Announcing the 3rd Annual Build a Better Mousetrap Competition

Have you or one of your coworkers recently built an innovative gadget or developed an improved way to do a job?

If so, now is the time to show off a project your municipality is proud of in the 3rd Annual Build a Better Mousetrap Competition.

The MDT2 Center is looking for projects that you, your employees, or crew designed and built. It can be anything from the development of tools, equipment modifications, and/or processes that increase safety, reduce cost, improve efficiency, and improve the quality of transportation.

If you have something you think would qualify for this competition, submit your entries by Friday, May 13, 2016. Entries will be judged by MD T2 Center employees on cost savings/benefits to the community, ingenuity, transferability to others and effectiveness. The winning entry will be submitted into a Regional Mousetrap competition (Delaware, Maryland, Pennsylvania, Virginia and West Virginia) as well as a National Mousetrap competition to compete for prizes and, of course, bragging rights. Winners of the national competition will be announced at the annual LTAP/TTAP national conference this summer. All entries at the national level will be posted on the LTAP/TTAP program website and compiled into an electronic booklet.

To enter the competition, complete the entry form and return it by Friday, May 13, 2016.

If you have questions, please feel free to email them to ckeane@umd.edu, or call Carly Keane at 240.304.9627.

Below are the 2015 Build a Better Mousetrap National Winners:

1st Place: Curve Analysis Application
Agency: Virginia Department of Transportation
Contact: Jacob Dellinger
1596 Deborah Lane, Salem, VA 2415
Phone: 540.375.0124

Problem Statement: One very important part of any speed, safety, or warning sign study is the process of “ball-banking curves.” Ball-banking curves is part the process whereby the safe speed for a curve is determined. Until now, we have had to use relatively expensive tools (easily $2,000) to capture what is at best, spot location data of a curve or set of curves. Often times this process requires an additional person as one person is required to drive and the other to make notes.

Solution: Nathan O’Kane and I realized that all of the components and sensors...
within the current tools, i.e. Distance Measurement Instruments (DMI), Speedometers, Accelerometers and Inclinometers (for Ball-Banking the curve), are sensors that are in nearly every new smartphone on the market. With this in mind, we began building and testing a mobile application that not only provides real-time display of the same data the current tools do; but more importantly, logs the data automatically. The logged data can easily be uploaded into a free visualization program where each data point can be displayed on a map. This is a tremendous advantage over the current system. Data is no longer captured only at one or two spot locations, but is captured at multiple points along the roadway which also aids in data analysis. Accuracy is increased and the need for a second person in the field is eliminated.

**Labor/Materials/Cost:** $0  
**Savings/Benefits to the Community:** This tool is extremely beneficial as it displays data more accurately than most current tools, records exponentially more data over traditional methods of data collection (data is logged several times per second rather than a few times per minute by hand), and the application costs nothing. Moreover, it is feasible that this tool could be provided to less skilled staff and engineer-grade data could be captured.

### 2nd (tied) Place: Under Body and Frame Pressure Washer

**Agency:** Mt. Sterling Public Works Department  
**Contact:** Steve Lane  
100 Willow Street, Mt. Sterling, KY 40353  
**Phone:** 859.404.3250, **Email:** steve.lane@ky.gov

**Problem Statement:** I wanted to design something that would wash off salt from underneath truck frames and dump beds after a snow event to help slow down the rusting process and help preserve the brake parts from early failure. I also wanted it to be something we could make economically.

**Solution:** I finally settled on a frame size small enough to be easily maneuverable and also big enough to accommodate enough nozzles. Caster size had to be big enough to roll easily and small enough to fit under brake chambers. Water supply needed to be high volume and the spray nozzles needed to fan out and overlap each other.

**Labor/Materials/Cost:** Frame is 1” box tubing, 3” swivel casters, 1 1/3” galvanized pipe for handles, all other piping is pvc sch. 40 (3 sizes) 1 1/3 - 1” and various fittings, nozzles are screw in type with 45” fan installed to overlap 1 1/3” fire hose from handle to a 2” 195 GP gas water pump. $300 and a fire hose.

