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technotes

MD T2 Center

MARYLAND TRANSPORTATION TECHNOLOGY TRANSFER CENTER

Local Technical Assistance Program (LTAP)
University of Maryland at College Park

www.mdt2center.umd.edu

INSIDE

MD T2 Center Launches New Website, Reports Best Year

The Maryland Transportation Technology Transfer (MD T2) Center, part of the University of Maryland's Department of Civil and Environmental Engineering, has launched a new website and reports 2007 as its best year ever in terms of quantity and quality of training courses delivered.

The MD T2 Center as part of the Federal Highway Administration's (FHWA) Local Technical Assistance Program (LTAP) has seen exponential growth in course offerings since 2003 when it offered 21 courses. In 2005, 49 courses were offered and last year it topped the charts with a total of 78 courses offered! "I think the MD T2 Center staff is doing a great job of helping the municipalities as well as the State and the FHWA in terms of transferring technology to the field," said Dan Sanayi, P.E., Infrastructure and Technology Team Leader, FHWA Delmar Division.

In an effort to further MD T2's focus on delivering training to its customers, a new MD T2 web site has been developed that introduces a sleeker design and more user friendly pages. Class registration and training requests can be completed from the new site. To see the MD T2 Center's new look, please visit: www.mdt2center.umd.edu

Philip Tarnoff, MD T2 Center Director acknowledged, "The Center's 2007 accomplishments have received recognition from the Administrator of the Maryland State Highway Administration, Neil Pedersen, during a recent advisory board meeting for being one of the most active LTAP center's in the Nation." There are 57 LTAP centers located throughout the Nation, Puerto Rico and regional centers that serve tribal governments.

Some of the more popular courses taught at the MD T2 Center include Construction Mathematics, Highway Capacity Analysis, Introduction to Temporary Traffic Control, Traffic Engineering Short Course, Winter Maintenance and Work Zone Design. Since 2006, the Center has made "in-house" training available to its customers. With "in-house" training, the Center offers requested courses on site as opposed to coming to College Park. This has become popular with municipal governments who have numerous employees in need of training and restricted travel budgets.

With 2008 well underway, the MD T2 Center is looking forward to another record setting year and hopes, with the release of the new website, they can achieve it.

Get Ready For 23 CFR Part 634!

(Translation: Worker Visibility Law)

Rules regarding high-visibility clothing *require* compliance by November 24, 2008 for EVERYONE working on or near Federal-aid Highways.

The Federal Highway Administration (FHWA) published final rules regarding worker visibility as Part 634 of Title 23 Code of Federal Regulation. The rule meets part of the SAFETEA-LU Section 1402 requirements to reduce the likelihood of worker injury and maintain the free-flow of traffic when workers are on or in close proximity to Federal-aid highways. Formerly, this compliance was a recommendation in the Manual of Uniform Traffic Control Devices. By November 24, 2008, all workers shall wear ANSI 107-2004 Class 2 or Class 3 apparel while working on or near Federal-aided highways.

It's clear that our aging road infrastructure needs an increasing number of workers in the field to build and maintain our roads. It's is also clear the increasing traffic volume on our roads means that we can't close every road we work on. This combination means that more and more workers have to spend their days and nights working near more and more vehicles traveling at high speeds. To help protect these workers, construction and maintenance crews follow safe practices and set up work zone; and now all workers, regardless of their affiliation with construction or maintenance, will have to wear clothing that makes them more visible in the workplace.

Which Apparel?

First of all, be sure that you refer to correct standard when selecting apparel. The ISEA/ANSI 107-2004 and 107-1999 standards appear very similar, but ISEA/ANSI 107-2004 completely replaces the older standard. Many agencies adopted ISEA/ANSI 107-2004 high-visibility Class 2 or Class 3 apparel when the FHWA recommended this apparel in the 2000 and 2003 Manuals of Uniform Traffic Codes, so the transition from a recommendation to a requirement should be smooth.

The selection of Class 1, 2, or 3 apparel is based on your proximity to traffic, the speed of traffic that is expected to be near you while you work, and whether your work allows you to pay attention to traffic while you work.

Class 1 Apparel

Class 1 apparel is not permitted for workers on or near Federal-aid highways. You can recognize a Class 1 garment by inspecting the label, which should be clearly marked. This class of apparel is for workers exposed to traffic traveling less than 25 MPH. The main difference between Class 1 and Class 2 apparel is the amount of fluorescent background material and retroreflective material. Typical occupations the require Class 1 apparel include parking lot attendants, warehouse workers, sidewalk maintenance personnel, and shopping cart retrievers. Even if you have employees who might perform these kinds of tasks, most transportation-agency workers are likely to also perform other tasks that require Class 2 or Class 3 apparel, so purchasing Class 1 apparel isn't recommended.

