



# TRAVEL-LOG

## D e l a w a r e T <sup>2</sup> C e n t e r

### Message From The Director

By Earl "Rusty" Lee, Ph.D., Director

I would like to thank all the people that have made my transition to the Director's position as smooth as it has been. First, I would like to thank Larry Klepner for his years of service to the center and the time he spent with me "showing me the ropes". Thank you to Ellen Pletz, the Assistant to the Director of DCT, and Sandi Wolfe, the Senior Secretary of DCT, for all the help learning the financial and administrative aspects of the job. Thanks to Matt Carter, the T<sup>2</sup> Engineer, for his insight. And a special thanks to all the LTAP / T<sup>2</sup> center directors who have offered me the benefits of their experience, especially to Ed Stellfox of Maryland.

Beyond learning the job, the past few months has been about evaluating the program, looking at what we have done well in the past and what new things we can do in the future. We have had a busy last few months, with many training events and speakers, many of which you will read about in this newsletter. The T<sup>2</sup> Center has also just completed the review and approval process with DelDOT and FHWA for our FY11 pro-

gram. This summer, we will be conducting a series of very frank discussions with senior managers at DelDOT, municipal officials from across Delaware and groups who have strong interest with T<sup>2</sup> activities, such as contractor associations. The purpose of all these meeting will be to shape a program that best fits everyone's needs, at the best value and delivered by the best means.

Effective training delivery is certainly one of my focus areas. Many topics are best taught in a classroom. These courses benefit from the interaction among the instructors and participants. However, we find more and more content is available delivered across the Internet. These can be webinars, that still allow for interaction among instructor and participants, or web presentations and videos that can be watched when convenient. The Delaware T<sup>2</sup> center is looking into utilizing these online resources more effectively. We will be forwarding notifications of webinars as we receive them and will likely be establishing a section on our web page for upcoming webinars.

Also, when possible, we will be recording the webinar so it will be available to those who were not free during its original broadcast. There are several logistical and administrative hurdles to overcome, but we feel this effort will be successful. Also, for training that the T<sup>2</sup> center gives, we will be trying out a new system just implemented here at the University called UD Capture. This system appears to be a low cost and simple way to build an electronic archive of the training, recording all of the discussion and the slides associated with the training session. We will be trying out this system this summer, and will be working with the University technology staff to develop a portable version that can be used off-campus.

Other new initiatives include the development of a 5 year strategic plan and establishing a T<sup>2</sup> advisory council. I will use this column to keep everyone apprised of these new initiatives. As always, if you have any suggestions for our program, feel free to contact me at [elee@udel.edu](mailto:elee@udel.edu).

### UD President Harker Addresses DCA

University of Delaware's President, Dr. Patrick Harker, addressed more than 150 construction and design professionals at the Delaware Contractor Association's March 29th luncheon. Attendees paid rapt attention as Dr. Harker gave the latest overview of significant University projects, such as the central campus dormitory replacements, the new engineering and sciences building, the new Main Street bookstore, and,

of course, the redevelopment of the 272-acre former Chrysler assembly plant.

Clearly, many in the audience wondered first how the University's plans might positively impact jobs in Delaware and Dr. Harker spoke directly to that issue. But a theme of the projects also seemed to be a continued desire for low impact design and the potential to realize significant elements of transit ori-

ented design. President Harker pointed particularly to the multi-model design opportunities for the former Chrysler site, and the excitement was obvious in his remarks.

Two UD engineering students, Kerry Yost and Bob McGurk, were guests of members at the affair and Dr. Harker pointed them out as tomorrow's engineering leaders.

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*Undergraduate students and ASHE officers Bob McGurk and Kerry Yost with UD President Harker at the March 26th DCA luncheon.*





*Work zone safety - it's not just for large or long term projects; practice it every time you step into the travel lane. Safety vests even for traffic counts? It's too easy - why not?*



*Doug Hill and his colleagues discuss how a transit oriented design is becoming a reality in a surprisingly rural setting.*



## Work Zone Safety-Practice It Every Time

Most work zone training sessions will acknowledge that there are those limited activities that don't necessarily require a work zone setup - inspections of manholes or stormwater inlets, for example, can often be safely accomplished on low volume streets with a protective vehicle with strobes along with high visibility gear. But even the most trivial of activities that put your personnel, your contractors, or public officials in the travel way warrant at least minimal safety precautions.