**Savings/Benefits to the Community:** Our trucks and dump bed will last longer and look better, thus saving money and showing our department takes pride in our equipment. Keeping the brake parts from building up with rust means safer trucks and less liability plus longer brake life.

### 2nd (tied) Place: Transportation Asset Collection Using Android Tablet & ArcGIS Collector

**Contact:** Ken Hudak  
**Phone:** 248.645.2000, **Email:** khudak@rcoc.org

**Problem Statement:** The Road Commission for Oakland County was seeking a cost effective solution to map road stream crossings and dry-weather flow screening within its right-of-way for storm-water permit compliance. Mapping road infrastructure and assets can often be expensive because of the required equipment and time.

**Solution:** The Road Commission for Oakland County leveraged its existing geographic information system (GIS) to support field mapping using a free collection software suite called ArcGIS Collector. ArcGIS Collector runs on Android and Apple tablets, and it uses the tablet’s built-in GPS that provides a two meter accuracy, which is well within the required parameters of our project. This equipment can be acquired at retail wireless providers for just 10% of the cost of survey grade GPS systems. The Road Commission for Oakland County then hired two summer interns with a background in Environmental Studies and GIS to conduct the field surveys. Over the course of 10 weeks, the interns visited over 500 locations and mapped road stream crossing points (outfalls) where storm-water drainage from the pavement was fed into natural waterways in our right-of-way. In total, over 2,500 points were collected at a total cost which was 80% lower than similar proposals from private consultants. The team was also able to identify problems with infrastructure (such as dry weather flow indicating potential illicit discharge) and collapsed structures. These were invented with geotagged photos and submitted to highway maintenance for additional investigation.

**Concluded on page 3**
Third Place - Redesigned Sign Truck
Agency: Billings County in North Dakota
Contact: Jeff Baranko
Billings County District #2, 12811 20th St., SW, Belfield, ND 58622
Phone: 701.260.2588, Email: barankojeff@yahoo.com

Problem Statement: Many items on the sign truck were poorly designed and not efficient. This included a catwalk that had to be manually swung to be extended. All the equipment was kept on the bed of the truck and had to be lifted from a high location. To replace or install a sign post or sign required two people. The ladder was mounted on the rear of the truck and had nothing to hold unto when climbing up or down. Tools were kept in a tool box but weren’t organized. When working with equipment on the sign truck the chances of injury were great and it took a considerable amount of time to complete a task. Many items on the sign truck were poorly designed and not efficient. This included a catwalk that had to be manually swung to be extended. All the equipment was kept on the bed of the truck and had to be lifted from a high location. To replace or install a sign post or sign required two people. The ladder was mounted on the rear of the truck and had nothing to hold unto when climbing up or down. Tools were kept in a tool box but weren’t organized. When working with equipment on the sign truck the chances of injury were great and it took a considerable amount of time to complete a task.

Solution: Redesign the sign truck to make it more efficient and safer for employees to work. Rebuilt the catwalk pivot hub and added a camper jack so the catwalk would swing mechanically. Added a 12-volt electrical system connected to the camper jack so the catwalk didn’t need to be swung manually. Added an electrical switch on the catwalk so it could be operated top side. Added a toolbox and holders for the drive dyes on the catwalk so they would be handy and didn’t have to climb off the catwalk for a sign installation. Built holders on the side of the truck bed for the air hammer and auger so it was accessible from ground level. Moved the compressor and built a bracket to mount a reel so the air hose could be extended easily. Designed an air operated auger from an air wrench to be able to dig post holes eliminating the need for a second person to install a sign. The ladder was moved from the rear middle area of the truck bed where it was in the way to the rear corner of the truck bed. The ladder was rebuilt to include grated steps and a hand rail was added. The storage box on the rear of the truck was extended and a vise was added and could be used for a work bench. A bracket was added to protect the generator and air compressor from sign posts which are stored on the truck bed. Dividers were added to the tool boxes mounted on the side of the truck bed so items could be better organized.