Class 2 Apparel

Class 2 apparel offers many workers adequate visibility to motorists traveling at 25 MPH or more and in inclement weather. Class 2 is for workers whose attention might be distracted from approaching traffic and work in close proximity to moving vehicles. The most common Class 2 garments are shirts, jackets, or sleeveless vests. This apparel provides 360 degrees of torso visibility with horizontal and vertical retroreflective stripes. Typical occupations for workers who must wear Class 2 apparel are: forestry operations, ship cargo loading operations, roadway construction, utility and railway workers, school crossing guards, delivery vehicle drivers, high-volume parking and toll gate personnel, airport baggage handlers/ground crew, emergency response and law enforcement personnel, and trash collection and recycling operations.

Classes of ISEA/ANSI 107-2004 High-Visibility Apparel

Typical Class 1 Apparel
Few transportation occupations allow this class, and Class 1 may never be used while working on or near Federal-aid highways.

Typical Class 2 Apparel
The number of retroreflective stripes is not specified in the standard, but the surface area of the stripes and the background materials is, so the only way to identify which class of clothing you are looking at is by reading the label.

Typical Class 3 Apparel
As with Classes 1 and 2, the number of stripes and type of garment is not specified, but the surface area of retroreflective and background material is. Typical Class 3 apparel includes clothing that covers most of the upper and lower parts of the body.

Some "safety" vests look similar to Class 2, and the only way to be sure you are wearing the right apparel is to inspect the tag. There are many other design features besides visibility that differentiate the classes and separate "genuine" ANSI 107-2004 apparel from other "safety" apparel. If the tag on your high-visibility garment is missing or not clearly marked, then don't wear it and discard it. Remember that an inspector will check the tag to see if you are in compliance, so the only thing protecting you from being cited for a violation is the proper tag.

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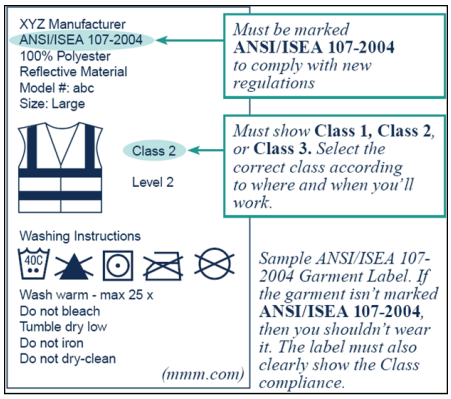
Class 3 Apparel

The main difference between Class 2 apparel and Class 3 apparel is the larger area of your body that Class 3 apparel covers. There are no sleeveless vests that, when worn alone, provide Class 3 protection. Class 3 apparel is for workers who are constantly exposed to high-speed traffic and who cannot pay attention to approaching traffic. If you aren't sure which class of apparel to wear, choose Class 3. Typical workers who must wear Class 2 apparel include: roadway construction personnel and traffic regulators, utility workers, survey crews, and emergency response personnel.



Law Enforcement and Firefighters

Firefighter apparel must meet different visibility and protection requirements than construction and law enforcement apparel. Law enforcement personnel have different rules for when they must wear ANSI clothing, but Class 2 apparel meets the visibility requirements for these workers when they are present on Federal-aid roads and are not exempt from the rule.

Other Applications

Class 1 and Class 2 apparel are excellent for those evening runs and walks. Class 2 and Class 3 apparel is also GREAT for accompanying Trick-or-Treaters, and will earn you lots of compliments from envious parents. Plus, you're likely to collect some treats since you are "in costume!"

Reprinted from The Bridge, a Michigan Local Technical Assistance Program (LTAP) Publication.

Perform Benefit-Cost Analysis Online with New FHWA Program

When making decisions about roadway projects, transportation agencies should consider a range of benefits and costs. Will a project's performance warrant the resources needed to build it? Which project alternative will result in the greatest net benefit and the most return on taxpayer dollars? The Federal Highway Administration's (FHWA) new online, browser-based benefit-cost analysis tool, BCA.Net, is designed to provide valuable support to the roadway decision making process.

Using BCA.Net, transportation agencies can: manage economic analysis data, select from an array of sample data, develop alternative strategies for improving and managing highway facilities, and evaluate and compare the benefits and costs of alternative strategies.

BCA.Net can also help agencies determine the optimal timing for a project. The tool can be used to evaluate projects involving new lane capacity and other improvements to operational efficiency, as well as reconstruction and preservation strategies. New features to be added later this year will include enhanced traffic analysis.

