural contexts
- Learn about the concept of micro-targeting and the inherent challenges in data mining for government agencies

Target Audience:
This training was directed towards a very broad safety audience including, but not limited to, law enforcement, planners, engineers,

first responders, elected officials, public health, tourism agencies, and safety culture experts. Participants had some basic familiarity with transportation safety.

Safe Transportation for Every Pedestrian STEP Webinar from Ohio LTAP Center

- Part 1
- Part 2
- Part 3
- Part 4

Shoulder Maintenance from AASHTO TC3 Just-in-Time video (4 min.)

Systemic Analysis Infographic from FHWA

Systemic Approach to Safety – Using Risk to Drive Action from FHWA

Type A Turned-down Guardrail Ends Update Webinar from Ohio LTAP Center (1 hr.)

We are All Responsible for Good Roads from Cornell Local Roads Program (1.0 hrs.)

Working Along the Roadway from NLTAPA Tailgate Talks

Low-Cost Safety Imrpovements: Speed Management Tehniques from USDOT FHWA (3 min)

Low-Cost Safety Improvements for Walking and Biking from USDOT FHWA (5 min)

Low-Cost Safety Improvements: Systemic Approach for Stop-Controlled Intersections from USDOT FHWA (4 min)

Low-Cost Safety Improvements: Enhanced Delineation on Horizontal Curves from USDOT FHWA (5 min)

Rural Road Crashes from Iowa DOT (10 min)

Alternative Intersections: Displaced Left Turns from USDOT FHWA (5 min)

Diverging Diamond Interchange – East First Street, Ankeny, Iowa from Iowa DOT (2 min)

Stormwater Control

Stretching your Green Infrastructure Dollars: Case studies in maintenance costs and Level of Service. From APWA Click, Listen, & Learn (1.0 hrs.)

Case studies from two communities will be presented by different speakers. Over the last 20 years, the City of Ann Arbor, Michigan has built 124 rain gardens and bio-swales in public spaces. Although rain gardens have been successful at reducing pollutant loads, our 30 acres of green stormwater infrastructure created a new challenge: maintenance. In 2015, the City of Ann Arbor and the Washtenaw County Water Resources Commissioner's Office collaborated to formalize the maintenance of the 124 rain gardens. Maintenance schedules and expenditures for each rain garden have been implemented and refined over the last three years. Three case studies will be highlighted showing varied plant designs, spillways and public support. For each case study, a multi-pronged approach has proven successful in implementing the maintenance plan. The variety of rain gardens installed in Ann Arbor have provided the opportunity to learn many lessons and rules of thumb for design. Recommendations for designs that can simplify maintenance, focusing on plant selection, spillway design, size considerations and public involvement will be detailed. The lessons learned from maintenance in Ann Arbor's rain gardens can be used to improve designs, create realistic budgets and foster positive partnerships.

Continue the conversation after the program, click here to download the facilitator discussion guide.

Learning Outcomes: After attending this session, participants will be better able to:

· Identify different level of service goals to consider during design.

· Estimate costs for long term green infrastructure maintenance.
· Identify key design considerations for minimizing green infrastructure maintenance.

Berm Maintenance from NLTAPA Tailgate Talks 

Channeling Devices Checklist from AASHTO TC3 Job Aids 

Construction Stormwater from TC3 (5.0 hrs.)
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.
It is not required that you complete the modules in order; however, it is recommended.

Training level: This training is recommended for the Transportation Curriculum Coordination Council levels.
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.

Construction Stormwater Field Guide from AASHTO TC3 Job Aids 
Construction sites can be a source of sediment and other pollutants to waterways. Best management practices (BMPs) are devices and activities that reduce or eliminate pollution sources and can include silt fences, settling basins, and even training. This guide is a quick reference for inspectors and resident engineers in construction on topics related to installation, maintenance, and inspection of common BMPs. Using this 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.

Drain Pipe Install from NLTAPA Tailgate Talks 

Drainage Features Maintenance for Safety from TC3 (1.0 hrs.)
This course highlights common roadway drainage problems that can cause an unsafe condition and suggests inspection methods and corrective action. Maintaining roadway drainage is important for safety and for ensuring the long life of the roadway as it prevents erosion of the roadway, saturation of the subbase, and damage to roadway structures. The training is broken into two modules:
Module 1: Effects of Drainage describes common roadway safety hazards and how to recognize drainage problems.
Module 2: Safe Drainage Features and Work Zones covers solutions to common roadway safety issues and work zone safety.
This training is not intended to be a design guide. Participants may want to contact their State Local Technical Assistance Program (LTAP) for more details on drainage design.

