



technotes

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MARYLAND TRANSPORTATION TECHNOLOGY TRANSFER CENTER

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

www.mdt2center.umd.edu

INSIDE:

Page 2

Pedestrian Safety, concluded

Page 3

Build a Geosynthetic Bridge
with FHWA's Sample
Specifications
CITE's 2013 Blended
Courses

Page 4

Build a Geosynthetic
Bridge, concluded

Page 5 - 7

Our Currently Scheduled
Courses

We've recently
updated our phone
numbers! Please see
page 8 to make sure
you have our new
numbers on file.

SHA'S HIGHWAY SAFETY PROGRAMS

Pedestrian Safety



Pedestrian safety is an issue that affects the entire community; young and old, drivers and walkers, in the day and at night. Many unnecessary injuries and fatalities occur as a result of intoxication or inattentiveness of either the driver or the pedestrian. The roadways should be safe places for everyone regardless of their transportation mode. To reach this goal, laws related to pedestrian safety must be enforced without reservation, and citizens must be educated on the perils facing pedestrians and how they can help make the road a safer environment for those traveling by foot. Pedestrians, Walk Smart! Drivers, Do your Part!

Maryland Fast Facts:



- In 2008, 112 pedestrians were killed, accounting for 20 percent of all fatalities in Maryland.
- In 70 percent of the pedestrian fatalities, the pedestrians were at fault, according to police crash reports.
- 73 percent of the fatal pedestrian-involved crashes occur in the dark.
- Of the pedestrians killed, 40 percent were alcohol-impaired.
- Over 75 percent of the pedestrians killed were males.

National Statistics:

- There were 59,000 pedestrians injured and 4,902 pedestrians killed in traffic crashes in 2009.
- On average, a pedestrian is killed in a traffic crash every 120 minutes and injured in a traffic crash every 8 minutes.
- Thirty-six percent of the 354 young (under age 16) pedestrian fatalities occurred in crashes between 3 pm and 7 pm. Alcohol involvement — either for the driver or the pedestrian — was reported in 48 percent of all pedestrian fatalities.

**Check out
our NEW course,
Designing Safer Roads
for Vulnerable Road Users,
scheduled for June 4-5, 2013.
For more information see
page 7!**

Continued on page 2

Maryland Laws:

These laws, along with explanatory diagrams, can be accessed at the link below:

http://www.montgomerycountymd.gov/content/DOT/dir/pedsafety/documents/md_ped_law.pdf

The driver of a vehicle must stop for a pedestrian in a marked or unmarked crosswalk when:

- At crosswalks and intersections without signals:
 - The pedestrian is on the half of the roadway on which the vehicle is traveling.
 - The pedestrian is approaching within one lane of the half of the roadway on which the vehicle is traveling. (§ 21-502 (a)(2))
- At intersections with signals:
 - When proceeding on a green signal, drivers turning right or left shall yield the right-of-way to pedestrians lawfully within the crosswalk.
 - When turning right on red after stopping, drivers shall yield the right of way to pedestrians lawfully within the crosswalk. (§ 21-202 (c), (d) & (k))



Safety Tips For Pedestrians: Walk Smart



- Be predictable. Stay off freeways and restricted zones. Use sidewalks where provided. Cross or enter streets where it is legal to do so.
 - Crosswalks and traffic lights don't stop cars! The WALK signal does not mean it is safe to cross. It only means it is your turn to cross. Check to make sure all traffic has come to a stop before crossing.
 - Look before stepping past stopped vehicles—They may be blocking your view of moving traffic.
 - Wear bright clothes to be seen day or night. At night, wear reflective materials.
 - Always walk on the sidewalk. If there is no sidewalk, always walk on the side of the road facing traffic.
 - Stand on the side of the road while waiting for the bus and always stand at least 10 feet away from where the bus will stop.
 - Alcohol and drugs can impair your ability to walk safely, just like they do a person's ability to drive.
- Try to make eye contact with the driver(s) to make sure they see you before you begin to cross

Safety Tips For Drivers: Do Your Part

- Always come to a complete stop at the stop line.
- Stop for pedestrians who are in a crosswalk, even if it is not marked. When you stop for a pedestrian in a crosswalk, stop well back so that drivers in the other lanes can also see the pedestrian in time to stop.
- Be especially attentive around schools and in neighborhoods where children are active.
- When you are turning, you often will have to wait for a "gap" in traffic. Beware that while you are watching for that "gap," pedestrians may have moved into your intended path.
- Be extra attentive and slow down in school and work zones where increased pedestrian presence is likely.
- Keep your windshield clean for maximum visibility.