BCA.Net evaluates projects based on capital and maintenance costs data, the projects' physical and performance characteristics, forecast travel demand, and the economic value of benefits to users. Required data inputs include such items as the project facility type (urban freeway, urban arterial, etc.); type of improvement being considered; project length; number of lanes; pavement condition and deterioration rate; crash rates; current and projected traffic levels; vehicle mix data; vehicle type and occupancy data; and right-of-way, construction, and operation and maintenance costs. "Most of the data should be available to the model user based on existing planning, design, and engineering studies," says Eric Gabler of FHWA's Office of Asset Management. The model provides default data for economic factors such as the value of travel time and vehicle operating costs and also calculates travel time savings based on facility characteristics and projected traffic levels. The user can override any of the default data in the model with location-specific data.

The user specifies a base strategy and alternative strategies for improvement and maintenance of the facility. BCA.Net calculates the traffic impacts and agency and highway user costs and benefits for each strategy and compares them, generating measures such as the net present value, benefit-cost ratio, and rate of return for the alternative strategies relative to the base strategy.

BCA.Net has report writing capabilities for all analysis results and their associated statistics. The tool also accommodates risk analysis. The risk analysis features of the program allow the analyst to develop probabilistic inputs and results, thus accounting for the uncertainty associated with analysis inputs.

The program is available online at no cost and does not require the installation of software on a user's computer. Users can store up to 10 data sets on the BCA.Net server. Data may also be archived on the user's computer and restored to the BCA.Net system for use in subsequent sessions.

To begin using BCA.Net, three walk-through training exercises are available under the "Help" section of the online tool. The first exercise guides users through the basic features of the tool as it performs a sample project evaluation.

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Amendments to the MUTCD

Traffic Control Devices (TCD) have a profound influence over the flow of traffic, and the resulting traffic safety experience. There is heightened interest and concern about traffic operational and safety issues by the public, local governments and legislators. The Manual on Uniform Traffic Control Devices (MUTCD) is required for application of TCD's along all roads open to public travel by both state and federal laws. It seems like we have just completed our reviews of the 2006 MdMUTCD and we embark upon new era of MUTCD 2009!

Sign up now for our Traffic Sign Retroreflectivity course to be held on August 7. For more information or to register visit us on the web.

The Federal Highway Administration (FHWA) has published in the federal register a Notice of Proposed Amendments (NPA) to the MUTCD. The NPA contains comprehensive revisions that are proposed for incorporation into the next edition of the MUTCD (2009). The proposed changes are intended to expedite traffic, promote uniformity, improve safety, and incorporate technological advances in traffic control devices application. A seven month period is being provided for comments to the docket, which will be closed on July 31, 2008. The text, tables and figures of the proposed 2009 MUTCD are available on MUTCD web site http://mutcd.fhwa.dot.gov. The proposed text is available in two formats. The first format shows the current MUTCD text with additions in the blue underlined text and proposed deletions as red strikeout text. It also includes notes in green boxes to provide helpful explanations. The second format shows a "clean" version of the complete text proposed for the next edition of MUTCD. The FHWA is mostly confining its review of the requested Docket comments to those that deal with the changes from the 2003 MUTCD Edition.

We strongly recommend that the Maryland Traffic Engineers Council (MTEC) members and other government agencies take advantage of this MUTCD NPA period to comment on the proposed revisions for reasons of safety and possible liability to employer agencies. The SHA, owner/promulgator of the MUTCD in Maryland, is reviewing the 2009 MUTCD. We have created teams for each chapter of the MUTCD. We will be glad to include the MTEC members and other Government agency representatives to our teams or we can incorporate their comments with our own, as may be appropriate. However, the greater impact will likely to come from separate submissions. ITE, NACO and APWA are members of the NCUTCD, and we suspect they must have set up a review process for their members similar to that of AASHTO. We recognize that it is likely that some of you are already participating with your 'parent' organizations in this MUTCD review effort.

It is becoming more important to get involved in the review or proposal of changes to the MUTCD because of the use of innovative technologies, increasing number of locations where "design exceptions" are required due to geometric constraints, and a wide range of driver's perceptions because of increasing populations of immigrants, aging drivers, and foreign visitors. We all need to work more closely, including the private sector - as we all know, consistency and uniformity are essential needs of a successful traffic control strategy application program.

It is hoped that you can help spread the word to the members of those organizations, and others that have an interest in, and/or a responsibility for, applying traffic control strategies and devices along our State's public and applicable private roads and streets.

Any thoughts or comments that you like to offer the SHA will be cheerfully received. You may send your comments or get additional information by contacting the writer of this note: Mr. Dilip Patel at 410-787-5811, toll-free 888-963-0307 or via email at dpatel@sha.state.md.us. Dilip is the Assistant Chief for the Traffic Development and Support Division, for the Office of Traffic and Safety.