Labor/Materials/Cost: $1200.00 in materials and 20 hours in labor.
Savings/Benefits to the Community: The redesigned sign truck changes the signing operation from a two person to a one person operation. The changes to the catwalk and holders for the air hammer and auger; and redesigning the ladder reduces the exposure to injuries to employees. All the changes increase the efficiency of the signing operation and reduction to possible bodily injury is a great benefit to employees and saves the county money in possible workers compensation costs.

If inspiration has struck, please submit your entry!
Fill out the entry form and submit it by Friday, May 13, 2016.
Many states across the nation are discovering that you really don’t need all that paperwork to complete a highway construction project. “e-Construction is an absolute game changer,” said Cliff Farr, construction technology manager for the Michigan Department of Transportation.

e-Construction is the collection, review, approval and distribution of highway construction contract documents in a paperless environment. The process includes electronic submission of all construction documentation, electronic document routing and approvals through electronic signatures. It involves digital management of construction documents in a secure environment that allows distribution to all stakeholders through mobile devices.

A paper-based system requires significant time and money to create, process and store documentation. In this era of instant communication and a tech-savvy workforce, the paper process is quickly becoming obsolete. Through the Every Day Counts initiative, the Federal Highway Administration and American Association of State Highway and Transportation Officials are partnering to help states adopt e-Construction.

**States go paperless**

States are reporting dramatic savings in time and money. The Michigan DOT, with a 2015 construction program of $1.2 billion, estimates it’s saving $12 million a year, eliminating six million pieces of paper and slashing construction modification times from 30 days to just three days with the use of e-construction.

The agency rates itself as 99 percent paperless. It uses paper for the tickets on materials, but that will change as it investigates alternatives. For Michigan, e-Construction includes the electronic transfer of plans and specifications, data hosting services, electronic review and approval of documents through e-signatures, and electronic as-built drawings. “Basically, we get rid of the paper trail,” said Brad Wieferich, Michigan DOT deputy chief engineer.

The Florida Department of Transportation is another e-Construction leader. At the rate of saving $45,000 annually per contract, spread over 500 active projects, the agency estimates it could save $22 million per year with e-Construction, said Doug Martin, construction systems engineer. The Florida DOT has implemented e-construction under the leadership of a group of innovators at its highest level, including the chief engineer. The state reports it replaced over 20,000 pieces of paper on just four projects.

Several states—including Iowa, Minnesota, Missouri, North Carolina, Pennsylvania, Texas, Virginia, West Virginia and Utah—have built two or more projects using e-Construction, said Bryan Cawley of FHWA’s Office of Infrastructure, who leads the EDC-3 e-Construction Innovation Deployment Team.

**Challenges and benefits**

Going paperless does involve challenges, Cawley said. One concern is the length of time it takes for construction inspectors to adapt to using the new technology. But a research project carried out by the Minnesota, Washington State and Texas Departments of Transportation found that after about three days, the inspectors “grabbed hold of it and could look up project documents and process and approve contract documents on an electronic screen,” said Cawley.

e-Construction offers several benefits:

- You need less physical space to store documents.
- You can create a more consistent approach to decision-making.
- You have real-time access to data through secure data management systems.
- You can back up and store more project data electronically to make it natural-disaster-proof.

As Martin pointed out, “Why store things in multiple places when you can store it in one place where everybody can view it?” The Florida DOT has 140-plus forms that need to be filled out to complete a construction project. “At first, we went through the list and picked out the ones that we could easily make electronic,” said Martin. By December 2015, the agency had nearly finished the entire list.

To move the e-Construction process along, leaders of three major stakeholders—the Florida DOT, Florida Institute of Civil Engineers and Florida Transportation Builders Association—signed a memo of understanding that they would endorse e-Construction and recommend it to their members. “Our goal is to be completely paperless by July 1, 2016,” said Martin.
e-Construction help

- Register for the EDC Exchange on e-Construction from 2 to 4 p.m. ET on April 21.
- Read the Florida DOT e-Construction How-To Guide on implementing a paperless system.
- Read reports on peer exchanges for e-Construction best practices in several states.