Reprinted from Maryland Roads, for more information visit: www.MarylandRoads.com

Using the Geosynthetic Reinforced Soil-Integrated Bridge System (GRS-IBS), State and local transportation agencies across the country are redesigning their standard bridge. Now it's easy to start implementing the technology on your bridges with the Federal Highway Administration's (FHWA) Sample Guide Specifications for Construction of GRS-IBS (Pub. No. FHWA-HRT-12-051).



The Bowman Road Bridge in Defiance County, OH, was the first bridge in the world to use the Geosynthetic Reinforced Soil Integrated Bridge System (GRS-IBS).

Agencies can use the sample specifications as a basic template for developing their own standard specifications for GRS-IBS, incorporating local experiences and practices where applicable.

GRS-IBS can be used to build single span bridges on all types of roads. The technology offers the advantages of being faster, more economical, and easier to build than standard bridge construction methods. It is also extremely durable and can be built with readily available materials, using common construction equipment, and without the need for highly skilled labor. Defiance County, Ohio, built the world's first GRS-IBS bridge in 2005, followed by more than 20 additional bridges using the technology. New York's St. Lawrence County is now using GRS-IBS to replace many of its bridges, realizing cost savings of 50 to 60 percent.

FHWA selected GRS-IBS as one of the technology innovations for accelerated deployment by its Every Day Counts (EDC) initiative in 2010. The technology was included in the second round of EDC under the category of accelerated bridge construction. For more information about EDC, visit www.fhwa.dot.gov/everydaycounts.

Continued on page 4

CITE Blended Courses for 2013

The Consortium for ITS Training and Education (CITE) announces its Blended Course schedule for 2013. A "blended" course combines the best features of both instructor-led and web-based instruction. Features include: live discussions through the use of conference calls, convenient, flexible web-based learning, a specific time schedule in which to complete the course, and student interaction through the use of a discussion board.

Scheduled courses include:

- Network Design and Deployment Considerations for ITS Managers and Professionals - April - May 2013
- Improving Highway Safety with ITS - May - June 2013

For more information about or to register for CITE's Blended Courses visit:
www.citeconsortium.org

GRS-IBS technology consists of three main components: the reinforced soil foundation (RSF), GRS abutment, and GRS integrated approach. The RSF is composed of granular fill material that is compacted and encapsulated with a geotextile fabric. The abutment uses alternating layers of compacted fill and closely spaced (less than 30 cm or 12 in) geosynthetic reinforcement to provide support for the bridge superstructure, which can be placed directly on the abutment without the need for a traditional bearing joint or cast-in-place concrete.

To construct the abutment, a row of facing blocks is followed by a layer of compacted granular fill, and then finished with a layer of geosynthetic reinforcement. This process is repeated until the required abutment height is reached. GRS is then also used to construct an integrated approach for the road that leads to the bridge, alleviating the common “bump” caused by differential settlement between the bridge and approach road.

FHWA's sample specifications cover both material requirements, including backfill material and geosynthetics, and construction requirements. Among the construction topics highlighted are labor and equipment; site layout; excavation; placement of backfill, compaction, geosynthetic reinforcement, and superstructure; integration of the approach road; and site drainage.

Also featured is contractor quality control (QC). Topics include creating a contractor QC plan, personnel and laboratory facility requirements, inspection, sampling and testing, and documentation and data evaluation. Agencies can also find sample specifications for project acceptance and contractor payment.

To download the Sample Guide Specifications, visit www.fhwa.dot.gov/publications/research/infrastructure/structures/12051/12051.pdf.

For more information, contact Jennifer Nicks at FHWA, phone: 202.493.3075 or by email: jennifer.nicks@dot.gov, or Daniel Alzamora at FHWA, phone: 720.963.3214 or by email: daniel.alzamora@dot.gov.