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The first exercise guides users through the basic features of the tool as it performs a sample project evaluation. Two additional walk-through exercises highlight more advanced features. "The exercises not only demonstrate how to use the model, but also how to set up a project for economic analysis. We strongly recommend that users go through the exercises before getting started," says Gabler.

For more information on BCA.net, visit: http://fhwaapps.fhwa.dot.gov/bcap or contact Eric Gabler, FHWA, at 202.366.4036. To learn more about using economic analysis methods in transportation decision making, visit: http://www.fhwa.dot.gov/infrastructure/asstmgmt/invest.htm.

Reprinted with permission from the January/February issue of FHWA's Focus newsletter.

Life Cycle Cost Analysis: Learning from Your Peers

Transportation professionals from the United States and Canada came together to share their experiences and best practices in using life cycle cost analysis (LCCA) at the Federal Highway Administration's (FHWA) 2006 LCCA Peer Exchange. Held October 17-18, 2006, in Kansas City, Missouri, the conference provided a forum for practitioners to discuss lessons learned from implementing LCCA in their State programs and to identify future LCCA needs. Conference attendees included State department of transportation design, construction, and materials engineers.

States are using life cycle cost analysis to determine which design alternative will produce the desired results for a highway project at the lowest cost.

"LCCA is an analytical tool that provides a cost comparison between two or more competing design alternatives that produce equivalent benefits for the project being analyzed," said conference facilitator Nathaniel Coley of FHWA's Office of Asset Management." It evaluates agency and user costs over the life of investment alternatives." States are using LCCA to determine which alternative will produce the desired results for a given highway project at the lowest cost. Because LCCA focuses on overall life cycle cost, the lowest cost alternative is not necessarily the one with the lowest cost of initial construction, noted Coley. "Spending more money up front on quality construction often reduces the overall cost by reducing the need for constant maintenance and full-scale rehabilitation."

Life cycle cost analysis evaluates agency and user costs over the life of investment alternatives.

Clemson University conducted a survey of LCCA use in 2005 for the South Carolina Department of Transportation. Responses were received from 33 State transportation departments and 2 Canadian provinces. Of the respondents, 94 percent use LCCA for pavements. Respondents noted that the following costs are typically included in the calculation of agency LCCA costs:

- Preliminary engineering.
- Initial construction.
- Construction management.
- Maintenance of traffic.
- Routine and preventive maintenance.
- Resurfacing and rehabilitation.
- Associated administrative expenses.

Fourteen States include user costs in the LCCA, with 10 of those incorporating work zone user delay costs.

States and others can take two approaches when conducting an LCCA: deterministic and probabilistic. The deterministic approach uses inputs with fixed values to calculate life cycle cost. Analysts rely on existing data sources to determine fixed values for uncertain variables, such as design life and future rehabilitation cost. Conversely, the probabilistic approach assigns a range of possible inputs to each uncertain variable to calculate a probability distribution of results. This approach allows risk to be quantified for the input variables. Most States that practice LCCA use the deterministic approach, because of their more limited experience with performing and analyzing the results of a probabilistic analysis. Some States employ the probabilistic approach for certain situations. The Colorado Department of Transportation (CDOT), for example, uses the probabilistic approach for all appropriate projects with an estimated initial cost of more than $1 million. "The probabilistic approach allows for a better justification of the numbers," notes Jay Goldbaum of CDOT.

State experiences highlighted at the meeting include those of the California Department of Transportation (Caltrans). Caltrans has developed a draft State LCCA Procedures Manual, and the agency's recently updated pavement design manual now uses LCCA to compare different design lives. LCCA costs must be included in project study reports as well.

The Kansas Department of Transportation, meanwhile, conducts LCCA on about six projects each year, including all major modification and system enhancement projects.

Because no standard protocol exists for determining which projects necessitate use of LCCA, States have established their own guidelines. The New York State Department of Transportation, for example, mandates LCCA for all projects greater than 2.6-km (1-mi) long. CDOT, meanwhile, generally bases the decision to conduct an analysis on the length of the project, with an LCCA also mandated for all projects costing more than $1 million.

Several States use FHWA's RealCost LCCA software when performing analyses. RealCost identifies cost differences between design alternatives, accounting for both initial and future agency and user costs. To run the program, a user must enter the estimated costs for the initial construction and any future rehabilitation of the asset, as well as the period of serviceability (i.e., time between construction and rehabilitation). The software also requires basic traffic data inputs such as annual average daily traffic, capacity, and hourly traffic distribution.

Learn more about life cycle cost analysis at www.fhwa.dot.gov/infrastructure/asstmgmt/lcca.htm.