Target audience: This training is ideal for local road agency maintenance workers who want to understand the importance of maintaining and upgrading drainage features on their road system to avoid an unsafe condition.
Learning outcomes: Upon completion of the course, participants will be able to:

- Identify problems created by ponding and standing water on the roadway;
- Describe safety issues related to ditches and side slopes;
- Describe how drainage features can become safety hazards;
- Identify methods for identifying drainage problems;

- Recall conditions to look for during field inspections;
- Explain how to fix or prevent common roadway side slope problems; and
- Describe work zone safety procedures.

Drainage Installation- Work Zone Safety Procedures Checklist from AASHTO TC3 Job Aids 
The first consideration during any installation or maintenance of drainage features is the safety of both the work crew and the motorist. Below is a checklist of safety procedures. Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Installation of Minor Drainage Structure from AASHTO TC3 Just-in-Time videos (5 min.) 
This video explains the methods to use to ensure minor drainage structures are installed correctly.

Maintenance Stormwater from TC3 (3.0 hrs.)
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.
Training level: This training is recommended for the Transportation Curriculum Coordination Council levels
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.

Maintenance Stormwater Field Guide from AASHTO TC3 Job Aids 
Highways and other transportation-related sites can be a source of sediment and other pollutants to rivers, lakes, and coastal waters. Best management practices (BMPs) can be used by maintenance workers to reduce the discharge of pollutants from highway storm drain systems. The intent of this guide is to be a quick reference for maintenance staff on topics related to BMP inspection and common operational practices. Good housekeeping and other pollution source control measures are presented. Using the tips in this guide will help in complying with federal and state regulations for stormwater quality. It will also help achieve a greater level of environmental stewardship. This guide is not a design manual or a substitute for a pollution prevention plan.

Maintenance Training Series: Roadway Drainage from NHI (1.0 hrs.)
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. Shoulder, ditch, and pipe or culvert maintenance activities are performed frequently throughout the year. This training was developed as part of the Maintenance Training Series. To access all the courses in the series, enroll in the 134109 course.
Learning Outcomes:

- 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
- Identify the components of shoulders and ditches

Training Level: Basic
Target Audience
This course is designed for State, regional, and county personnel 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.

Recognizing Drainage Problems Checklist from AASHTO TC3 Job Aids
When you suspect a drainage problem, it helps to ensure that each possible condition is evaluated. The following checklist is useful to have while performing field inspections. Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Wall Backfill, Keying & Benching of Embankments, & Drainage Filters Best Practices AASHTO TC3 Job Aids
Shares some best practices you should follow when working with wall backfill, keying and benching of embankments, and drainage filters. Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Summer Safety

Bee Sting NLTAPA Tailgate Talk

Body Heat NLTAPA Tailgate Talk

Lightning Safety NLTAPA Tailgate Talk

Lyme Disease NLTAPA Tailgate Talk

Prevent Poison Ivy NLTAPA Tailgate Talk

Snakes and Ticks from Montana LTAP Safety Webinars (0.5 hrs.)
Learning outcomes:

- Identification of Ticks
- Diseases Ticks Carry
- Removal of Attached Tick
- Disposal of Ticks
- Procedures if Bitten by Rattlesnake
- Sawyer Snake Bite Kit
- Avoiding Snake Bites

Summer Safety from Montana LTAP Safety Webinars (0.5 hrs.)
Information provided includes: Heat illness, heat exhaustion, heat stroke, sun exposure, water safety, and mosquito and tick transmitted diseases.

Sun Induced Burns NLTAPA Tailgate Talk

Working in the Heat from Montana LTAP Safety Webinars (0.5 hrs.)
Information provided includes: Wild Land Fire Concerns, Heat Exhaustion, Dehydration, Heat Stroke, Water and the human body, Giardia

Traffic Incident Management (TIM)

A Review of the Effectiveness of Mitigation Measures that Seek to Reduce Wildlife-Vehicle Collisions from the National Center for Rural Road Safety (1.5 hrs)
This webinar presented the latest information on the relative effectiveness of mitigation measures that seek to reduce animal-vehicle collisions (AVCs). There are an estimated 1-2 million annual collisions with large animals in the U.S. which costs society $6-12 Billion per year. AVCs are most common on rural roads and over 89 percent occur on 2-lane roads (compared to 52% of all crashes).