For information and technical assistance on using e-Construction, contact Bryan Cawley of the FHWA Office of Infrastructure, Richard Duval of the FHWA Office of Infrastructure Research and Development or Kathryn Weisner of the FHWA Resource Center.

This article was reprinted from the Center for Accelerating Innovation’s Innovator (Mar/Apr issue), a publication of the Federal Highway Administration and United States Department of Transportation.
ASPHALT RECYCLING
Ed Stellfox
April 14, 2016, 8:30am-12:30pm
College Park, Maryland
$59 for all participants
PDHs: 4.0
This course discusses the advantages of asphalt recycling as part of your road maintenance program. It covers techniques for recycling asphalt pavement, including surface recycling, hot mix recycling (both in plant and on-site), and cold mix recycling. The course emphasizes cold mix recycling, full depth reclamation, reviewing materials, equipment and operations. It also presents recent examples of asphalt recycling projects in several states. The following topics will be discussed: advantages; review of techniques - materials, equipment, and operations for surface recycling, hot-mix recycling, cold-mix recycling, and full depth reclamation.

PREVENTIVE PAVEMENT MAINTENANCE
Ed Stellfox
April 28, 2016, 8:30am-3:30pm
College Park, Maryland
$89 for all participants
PDHs: 6.0
This course is the first step in making your asphalt pavements last longer at lower costs. The course covers preventive maintenance treatments such as chip seals, slurry seals, and micro-surfacing and discusses when and where each technique could be effective. It presents application methods, including preparation, materials, equipment, operations and safety, along with practical tips on how to avoid trouble. This course is open to municipal officials, road commissioners, supervisors, and superintendents; public works and maintenance personnel; equipment operators; and city or town managers.

TRAFFIC SIGNS
Ed Stellfox
May 12, 2016, 8:30am-12:30pm
College Park, Maryland
$59 for all participants
PDHs: 4.0
This half-day course will cover the regulations and guidelines for traffic signs including; regulatory signs, warning signs, and guide signs. A review of the Manual on Uniform Traffic Control Devices (MUTCD) will also be covered. An in depth discussion of sign examples, installation and maintenance, as well as sign management will be covered.

INTRODUCTION TO TEMPORARY TRAFFIC CONTROL
Juan M. Morales, P.E.
May 17, 2016, 8:30am-3:30pm
College Park, Maryland
$100 for Maryland local government participants
$125 for all other participants
PDHs: 6.0
An introductory course to temporary traffic control (TTC) in highway work zones. This one-day course is designed to give participants a complete overview of TTC in work zones, including applicable standards, guidelines, traffic control devices, component parts and their requirements, installation/removal considerations, and pedestrian accessibility. This course will prepare participants to take the Maryland SHA Traffic Manager’s course. Topics Covered/Agenda: Introduction to temporary traffic control (TTC); Quantification of the work zone safety problem; Standards and guidelines applicable in the State of Maryland (MD SHA); Fundamental principles of TTC; Component parts of the TTC zone; Temporary traffic control devices; Tapers and other transitions; Installation and removal considerations; and Pedestrian accessibility. The course is intended for anyone whose actions affect safety on temporary traffic control work zones, including traffic managers, traffic technicians, inspectors and designers.

ROAD SURFACE MANAGEMENT
Ed Stellfox
May 19, 2016, 8:30am-3:30pm
College Park, Maryland
$89 for all participants
PDHs: 6.0
This course provides participants with the basic concepts of road surface management including inventory, distress identification, condition survey, strategies, programs, budgets, and field surveys. A Road Surface Management Systems software demonstration will also be conducted during this course.
TRAFFIC ENGINEERING FUNDAMENTALS
_Dane Ismart and Juan M. Morales, P.E._
_May 23-26, 2016, 8:30am – 4:15pm_
College Park, MD
$399 for Maryland local participants
$420 for all other participants
PDHs: 24.0

This course condenses what was the five-day Traffic Engineering Short Course into a new four-day course.