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State users such as California and Georgia have identified some recommended enhancements for RealCost. These enhancements will be included in an update scheduled for release this year. Caltrans, in conjunction with the University of California, Berkeley, is also working to develop decision support tools that can be used in conjunction with RealCost. Future peer exchanges are planned that will focus on developing standardized practices for LCCA and an LCCA roadmap for implementation activities over the next 5 years. Another goal for FHWA and States is to expand LCCA practices beyond pavements and into bridge design and other applicable fields in the near future.

For more information about LCCA, RealCost, or future peer exchanges, contact Nathaniel Coley at FHWA, 202-366-2171 or by email nathaniel.coley@fhwa.dot.gov. Information on LCCA and the RealCost software is also available at www.fhwa.dot.gov/infrastructure/asstmgmt/lcca.htm.

Reprinted with permission from the March 2007 issue of FHWA's Focus newsletter (FHWA-HRT-07-011).

CITE and FHWA Introduce New Blended Course: Improving Highway Safety with ITS

The Consortium for ITS Training and Education (CITE) and the Federal Highway Administration (FHWA) Office of Safety have released an interactive web-based course on "Improving Highway Safety with ITS." This course aims to increase awareness of the benefits to be gained through the deployment of ITS for highway safety applications.

This blended course is designed to assist professionals in both the highway safety and ITS communities. Participants may be planners, operators, designers, or maintenance personnel. These may be for example, the employees of, or contractors for, State departments of transportation, metropolitan planning organizations, and city and county agencies. The course activities will draw on attendee's experience, expectations, and contributions. Because an underlying objective is to foster cooperation among the Safety and ITS communities, it is critical that both be well represented during the course offering. This blended version of the course has the same content as the NHI classroom version, only it is converted to an on-line format and the participant activities had to be modified to fit this type of course presentation. A complete outline of the course can be found on the CITE web site.

CITE eliminates the inconvenience of attending courses away from the office by providing courses through an interactive web-based format. All of CITE's courses are accessible 24 hours a day, 7 days a week. The courses provide student interactivity through a stimulating mix of participatory activities, such as self-study quizzes, exercises or problems, and drag-and-drop pages. These activities help support and reinforce the text-based information and keep students engaged and active in the learning process.

A "blended" course combines the best features of both instructor-led and web-based instruction. These features include:

- Live discussions with the instructor through the use of conference calls,
- Convenient, flexible web-based learning,
- A specific time schedule in which to complete the course, and
- Interaction with other students through the use of class workshops posted on a discussion board.

The instructor for this blended course is Dr. Emily Parkany, P.E., PTOE, a Principal Transportation Engineer at Noblis in Washington, DC. Emily's PhD is from the University of California, Irvine, where she studied Transportation Science. She also has degrees from MIT and Columbia University. Prior to joining Noblis, she was an assistant professor of civil engineering at the University of Massachusetts, Amherst and at Villanova University.

This blended course begins on May 2nd and continues through June 23, 2008. The fee for the course is $250 and students can register by going to the CITE web site at http://www.citeconsortium.org.

For more information, please contact Denise Twisdale, mztwiz@umd.edu or 301.403.4592.

CURRENTLY SCHEDULED COURSES FOR 2008

The following courses are scheduled for 2008, we are also still adding to the list, you may also request a course, visit us on the web. Sign up now for these great courses, hurry, they fill up fast! For more information or to schedule a class contact Janette Prince at 301.403.4623 or sign up online by visiting us at: http://www.mdt2center.umd.edu.

ASPHALT RESURFACING

Ed Stellfox
May 22, 2008, 8:30 am - 12:30 pm
College Park, MD
$25 All Registrants

This course reviews the various asphalt mixes, their components and their uses. Asphalt resurfacing procedures are covered, including preparation, material, equipment, operation and safety.

HIGHWAY CAPACITY ANALYSIS

Dane Ismart
June 10-12, 2008, 8:15 am - 4:30 pm
Linthicum, MD
$275 Maryland Local Government Only
$395 State and Federal
$430 Private and Out-of-State
CEU's: 2.2

This course provides a working knowledge on the basics of capacity analysis and the use of the Highway Capacity Manual (HCM) and Highway Capacity Software. Topics addressed will cover the analysis of a wide range of facilities from freeway systems to signalized and unsignalized intersections. Design issues and their effect on capacity will be covered as well as the major changes in the latest version of the Highway Capacity Software.

PREVENTIVE PAVEMENT MAINTENANCE

Ed Stellfox
June 12, 2008, 8:15 am - 3 pm
College Park, MD
$50 All Registrants

This course covers preventive maintenance treatments such as chip seals, slurry seals, and micro-surfacing and discusses when and where each technique could be effective.