The webinar reviewed the preliminary results of a Transportation Pooled-Fund Project: TPF 5(358), Wildlife Vehicle Collision Reduction and Habitat Connectivity Study. It has evaluated 28 counter measures that seek to reduce collisions with large animals. The webinar also demonstrated that there are significant differences between crashes with wildlife versus livestock. It also provided a peer-reviewed method of cost-benefit analysis for deploying mitigation measures to reduce wildlife vehicle collisions.

Webinar Outcomes:

- Identify the three strategies developed to reduce AVCs and the types of mitigation measures that fit under each strategy;
- Know which of the 28 counter measures are most effective and which are not;
- Understand the importance of differentiating between crashes with livestock and wildlife; and
- More fully appreciate the costs of doing nothing to mitigate AVCs versus the benefits that accrue when counter measures are deployed.

Target Audience:

This training was directed towards a very broad safety audience including, but not limited to, transportation planners, engineers, project managers, technologists, highway design consultants, environmental managers and safety culture experts. Participants should have some basic familiarity with transportation safety.

Myths of Traffic Calming and Complete Streets from Cornell Local Roads Program (1.0 hrs.)

Roads and streets traditionally have been designed to move cars and trucks quickly, but there are alternatives to design for use by all users including pedestrians and bicyclists: Complete Streets and Traffic Calming. However, there is a misunderstanding of what complete streets and traffic calming can actually do. David will cover what is a complete street and what traffic calming actually can do to help improve your community.

Myths of Traffic Calming and Complete Streets Handout from Cornell Local Roads Program

National Traffic Incident Management Responder Training from NHI (4.0 hrs.)

The National Traffic Incident Management Training Program equips responders with a common set of core competencies and assists them in achieving the TIM National Unified Goal of strengthening TIM programs in the areas of: Responder safety; Safe, quick clearance; and Prompt, reliable, and interoperable communications. Three injury crashes occur every minute in the United States, putting nearly 39,000 incident responders potentially in harm's way every day. Congestion from these incidents often generates secondary crashes, further increasing traveler delay and frustration. The longer incident responders remain at the scene, the greater the risk they, and the traveling public, face. A cadre of well-trained responders helps improve traffic incident response. Better incident response improve the safety of responders and drivers, reduces crashes that occur because of incident-related congestion, decreases traffic delays caused by incidents, and can cut incident response time.

This training covers many TIM recommended procedures and techniques, including:

- TIM Fundamentals and Terminology
- Notification and Scene Size-Up
- Safe Vehicle Positioning
- Scene Safety
- Command Responsibilities
- Traffic Management
- Special Circumstances
- Clearance and Termination

Prerequisite Note:

It is recommended that you take the following courses offered by FEMA:

IS 700 - National Management System (NIMS), An Introduction

ICS 100 - Introduction to Incident Command System (ICS)

ICS 200 - ICS for Single Resources and Initial Action Incidents

This training was developed through the second Strategic Highway Research Program (SHRP2).

The National Traffic Incident Management Responder Training was created by responders for responders. This course provides first responders a shared understanding of the requirements for safe, quick clearance of traffic incident scenes; prompt, reliable and open communication; and motorist and responder safeguards. First responders learn how to operate more efficiently and collectively.

Training Level: Basic

Target Audience: Individuals from all TIM responder disciplines, including: Law Enforcement, Fire/Rescue, Emergency Medical Service, Towing and Recovery, Emergency Management, Communications, Highway/Transportation and Dispatch within States, regions and localities.

Learning Outcomes:

Use a common set of practices and advance standards across all responder disciplines.