Additional information on implementing GRS-IBS is available in FHWA's Geosynthetic Reinforced Soil Integrated Bridge System Interim Implementation Guide (Pub. No. FHWA-HRT-11-026), which is available at www.fhwa.dot.gov/publications/research/infrastructure/structures/11026/index.cfm.

To view a construction video that demonstrates how to use GRS-IBS, visit FHWA's YouTube channel at www.youtube.com/user/USDOTFHWA (select “Turner-Fairbank Highway Research Center” and then choose “Geosynthetic Reinforced Soil-Integrated Bridge System”). The video can also be viewed on the FHWA EDC Web site at www.fhwa.dot.gov/everydaycounts/technology/grs_ibs/multimedia.cfm.



Bridges built using the Geosynthetic Reinforced Soil Integrated Bridge System (GRS-IBS) include the Vine Street Bridge in Defiance County, OH.

This article was reprinted from January/February 2013 issue of FOCUS, a publication of the United States Department of Transportation and Federal Highway Administration.

The following courses are currently scheduled and we are still adding to the list! For more information or to schedule a class, contact Janette Prince at 301.405.6535 or register online by visiting us at www.mdt2center.umd.edu.

TRAFFIC SIGNS

Ed Stellfox

April 2, 2013, 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.

LOW COST SAFETY IMPROVEMENTS

Mark Hood, P.E.

April 9, 2013, 8:30am - 3:30pm

College Park, Maryland

\$100 for Maryland local government

\$125 All other participants

PDHs: 6.0

This course provides participants with methods for implementing effective, low cost safety improvements targeted at high crash areas. It emphasizes the basic and enhanced application of traffic control devices, low cost safety improvements, and their specific safety benefit. Traffic crash data collection, identification of hazardous locations, and engineering study procedures are also discussed. Emphasis is placed on low cost solutions that may be made at the local level.

BECOMING A SUCCESSFUL SUPERVISOR

David and Janet Grouchy

April 10, 2013, 8:30am - 3:00pm

College Park, Maryland

\$110 for all participants

PDHs: 6.0

Supervisory skills include delegation, prioritization, morale, performance evaluations, accounting, planning and personnel actions. Performing these skills properly will benefit the organization and the individual. This workshop is designed to help public agency supervisors develop the skills they need to successfully manage, motivate, and lead people. The workshop will focus on five areas of supervisory development: Attitude, Relationships, Communication, Teamwork and Conflict Resolution, and will also include specific strategies for helping new supervisors. The format provides plenty of time for asking questions and sharing experience. All public and private agency personnel who supervise and manage people, including county and city engineers, public works directors and managers, office managers, finance managers, managing directors, superintendents, commissioners, and consultants who work with public agencies are encouraged to participate.

WORK ZONE DESIGN

Juan M. Morales

April 15-16, 2013, 8:30am - 3:00pm

College Park, Maryland.

\$199 for Maryland local government

\$235 for all other registrants

PDHs: 12.0

CEUs: 1.2

The course gives 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. The procedures and devices covered are generally taken from Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD) and are modified to meet practices and standards in Maryland. (ADD and other local jurisdictions.

ROUNABOUT PLANNING AND DESIGN

Dane Ismart

April 23, 2013, 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. SIDRA and Rodel software packages will be demonstrated to the class participants and used for capacity and operational analysis of roundabouts. The basic structure of the course will be built around the FHWA Report, "Roundabouts: An Informational Guide." 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.

Continued on page 6

FLAGGER CERTIFICATION

Juan Morales

April 29, 2013, 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.

ASPHALT RECYCLING

Ed Stellfox

April 30, 2013, 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.

ARTERIAL ACCESS MANAGEMENT

Dane Ismart

May 6-7, 2013, 8:30am - 4:00pm

College Park, Maryland

\$199 for Maryland local government participants

\$225 for all other registrants

PDHs: 12.0

CEUs: 1.2

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

Our Currently Scheduled Courses
(continued from page 5)

SIGNAL

WARRANT

AND

INTERSECTION CONTROL ANALYSIS

Dane Ismart

May 8, 2013, 8:30am - 4:00pm

College Park, Maryland

\$110 for all participants

PDHs: 6.0

CEUs: 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, warrant 8: roadway network. The course will also cover warrants for four-way stops as well as alternatives to traffic control signals. A detailed discussion of the advantages and disadvantages both in the terms of capacity and safety of various types of traffic controls will be presented. The basis for both the installation and the removal of traffic control devices will be covered. As part of the course, workshop problems will be given to the class participants. The class will be provided intersection field data and will determine if signals are warranted for the sample intersections. After completing the workshops, MUTCD signal warrant analysis software will be demonstrated and the workshop problems will be evaluated based on microcomputer analysis. This course is designed for traffic engineers and transportation planners involved in the design and planning of corridors and intersections.