ACCESS TREATMENT TO STATE & LOCAL ROADS

Dane Ismart
June 16-17. 2008, 8:15 am - 4 pm
College Park, MD
$195 Maryland Local Government Only
$275 Maryland State Government Only
$295 Federal, Private, and Out-of-State
CEU's: 1.2

This course formally titled Access Management, covers not only why, but also how to manage access, from a policy, legal, and design perspective.

ASPHALT RECYCLING

Ed Stellfox
June 18, 2008, 8:30 am - 3:30 pm
College Park, MD
$50 All Registrants
This course covers techniques for recycling asphalt pavement, including surface recycling, hot mix recycling, and cold mix recycling. The class will emphasizes cold mix recycling, full depth reclamation, reviewing materials, equipment and operations.

TRAFFIC ENGINEERING SHORT COURSE

Tom Hicks
Woody Hood
Dane Ismart
Gerry Alexander
Wamahdri Williams
Rick Hawthorne
July 28 - August 1, 2008,
8 am - 4:30 pm
Linthicum, MD
$300 Maryland Local Government Only
$650 State and Federal
$700 Private and Out-of-State
CEU's: 3.5

This five-day short course covers many aspects of traffic engineering, including design, data analysis, operation and management. Also, related factors, such as road use characteristics, public influence and traffic calming are addressed in the class. The course is designed for persons with an engineering background and/or traffic engineering responsibilities in a related field. Junior level traffic engineers, transportation planners, highway designers, city/county engineers without traffic engineering background, and possibly some experienced traffic technicians will benefit from the class.

BASIC DRAINAGE

Ed Stellfox
August 5, 2008, 8:30 am - 3 pm
College Park, MD
$50 All Registrants

This course emphasizes the importance of good drainage with discussions of water and its effects on roads, problems caused by improper drainage, and ways to handle these problems.

TORT LIABILITY & RISK MANAGEMENT

Ronald Eck
August 5, 2008, 8:30 am - 4 pm
College Park, MD
$115 Maryland Local Government Only
$150 All Other Registrants

This workshop provides an overview of the legal duties and responsibilities of roadway personnel. Key legal concepts relating to the liability of roadway agencies are reviewed from a risk management standpoint. Common types of claims/lawsuits brought against street departments and highway agencies are identified through examples/case studies. Risk management principles and practical risk management activities will be identified.

PEDESTRIAN & BICYCLE ACCOMMODATION

Ronald Eck
August 6, 2008, 8:30 am - 4:30 pm
College Park, MD
$115 Maryland Local Government Only
$150 All Other Registrants

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CURRENTLY SCHEDULED COURSES FOR 2008

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This workshop provides current information on the design, operation and maintenance of successful pedestrian and bicycle facilities. Emphasis is placed on making participants aware of the characteristics and needs of pedestrians and bicyclists and on the importance of an interdisciplinary approach to planning and implementing pedestrian and bicycle programs.

TRAFFIC SIGN RETROREFLECTIVITY

Ronald Eck
August 7, 2008, 8:30 am - 12:30 pm
College Park, MD
$50 All Registrants

This workshop will help practitioners gain a better understanding of sign retroreflectivity issues in order to improve the overall nighttime visibility of traffic signs. Topics covered will include: sign retroreflectivity importance; basic retroreflectivity science; types of retroreflective materials; measuring retroreflectivity; minimum retroreflectivity levels; and maintenance/management methods.

WINTER MAINTENANCE

Ed Stellfox
August 20, 2008, 8:30 am - 3 pm
College Park, MD
$50 All Registrants

This course covers all aspects of winter operations- planning and organizing, methods of snow and ice control, salt usage, and winter equipment maintenance. This lesson will include usage of snow maps and formal snow plans.

INTERSECTION DESIGN & ANALYSIS

Dane Ismart
September 8-9, 2008, 8:30 am - 4 pm
College Park, MD
$115 Maryland Local Government Only
$150 State and Federal
$175 Private and Out-of-State
CEU's: 1.2

This course will have broad general coverage of at-grade intersection analysis and design features. The analysis will include signalized, unsignalized and roundabout intersections. Specific coverage will include capacity, analysis, signal warrants, queue analysis and safety selected design features.

INTRODUCTION TO GEOSYNTHETICS

Ed Stellfox
September 24, 2008, 8:30am - 12:30pm
College Park, MD
$25 All Registrants

This course is an introduction to geosynthetics, beginning with a discussion of geosynthetics, what they are, how they are made and how they can be used in a road maintenance program. The class will cover the following topics: history, materials, geotextile fabrics, geogrids, geocells and geowebs, uses & applications, drainage, inflation, erosion control, reinforcement, separation, and reflective crack control.