Principles of Evacuation Planning Tutorial from NHI (6.0 hrs.)
Principles of Evacuation Planning Tutorial (133107) is a Web-based asynchronous/independent training that provides an introductory overview of evacuation planning topics and common considerations. It covers the roles and responsibilities of local, regional, and state agencies involved in the evacuation process, while highlighting the importance of collaboration. This course also presents current and emerging evacuation planning tools, methodologies, and trends, and offers insight into special considerations that evacuation planning stakeholders should take into account when designing, reviewing, or contributing to evacuation planning efforts. Emphasis is placed on multi-agency/jurisdictional planning as part of identifying effective practices used in the U.S.
This training was developed at the request of the FHWA Transportation Pooled Fund Study Security and Emergency Management Update and Request. The pooled fund study states are California, Florida, Georgia, Kansas, Mississippi, Montana, New York, Texas, and Wisconsin. In addition, the TSA is a member of the pooled fund study.
Training Level: Basic
Target Audience: transportation and emergency planning stakeholders along with local leadership (e.g. local public and private emergency management stakeholders). This course also will be made available to a variety of other professionals with an interest in evacuation planning including Government jurisdictions below state level; transportation planners, metropolitan planning organizations; transportation planners (city/county); local emergency managers; transportation management center staff; state and local police planners; metro emergency planners; public works and public schools planners; and other contributing stakeholders.
Learning Outcomes:

- Define evacuation planning from a transportation standpoint
- Describe how evacuation planning impacts local and state emergency management transportation operations
- Define the roles and responsibilities of local, regional, and state agencies
- List the benefits of working across agencies and localities to maximize the effectiveness of emergency planning efforts
- List evacuation planning considerations specific to Notice and No-Notice evacuations
- Describe other special considerations that evacuation planning stakeholders should take into account when executing evacuation plans
- Identify tools and methods for coordination and collaboration
- Identify current and emerging evacuation planning practices
- Describe effective emergency evacuation planning practices
- Explain the value of engaging other organizations and jurisdictions
- Identify resources available to emergency evacuation planning stakeholders and how to access them for further study

Traffic Incident Management (TIM) - Part I from FHWA (1.25 hrs.)
Effective TIM processes can improve responder and motorist safety while keeping traffic moving. Please join us for both parts of the two-webinar series hosted by the Center for Local-aid Support (CLAS) to discuss how TIM can help make your community safer and more efficient.
Part I: Attendees will gain a foundational understanding of TIM Program actions and proven strategies.
Part II: Attendees will bridge TIM Program actions and strategies with training by learning about the National Responder Training Program taught throughout the country.
Presenters of the webinar will include: Instructions by FHWA TIM Program Managers and presentations by state and local TIM leaders.

Traffic Incident Management (TIM) - Part II from FHWA (1.25 hrs.)
Effective TIM processes can improve responder and motorist safety while keeping traffic moving. Please join us for both parts of the two-webinar series hosted by the Center for Local-aid Support (CLAS) to discuss how TIM can help make your community safer and more efficient.
Part I: Attendees will gain a foundational understanding of TIM Program actions and proven strategies.
Part II: Attendees will bridge TIM Program actions and strategies with training by learning about the National Responder Training Program taught throughout the country.
Presenters of the webinar will include: Instructions by FHWA TIM Program Managers and presentations by state and local TIM leaders.

Traffic Incident Management Instructor Talking Points- Internal from FHWA 

Traffic Incident Management Other Resources for Participant Outreach from FHWA
We know how important TIM is to the safety and reliability of our roadways and want to provide the tools you need to educate the public. All of the tools on this page were developed to help TIM programs across the country promote their message clearly and cost-effectively. With your help, we can teach the general public about the value of TIM and how we can work together towards the goal of safe, free-flowing, reliable roadways for everyone.

Traffic Incident Management PowerPoint from FHWA

Traffic Incident Management Workshop video from FHWA (3 min.)
Traffic incidents -- including crashes, disabled vehicles and debris on the road -- create unsafe driving conditions. They put motorist and responder lives at risk and account for approximately 25% of all traffic delays.

This video was developed to accompany an earlier training course and offers an explanation of the need for Traffic Incident Management Responder Training.

Traffic Safety Culture Messaging from the National Center for Rural Road Safety (1.5 hrs)
This webinar featured information on the design of effective traffic safety messages based on an understanding of traffic safety culture. The webinar summarized different forms of traffic safety culture message including social norms. The webinar also discussed the importance of the message "frame" to be positive (rather than fear-based); namely, those that grow self-efficacy and align with audience values. Finally, the webinar discussed some aspects of message design to overcome audience resistance. Together, traffic safety culture messages can be more effective in changing behavior and be more acceptable to audience communities.
Webinar Outcomes:

- Identify different forms of message based on a model of traffic safety culture.
- Identify positive message frames.
- Interpret possible message effects on audience reactance.