_Agenda Day One:_
- 8:30AM Introduction
- 9:00AM Traffic Engineering Terms and Design Year Traffic
- 10:00AM Site Impact Analysis
- 1:15PM Safety Principles and Crash Principles
- 2:45PM Principles of Access Management

_Agenda Day Two:_
- 8:30AM Intersection Analysis and Geometrics
- 10:15AM Signal Timing
- 1:15PM Arterial and Freeway Analysis
- 3:00PM MUTCD

_Agenda Day Three:_
- 8:30AM Roundabout Basics
- 9:45AM ITS Overview
- 11:00AM Traffic Calming
- 1:30PM Pedestrian Safety
- 3:00PM ADA Accessibility

_Agenda Day Four:_
- 8:30AM Temporary Traffic Control Standards and Guidelines
- 9:45AM Component Part of a TTC Zone
- 11:00AM Traffic Control Devices
- 1:30PM Traffic Control Devices, continued
- 3:00PM Work Zone Impact Analysis

This course is geared towards anyone with an engineering background and/or traffic engineering responsibilities in a related field. Also junior level traffic engineers, transportation planners, highway designers and city/county engineers.

ROAD SAFETY 365: A SAFETY WORKSHOP FOR LOCAL GOVERNMENTS
_Juan M. Morales, P.E._
_June 1, 2016, 8:30am-3:30pm_
College Park, Maryland
$100 for all participants
PDHs: 6.0

This course is designed to provide local and rural agencies with practical and effective ways to mainstream safety solutions into their day-to-day activities and project development process. This one-day workshop focuses on processes for incorporating safety into all aspects of local and rural projects, and on making safety a priority through inclusion in the traditional decision-making process - 365 days a year. The course stresses the importance of road safety, and illustrates how it can be integrated into rural/local transportation project development at all stages: planning, design, construction, implementation, operations, and maintenance. Through practical exercises and facilitator-led discussions, the emphasis is on operations and maintenance to reflect the predominant, day-to-day responsibilities of local transportation agencies. The benefits and potential cost savings of safety initiatives are shown using examples from rural/local agencies. The workshop audience ranges from decision-makers to road crews. It is aimed primarily at local and rural road and public works supervisors. Others who would benefit include: elected officials, public safety advocates, State DOT personnel, law enforcement, consultants, regional and rural development organizations, municipal associations.

FLAGGER CERTIFICATION
_Juan M. Morales, P.E._
_June 2, 2016, 8:30am – 12:30pm_
College Park, Maryland
$100 for all participants
PDHs: 4.0

The safety of workers, motorists and pedestrians is dependent upon the flaggers’ performance. Since the flagger position involves safety, proper training is vital; flaggers are expected to pass a test to prove their proficiency and competence level. A MD SHA-approved ATSSA (American Traffic Safety Services Association) flagger card will be issued upon satisfactory completion of this course. This will be valid for 4 years and is acceptable in several states, including MD, VA and DC. The class is presented in PowerPoint© and will include a 25-question multiple choice exam and a flagger demonstration (dexterity test). Students will receive their ATSSA Flagger Certification card the day of the course (upon passing the exam). The course is intended for anyone whose actions affect safety of contemporary traffic control work zones, including traffic managers, traffic technicians, inspectors and designers.

ADVANCED HIGHWAY PLAN READING
_Glynn Stoffel_
_June 9, 2016, 8:30am-3:30pm_
College Park, Maryland
$199 for Local Agency Employees
$225 for all other participants
PDHs: 6.0

This class discusses how the highway supervisor, superintendent, maintenance worker and inspector can use a set of highway plans to ensure any new work, or roadway/structure repair work is performed according to design standards. At the successful conclusion of the course, the student should be able to: read and interpret the information given on a set of highway plans; review plans and recognize potential maintenance problem; use the proper vocabulary to communicate about key elements of the plan; locate key items in the plan using stations; locate buried or hidden objects in the field using scaling and triangulation techniques; and draw legible field sketches and red-line drawings. This course is designed as a follow-up to T2’s Blueprint Reading for Highway Workers.
INTRODUCTION TO GEOSYNTHETICS
Ed Stellfox
June 23, 2016, 8:30am-3:30pm
College Park, Maryland
$89 for all participants
PDHs: 6.0

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 course then looks at other geosynthetics and their road system uses, including geogrids, geocells and geowebs, presenting new materials with new applications. Designed for municipal officials, road commissioners, supervisors, and superintendents; public works and maintenance personnel; equipment operators; and city or town managers. This course will cover the following topics: history; materials (geotextile fabrics, geogrids, geocells and geowebs); uses and applications of drainage, erosion control, reinforcement, separation, and reflective crack control.