INTRODUCTION TO TEMPORARY TRAFFIC CONTROL

Juan Morales
October 6, 2008, 8:15 am - 4 pm
$115 Maryland Local Government Only
$150 State and Federal
$195 Private and Out-of-State

An introductory course to temporary traffic control in work zones, TCC is a one-day course designed to give participants a complete overview of traffic control in work zones, including applicable standards, devices used, component parts and their requirements, and installation/removal considerations.

WORK ZONE DESIGN

Juan Morales
October 7-8, 2008, 8 am - 4 pm
College Park, MD
$225 Maryland Local Government Only
$275 State and Federal
$295 Private and Out-of-State
CEU's: 1.2

The course will give participants knowledge of the entire temporary traffic control (TTC) process: planning, design, review, installation, maintenance, and evaluation of proper maintenance of traffic (MOT) controls for work zones. While the functions of planning, design, review, and operation of temporary traffic control are covered in detail, issues concerning safety of pedestrians and highway workers, human factors, and legal responsibility are also addressed.

STRATEGIES FOR IMPROVING HIGHWAY SAFETY

Juan Morales
October 9-10, 2008, 8:15 am - 4:30 pm
College Park, MD
$225 Maryland Local Government Only
$275 State and Federal
$295 Private and Out-of-State

To acquaint the participants with the options available to reduce traffic congestion and increase mobility. The course will examine the causes behind the growing congestion problem and specific strategies that can be taken to reduce it.

SIGNAL WARRANT AND INTERSECTION CONTROL ANALYSIS

Dane Ismart
October 16, 2008, 8:15 am - 4:30 pm
College Park, MD
$115 Maryland Local Government Only
$150 State and Federal
$175 Private and Out-of-State
CEU's: 0.6

This one-day course will cover the eight MUTCD signal warrants: Warrant 1: Eight-Hour Vehicle Volume; Warrant 2: Four-Hour Vehicle Volume; Warrant 3: Peak Hour; Warrant 4: Pedestrian Volume; Warrant 5: School Crossing; Warrant 6: Coordinated Signal System; Warrant 7: Crash Experience; and Warrant 8: Roadway Network. The course will also cover warrants for four-way stops as well as alternatives to traffic control signals.

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CURRENTLY SCHEDULED COURSES FOR 2008

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ROADWAY SAFETY FUNDAMENTALS

Mark Hood
October 21, 2008, 8 am - 4 pm
$125 Maryland Local Government Only
$150 Maryland State Government
$175 All Other Registrants

This one-day course will cover the following topics:

- Basics of road safety: why, when, and where crashes occur
- Solving fundamental traffic safety problems
- Using traffic control devices to improve safety: signs, signals, pavement markings, and maintenance
- Common roadway safety issues: curves, stopping sight distance, edge drop-offs, etc.
- Basic Intersection Safety.

DRAINAGE MANAGEMENT SYSTEMS

Alan Kercher
October 29, 2008, 8 am - 3 pm
$95 Maryland Local Government Only
$125 All Other Registrants
CEU's: 0.5
This one-day course will cover the basics of storm water management, the creation of a project map, collection of drainage structure inventory, report generation, and analyzing potential problem areas.

BICYCLE DESIGN AND PLANNING

Dane Ismart
November 5, 2008, 8:30 am - 4 pm
College Park, MD
$95 Maryland Local Government Only
$125 All Other Registrants

This one-day workshop will introduce plan and design concepts for the development of bicycle facilities.

ROUNDABOUT PLANNING AND DESIGN

Dane Ismart
November 6, 2008, 8:15 am - 4:30 pm
College Park, MD
$95 Maryland Local Government Only
$125 All Other Registrants

This one-day workshop will provide participants with an introduction to the planning and design of the modern roundabout. Topics covered in the roundabout course will include geometric design, signing, striping, safety, and accommodation of pedestrians and bicyclists. An important component of the course will be a discussion of the advantages and disadvantages of roundabouts.

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- Technotes

A Roadmap to Transportation System Preservation Research

What does the future hold for the Nation's transportation infrastructure? With increasing traffic volumes, aging highways and bridges, and budgets that cannot keep up with demands, transportation agencies face a growing number of challenges. Key to meeting these challenges and maintaining this vital infrastructure are preservation practices that can extend the service life of pavements and bridges. Agencies have enjoyed great success through the use of such practices, but progress is often hampered by gaps in the understanding and implementation of pavement and bridge preservation. "A concentrated effort is needed to conduct research to address these gaps and provide knowledge on how to apply the right preservation action at the *right* time to the *right* pavement or bridge," says Jim Sorenson of the Federal Highway Administration's (FHWA) Office of Asset Management.