Target Audience:
This training was directed towards a very broad safety audience including, but not limited to, law enforcement, planners, engineers, first responders, elected officials, public health, tourism agencies, and safety culture experts. Participants had some basic familiarity with transportation safety.

Tree Trimming

Tree Brush Trimming from NLTAPA Tailgate Talks

Tree Felling Safety from NLTAPA Tailgate Talks

Tree Trimming and Removal of Down Trees from AASHTO TC3 Just-in-Time video (5 min.)
This video provides information on tree trimming and removal of downed trees to make signals and signs visible, to keep sight distance safe, and to protect and maintain the roadside assets

Welding

Cutting Torch & Welding Safety - Part 1 from Montana LTAP - Safety Webinars (0.5 hrs.)
Information provided covers varying aspects of handing compressed gas cylinders, Regulator Burnout, Assembly of regulators, basic types of gases, equipment safety inspection checklists, and safety issues.

Cutting Torch & Welding Safety - Part 2 from Montana LTAP- Safety Webinars (0.5 hrs.)
Information provided covers varying aspects of gas welding and cutting arc welding and cutting, fire prevention, ventilation and protection, safe use, handling, and precautions to take when welding and cutting, and hazard identification and abatement methods.

Winter Maintenance

The below seven Anti-Icing/RWIS learning modules are part of the TC3 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. Please note that the estimated average time to take this course is 3 hours; however, it may take you less time to complete.

Anti-icing/RWIS: Computer Access to Road Weather Information from TC3 (3 hrs.)
This course will review 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.
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.

Anti-icing/RWIS: Introduction to Anti-icing and Winter Maintenance from TC3 (3 hrs.)
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.
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.

Anti-icing/RWIS: Scenario Room from TC3 (3 hrs.)
Please complete this course after you've taken all seven lessons that make up the Anti-icing/Road Weather Information System (RWIS) training program. The Anti-icing/RWIS training series consists of seven lessons that introduce the learner to effective use of anti-icing techniques in winter road maintenance using road weather information system technology.
After completing the seven lessons, you can put your knowledge into practice. In this Scenario Room, you will battle winter events using tools in a simulated winter maintenance facility. This environment will help you hone your winter maintenance decision-making skills. Please note that the estimated average time to take this course is 3 hours; however, it may take you less time to complete.
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:

- Complete various activities from an actual winter event scenario to determine the best possible course of action.

Anti-icing/RWIS: Weather and Roadway Monitoring for Anti-icing Decisions from TC3 (3 hrs.)
This course introduces powerful tools and techniques that will help you make informed decisions about anti-icing applications.
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.

Anti-icing/RWIS: Weather Basics from TC3 (3 hrs.)
This course discusses the basic weather principles necessary to make effective decisions for anti-icing operations.
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.

Anti-icing/RWIS: Winter Road Maintenance Management from TC3 (3 hrs.)
This course discusses the general management aspects of winter road maintenance as it applies to anti-icing and road weather information systems.
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.

Anti-icing/RWIS: Winter Roadway Hazards and the Principles of Overcoming Them from TC3 (3 hrs.)
This course discusses roadway ice and winter hazards.
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.

Cold Weather Driving Tailgate Talk from NLTAPA 

Cold Weather Precautions Tailgate Talk from NLTAPA 

Cold Weather Slips Tailgate Talk from NLTAPA 

Don’t Crowd the Plow from Montana LTAP (0.5 hrs.) 
Information provided includes anti-icing chemicals, application methods designed to reduce winter hazards on roadways, weather information, chemical technology, and application procedures to enhance roadway safety.

Blowing Snow Mitigation from TC3 (3 hrs.)
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.

Deicing from TC3 (4 hrs.)
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.

Equipment Maintenance from TC3 (2 hrs.)
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.

Evaluation and Analysis of Liquid Deicers for Winter Maintenance from Ohio LTAP Center (1 hr.) 

How to Wash Plow Trucks video from AASHTO TC3 Just-in-Time library (12 min.)