CRASH AND SAFETY DATA ANALYSIS
Dane Ismart
July 12-13, 2016, day 1 8:30am-3:30pm, day 2 8:30-12:30pm
College Park, Maryland
$130 for Maryland local government participants
$145 for all other registrants
PDHs: 10.0

This day and a half course will cover the following: Crash Data and Computation of Crash Frequency; Condition Diagramming and Collision Types; Speed Analysis and Traffic Calming; Sight Distance Analysis; Pedestrian Safety; School Crossing Considerations; Marking and Signing Considerations; and Safety Design Issues and Mitigation. Audience: This course is intended for Traffic Engineers, planners, traffic analysts, traffic signal technicians and local officials involved in the planning or design of transportation facilities.

CONSTRUCTION MATH
Ed Stellfox
July 14, 2016, 8:30am-3:00pm
College Park, Maryland
$89 for all participants
PDHs: 6.0

Construction inspectors may need to brush up on math skills specifically related to construction inspection, especially basic geometry, fractions, area, volume and conversions. The class is a good refresher, and excellent preparation for the construction inspection class. The course was designed for road workers, foremen, superintendents, construction inspectors and supervisors in need of a refresher, especially in preparation for the Construction Inspections class. Depending on the interest of the participants, the course may cover: whole number and fractions, decimals (for measurement and payment), mixed operation fractions and decimals, formula evaluation, techniques of algebra, ratio and proportion, percentage, hints for problem solving, useful formulas, square and square roots, conversion, and transportation construction examples. *Participants should bring a calculator, scale and straight edge; notebooks will be provided.

SITE IMPACT ANALYSIS
Dane Ismart
August 2-3, 2016, 8:30am-4:00pm
College Park, Maryland
$199 for local agency employees
$215 for all other participants
PDHs: 12.0

Participants will learn the standard techniques for estimating the traffic impacts of both small and large site developments. Content includes procedures for land use forecasting, trip generation, trip distribution and assignment, site impact layout design, and level of service designation. The workshop instructed by Dane Ismart will be conducted with manual procedures, but computer software packages suitable for site impact will also be demonstrated. Participant’s will receive a workbook, traffic access and impact studies, evaluating traffic impact studies, and a site impact handbook are provided. This course is designed for transportation engineers, traffic engineers, and planners concerned about the impacts of site development. Previous experience in traffic capacity or planning procedures is useful.

ROUNDABOUT PLANNING AND DESIGN
Dane Ismart
August 4, 2016, 8:30am-4:00pm
College Park, Maryland
$110 for all participants
PDHs: 6.0

This one-day workshop will highlight the new procedure to roundabouts as per the NEW 2010 Highway Capacity Manual. 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. HCS 2010 software will be used to demonstrate the US Roundabout Capacity procedure rather than SIDRA and Rodel. Maryland’s Roundabout Guide will also be discussed and included as part of the course. Transportation Planners and Traffic Engineers who are planning or designing a modern roundabout are encouraged to participate.