TRAFFIC ENGINEERING FUNDAMENTALS

Dane Ismart

May 21-22, 2013, 8:00am - 4:00pm

College Park, Maryland

\$220 for Maryland local government participants

\$250 for all other participants

PDHs: 12.0

This course condenses what was the five-day Traffic Engineering Short Course into a new two-day course. **Day One Agenda:**

8:00am Introduction

8:30am Data Collection – Sources and Types of Information

9:00am Traffic Forecasting – Site Impact Analysis

10:30am Safety Principles and Crash Analysis

1:15pm Speed Studies

1:45pm Traffic Calming & Context Sensitive Solutions

2:40pm Principles of Access Control

Day Two Agenda:

8:30am Intersection Analysis and Geometrics

10:20am Signal Timing

11:00am Arterial and Freeway Analysis

1:00pm MUTCD – Overview

2:40pm ITS Overview

3:15pm Roundabouts Basics

Audience - 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.

Continued on page 7

DESIGNING SAFER ROADS FOR VULNERABLE ROAD USERS

Juan M. Morales

June 4-5, 2013, 8:15am - 3:30pm

College Park, Maryland

PDHs: 12.0

\$220 for Maryland local government participants

\$250 for all other participants

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.

HIGHWAY CAPACITY INTERRUPTED FLOW

Dane Ismart

June 6, 2013, 8:30am - 4:30pm

College Park, Maryland

\$105 for Maryland local government participants

\$120 for all other registrants

PDHs: 6.0

CEUs: 0.6

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: signalized intersections, unsignalized intersections (A) two-way stops (B) four way stops, and urban arterial. Changes in each of the interrupted 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.

INTRODUCTION TO TEMPORARY TRAFFIC CONTROL

Juan M. Morales

June 18, 2013, 8:30am - 3:00pm

College Park, Maryland

\$100 for Maryland local government participants

\$125 for all other participants

PDHs: 6.0

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.

This is intended for anyone whose actions affect safety on temporary traffic control work zones, including traffic managers, traffic technicians, inspectors and designers; and will prepare participants to take the Maryland SHA Traffic Manager's course. The following topics will be covered: definition of temporary traffic control (TTC), quantification of the safety problem, manuals and standards applicable in the State of Maryland, fundamental principles of TTC, component parts of the TTC, introduction to traffic control devices, tapers and other transitions, and installation and removal considerations.

ROADWAY SAFETY FUNDAMENTALS

Mark Hood, P.E.

June 20, 2013, 8:30am - 3:30pm

College Park, Maryland

\$100 for Maryland local government participants

\$125 All other participants

PDHs: 6.0

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

FLAGGER CERTIFICATION

Juan Morales

August 13, 2013, 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.



MD T² Center Staff

Please note our phone numbers have recently changed.

Tom Jacobs, Director

301.405.7328

tjacobs@umd.edu

Ed Stellfox, Co-Director

301.405.6369

stellfox@umd.edu

Janette Prince

Program Manager

301.405.6535

janette@umd.edu

Oscar Morales

Administrative Assistant

301.405.5312

moraleso@umd.edu

Carly Keane

Newsletter Editor

240.304.9627

ckeane@umd.edu

Need training but budget cuts won't allow travel? Request a class and we'll bring it to you!

We understand your training needs and the tremendous budget cuts everyone is dealing with in this economy. By logging on to www.mdt2center.umd.edu and requesting a course that 10 or more of your employees need, we'll bring our course to you. We'll need a room where your employees can learn and either a white board or bare wall for our projector and a pot of coffee for our instructor.

Requesting a course is simple, visit www.mdt2center.umd.edu and fill out our request training form or call Janette Prince at 301.405.6535 and she'll be glad to assist you.

MD T² Advisory Board Committee

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