Maintenance Training Series: Weather-related Operations from NHI (1 hr.)

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 most 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 and to ensure they are safe for motorists.

Participants 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. To access all the courses in the series, enroll in the 134109 courses.

Training Level: Basic

Target Audience: This course is designed for State, regional, and county personnel 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:

- 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
- Describe how to identify equipment needs for a storm

Not All Roads Are Paved; Winter Maintenance of Gravel and Surface Treated Roads from APWA Click, Listen, and Learn (0.75 min)

Most municipalities are responsible for many types of roads that require different approaches. Gravel and surface treated roads are often forgotten, but still require our attention. This session will provide an understanding of how these roads react to different weather conditions and explore their treatment options.

Performance Measures for Snow & Ice Control from TC3 (4 hrs.)

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.

Prepare Your Home For Winter Weather Tailgate Talk from NLTAPA

Proper Plowing Techniques from TC3 (2 hrs.)
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.

SICOPS Talks winter podcast series from AASHTO 
Various podcast episodes about all things winter maintenance.

Selecting Snow and Ice Control Materials to Mitigate Environmental Impacts from TC3 (2 hrs.)
The Selecting Snow & Ice Control Materials to Mitigate Environmental Impacts training program provides the winter maintenance supervisor or mid-level manager with a systematic approach to selecting snow and ice control materials best suited for his region using a balanced method that addresses material performance, cost, infrastructure impact, and environmental impact. As you work through the module, you will complete a series of forms. Once you complete the module, you will have identified the best material(s) for your region. The program also includes a separate standalone tool, or "wizard," for walking through the material selection process.
There are eight units in this module:
Unit 1: Formulating a Material Selection Process;
Unit 2: Potential Impacts to the Natural Environment;
Unit 3: Ranking Potential Natural Environment Impacts;
Unit 4: Potential Infrastructure Impacts;
Unit 5: Ranking Potential Infrastructure Impacts;
Unit 6: Determining Comparative Material Prices;
Unit 7: Comparative Performance Measures; and
Unit 8: Material Purchase Specifications and Quality Assurance.
Target audience: This course is designed for those responsible for selecting and ordering materials; it is not generally intended for equipment operators.
Learning outcomes: Upon completion of this course, participants will be able to:

- Prioritize your agency's four main snow and ice control policy objectives.
- Identify the primary chemical components and attributes of concern.
- Identify and weigh the potential impacts that snow and ice control materials may have on the natural environment in your region.
- Identify potential impacts that snow and ice materials may have on your roadway infrastructure and the vehicles traveling along those routes.
- Objectively compare prices of various snow and ice control materials.
- Objectively compare the performance of various snow and ice control materials; and
- Specify requirements for material vendors and verify materials are delivered in accordance with these specifications.

Snow Removal Equipment Desalting from AASHTO TC3 Just-in-Time videos (5.5 min.) 

Weather-Related Operations (from Maintenance Training Series) from NHI (1.0 hrs.)
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 and to ensure they are safe for motorists.
Participants 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. To access all the courses in the series, enroll in the 134109 course.
Target Level: Basic
Target Audience:
This course is designed for State, regional, and county personnel 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:

- 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
- Describe how to identify equipment needs for a particular storm

Staying Fit for Snow Fighting Tailgate Talk from NLTAPA 

Winter Maintenance from Montana LTAP (.5 hrs.) 
Information provided includes anti-icing chemicals, application methods designed to reduce winter hazards on roadways, weather information, chemical technology, and application procedures to enhance roadway safety.

Winter Maintenance Management from TC3 (2 hrs.)
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.

Winter Operations Snowplows and Sanders video from AASHTO TC3 Just-in-Time videos (8.5 min) 

Winter Preparation from Montana LTAP (.5 hrs.) 

Information provided includes snowplow safety checklist, motor grader safety check list, 3 points of contact, winter travel, hypothermia, winter clothing, and survival basics.

Winter Survival from Montana LTAP (.75 hrs.)
Outlined are various winter survival topics including standard safety for winter travel; carbon monoxide and hypothermia as it relates to winter stranded automobile fatalities; proper layering of winter clothing; winter survival priorities; and what's in your winter survival kit.

Winter Operations Training Series from IOWA DOT
This is a 13-part series of short videos covering various topics under winter operations.

Index of Course Title Keywords