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DESIGNING PEDESTRIAN FACILITIES FOR ACCESSIBILITY
Juan M. Morales, P.E.
August 16-17, 2016, 8:30am-3:30pm
College Park, Maryland
$199 for Maryland local government participants
$225 for all other participants
PDHs: 10.0

Upon completion of this course the participant will be able to identify applicable laws, regulations, guidelines, and standards pertaining to accessibility for persons with disabilities. Know the requirements for ensuring accessibility in existing facilities vs. work in new construction and alterations. Identify some of the challenges in the Public Right-of-Way (PROW) faced by persons with disabilities. Review design elements necessary for achieving accessibility in the PROW, including work zones. Identify best practices. There will be (weather permitting) a field visit to a nearby intersection to assess its design and accessibility. Topics covered in the course include: Laws, Regulations, and Pedestrian Characteristics; Pedestrian Access Routes; Curb Ramps and Other Transitions; Detectable Warning Surfaces; Pedestrian Crossings; Accessible Pedestrian Signals; Pedestrian Facilities and Temporary Pedestrian (TPAR) in Work Zones; and a Field Visit.

WORK ZONE DESIGN
Juan M. Morales, P.E.
August 30-31, 2016, 8:30am-3:30pm
College Park, Maryland
$199 for Maryland Local Government Participants
$225 for all other participants
PDHs: 12.0

The course will give participants knowledge of the entire temporary traffic control (TTC) process: planning, design, review, installation, maintenance, and inspection of temporary traffic control for highway work zones. Issues regarding planning, design, review, and operation of temporary traffic control are covered, including pedestrian accessibility, worker safety, human factors, and legal aspects. The material is based on Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD) and are modified to address Maryland State Highway Administration (SHA) TTC standards and guidelines. Topics Covered: Introduction to TTTC; TTTC Standards and Guidelines (MUTCD and MD SHA); Fundamental Principles of Traffic Control; Human Factors; Component Part of the TTC Zones; Traffic Control Devices; The Typical Project: Planning; Design, Installation, Inspection, Enhancements and Modifications, Constructability Reviews and Removal; Traffic Control Plan Strategies; MD SHA Standards, Guidelines and Practices; Legal Aspects of TTC; and Workshops. The course is aimed at individuals who are responsible for the design, review, or modification of temporary traffic control for work zones adjacent to and within roads and highways. The course will also be of interest to those responsible for installation, operation, and inspection.

HIGHWAY CAPACITY UNINTERRUPTED FLOW
Dane Ismart
September 14, 2016, 8:30am-4:00pm
College Park, Maryland
$110 for Maryland local government participants only
$125 for all other registrants
PDHs: 6.0

This one-day course will cover the theory and methodology of the 2010 Highway Capacity Manual for uninterrupted flow. The Chapters that will be covered include: signalized intersections; unsignalized intersections (A) two-way stops (B) four way stops; and urban arterial. Changes in each of the uninterrupted Chapters of the 2010 Highway Capacity Manual will be highlighted during the lectures. The Highway Capacity Software will be demonstrated to the class using sample problems. The new roundabout capacity procedure is covered under a separate course.

HIGHWAY CAPACITY INTERRUPTED FLOW
Dane Ismart
September 13, 2016, 8:30am-4:00pm
College Park, Maryland
$110 for Maryland local government participants only
$125 for all other registrants
PDHs: 6.0

This one-day course will cover the theory and methodology of the 2010 Highway Capacity Manual for interrupted flow. The Chapters that will be covered include: basic freeway sections; weaving; ramps; multi-lane highways; and two lane rural roads. Changes in each of the uninterrupted Chapters of the 2010 Highway Capacity Manual will be highlighted during the lectures. The Highway Capacity Software will be demonstrated to the class using sample problems.

FLAGGER CERTIFICATION
Juan M. Morales, P.E.
September 15, 2016, 8:30am – 12:30pm
College Park, Maryland
$100 for all participants
PDHs: 4.0

The safety of workers, motorists and pedestrians is dependent upon the flaggers’ performance. Since the flagger position involves safety, proper training is vital; flaggers are expected to pass a test to prove their proficiency and competence level. A MD SHA-approved ATSSA (American Traffic Safety Services Association) flagger card will be issued upon satisfactory completion of this course. This will be valid for 4 years and is acceptable in several states, including MD, VA and DC. The class is presented in PowerPoint® and will include a 25-question multiple choice exam and a flagger demonstration (dexterity test). Students will receive their ATSSA Flagger Certification card the day of the course (upon passing the exam). The course is intended for anyone whose actions affect safety of contemporary traffic control work zones, including traffic managers, traffic technicians, inspectors and designers.
DESIGNING SAFER ROADS FOR PEDESTRIANS AND VULNERABLE ROAD USERS
Juan M. Morales, P.E.
September 20-21, 2016, 8:30am - 3:30pm
College Park, Maryland
$199 for Maryland Local Government Participants
$225 for all other participants
PDHs: 12.0