The key to meeting these challenges and maintaining this vital infrastructure are preservation practices that can extend the service life of pavements and bridges.

Partnering with industry, the Transportation Research Board (TRB), and the American Association of State Highway and Transportation Officials (AASHTO), FHWA sponsored a study to identify critical knowledge gaps in pavement and bridge preservation and to determine the research needed to fill those gaps. The outcome of the study is the new *Transportation System Preservation Research, Development, and Implementation Road-map*. Now available from FHWA, the Roadmap outlines 38 pavement preservation and 25 bridge preservation needs statements. The needs statements have been ranked and prioritized to facilitate their adoption into the short-term and long-term research funding programs of FHWA, TRB, and State transportation agencies.

Taken together, these statements represent a potential wealth of new knowledge across a broad array of technical and policy areas," says Sorenson. "They provide a framework for a research management plan to help direct application and implementation of the R&D results within the short-and long-term time frames."

Following a critical assessment of the state-of-the-art in preservation technology and infrastructure asset management, several broad topics in pavement preservation and bridge preservation were identified for in-depth study. In the pavements area, asset management and preservation, design, materials, concrete, construction, contracting methods, surface characteristics, and performance of preservation actions were examined. Bridge topics studied were asset management and preservation, bridge decks, bridge joints, concrete superstructures and substructures, steel superstructures and substructures, and selection and performance of preservation actions. White papers on each of the focus areas were then prepared by subject matter experts, summarizing the current knowledge on the topics and highlighting possible research and development needs.

The next step was to hold brainstorming workshops with transportation practitioners on pavement preservation and bridge preservation, so that participants could discuss and develop research needs statements addressing specific knowledge gaps across all the topic areas. Workshop participants represented highway agencies, FHWA, TRB, industry, and academia. The pavement preservation workshops were held February 5-7, 2007, in Phoenix, Arizona, and February 26-28, 2007, in Orlando, Florida, while the bridge preservation workshop took place May 22-23, 2007, in Dallas, Texas. Following the workshops, the needs statements were refined, consolidated, and assessed for priority to produce the final list outlined in the Roadmap.

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The top three pavement preservation needs identified are:

- Developing performance-related specifications for pavement preservation treatments.
- Determining pavement preservation treatments' lives and related pavement life extension.
- Determining the economic benefits of pavement preservation strategies.

The top three priorities for bridges are:

- Improving inspection techniques for steel pre-stressing strands, cables, and ropes.
- Quantifying the information necessary to guide bridge preservation decisions.
- Identifying best practices for preserving bridge decks.

FHWA's new Transportation System Preservation Roadmap outlines and prioritizes pavement preservation and bridge preservation research needs. Preservation practices that can extend the service life of pavements and bridges, such as the chip seal for pavements shown here, are more important than ever as the Nation's infrastructure ages.

Key issues highlighted by both pavement preservation and bridge preservation workshop participants include the importance of obtaining reliable, usable data on the degree of preservation that is accomplished by applying a particular treatment; the cost of the treatment; and how long the treatment remains effective. Also highlighted at the workshops were the difficulty in determining optimum timing for applying preservation treatments and the lack of standard terminology and definitions for preservation, particularly for bridge preservation. Practitioners also noted that preservation outreach and training (at the agency, contractor, and university levels) is a key component to increasing the acceptance and awareness of preservation among transportation agencies, decision makers, and the public.

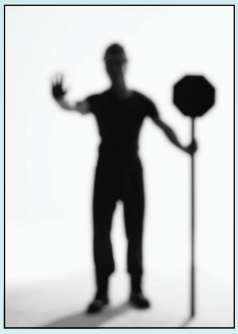
For more information or to obtain a copy of the Roadmap, contact Chris Newman at FHWA, he can be reached at 202.366.2023 or by email at christopher.newman@fhwa.dot.gov.

The Roadmap can be viewed at: http://wwwcf.fhwa.dot.gov/exit.cfm?link=http://www.pavementpreservation.org.

To learn more about transportation system preservation, visit http://www.fhwa.dot.gov/preservation/.







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CENTER STAFF

PHILIP TARNOFF
Director
301.403.4619
tarnoff@umd.edu

ED STELLFOX
Co-Director
301.403.4696
Stellfox@umd.edu

JANETTE PRINCE
Assistant Program Manager
301.403.4623
janette@umd.edu

ELLEN NEAL
Administrative Assistant
301.403.4632
ellen@umd.edu

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Maryland Transportation Technology Transfer (T²) Center
University of Maryland, College Park
Building 806, Suite 3102
College Park, Maryland 20742-6602

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