Vulnerable road users (VRU) are susceptible to traffic injuries and fatalities, perhaps more so than drivers. Yet we design highways for the mobility of cars sometimes neglecting the needs of the most vulnerable, such as pedestrians, bicyclists, motorcyclists, transit users and others. This course will teach participants how to diagnose pedestrian (and other VRU) safety deficiencies and select the appropriate countermeasures to make conditions safer for all users including an overview of the American with Disabilities Act (ADA) accessibility requirements. Engineering countermeasures will be emphasized but education and enforcement countermeasures will also be covered. Upon Completion of the Course, Participants Should be Able to: Define vulnerable road users, Describe VRU needs, Diagnose crash causes and select proper countermeasures, Identify safety-related geometric design elements, and Discuss VRU safety issues and how to address them.

SAFE WORK PRACTICES ON AND AROUND HEAVY EQUIPMENT
Glynn Stoffel
October 4, 2016, 8:30am-3:30pm
$110 for Maryland Local Government Participants
$125 for all other participants
PDHs: 6.0

Jobs requiring heavy equipment demand that all persons on the job recognize the hazards that exist when operating and working around this equipment. The class instructed by Glynn Stoffel provides a comprehensive overview of how to safely operate and work with the equipment used in highway and utility construction and maintenance work. The subjects covered include: OSHA standards for heavy equipment; job site hazard recognition and abatement; safe operation of backhoes, excavators and graders; safe operation of front-end and skid-steer loaders; hand signals and other communication techniques; safely working around heavy equipment; safely working around dump trucks and other mobile equipment; safe excavation techniques; safe rigging and lifting techniques; and safe street driving and transport of heavy equipment.

WINTER MAINTENANCE
Ed Stellfox
October 6, 2016, 8:30am – 3:30pm
College Park, Maryland
$89 for all participants
PDHs: 6.0

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, formal snow plans, snow plow and salt spreader operation. This course is intended for municipal officials, road commissioners, supervisors, superintendents, public works and maintenance personnel, equipment operators, and city or town managers.

SAFETY THROUGH ACCESS MANAGEMENT
Dane Ismart
November 15-16, 2016, 8:30am-3:30pm
College Park, Maryland
$199 for Maryland Local Government Participants
$225 for all other participants
PDHs: 12.0

Traffic engineers have long recognized that eliminating unexpected events and separating decision points simplifies the driving task. Since access control reduces the number, complexity, and spacing of events to which the driver must respond, it results in improved traffic operation and reduces accidents. Other benefits include reduced delay, improved traffic flow, increased capacity, and improved fuel economy. This course covers not only why, but also how to manage access, from a policy, legal, and design perspective. This two-day short course covers the following topics: access management policies; access design principles, trip generation; access management techniques; retrofit programs; access and median design guidelines; site plans and access for major activity centers; evaluation of improvements; and workshops.

THE NEW MD MUTCD ONE DAY SEMINAR
Dane Ismart
November 29, 2016, 8:30am-3:30pm
College Park, Maryland
$100 for all participants
PDHs: 6.0

This one-day training is to enable participants to become familiar with the new MD MUTCD regarding the application of its principles to their traffic control devices in Maryland. As of February 3rd, 2012, the new Maryland Manual on Uniform Traffic Control Devices (MDMUTCD) has been officially adopted by the State of Maryland. The workshop is open to representatives of all traffic engineering and planning organizations and elected officials. Part of the workshop is also geared towards Local Administrators and Elected Officials. A series of five workshops will be provided in various regions of the State. Agenda will include compliance days for new and existing traffic control devices, new sections within various chapters of the manual, other changes in standards and guidance, procedure for experimentation and interpretation, etc.
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