Anytime you'll spend in travel lanes, shoulders, or median warrants high visibility, retro-reflective clothing. It's too easy to throw on a vest to argue. The designs are much

cooler in the summer than they used to be and they fit better. And they don't cost that much - certainly not as much as a hospital bill. Just like a safety belt, get in the habit of wearing them and it will become second nature.

We've all seen (and maybe been guilty of ourselves) the work zone setup that looks like the old college try. Cones where there should be drums, not enough cones or drums, abrupt tapers, non-retroreflective signs, incorrect signs, poor detour information, insufficient room for the work, inattentive or poorly trained flaggers, and so on. These kinds of setups unnecessarily endanger your personnel and contractors as well as motorists, bicyclists, and

pedestrians.

Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD) is dedicated to work zone designs. Yes, it is a comprehensive look at temporary controls and can be a bit intimidating, but review it each time you setup a work zone and you'll find you get more and more comfortable as you go. Attending work zone training opportunities can help identify the portions that are most applicable to your practices and such training can benefit everyone on the job-site.

Regardless, practice work zone safety every day - start with a disciplined safety vest policy for you and your team and go from there.

## Doug Hill Provides Developer's Perspective on Transit Oriented Design

On April 16th, the Delaware T<sup>2</sup> Center welcomed Doug Hill, Stacy Ziegler, Molly Green, and Sean Darras as they provided a panel presentation centered on their various experience from the Woodlands mixed use development in Perryville, Maryland. Woodlands will begin construction this spring as a low impact designed community of residential, retail, and service businesses with an emphasis on walkability, accessibility to public transportation, and multi-modal integration into the existing municipality that it will abut.

The panel members are all University of Delaware alum, but the different roles each have played in the project became evident as they spoke and the audience heard the developer's perspective of how to marry all the benefits of low impact, sustainable, and transit oriented design into a project that holds promise to be financially viable. As the developer's principal, Mr. Hill described how he was first introduced to sustainable design concepts, where his

enthusiasm for them developed, and why he believes they are the basis for a sound business model for this project. Stacy Ziegler (Duffield Associates), both the lead engineer for the project and a resident of Perryville, discussed the conflicts of providing a multi-modal design and achieving low impact design, and gave examples of how those challenges were met. Molly Green and Sean Darras, who focused extensively on the public workshops, explained how the public was instrumental to the nuances of design and how intensive charrettes yielded a sense of ownership by the existing community.

While bike and pedestrian accessibility posed their own design challenges, the connection with existing commuter bus and rail required a capital investment by the developer (a transit station) and Cecil County's commitment to arrange bus routes that would genuinely connect the development to nearby commuter rail (MARC train).

## New Manual on Uniform Traffic Control (MUTCD) Published

The Manual on Uniform Traffic Control Devices (MUTCD) defines the standards used by road managers nationwide to install and maintain traffic signs and other control devices on all public streets, highways, bikeways, and private roads open to public traffic. Most readers probably have at least some familiarity with the MUTCD. Comprehensive changes resulted in a new version that was published in December 2009 after nearly two years of public review and comment. The entire document, together with supporting materials and summaries, can be viewed for free at <http://mutcd.fhwa.dot.gov/index.htm>. A newsletter is the wrong place to attempt a briefing on the changes, but a few examples and highlights are in order. It should also be noted that many new and changed aspect have compliance dates that extend several years from now or when an alteration to the facility is made.

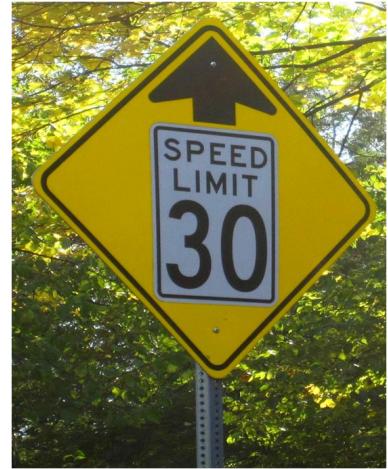
### General notes:

- The hot topic in TCDs these days is arguably the sign retroreflectivity requirements and these haven't changed (except for some section numbers – Section 2A-08 became 2A-07 and so on); the minimum retroreflective levels have remained the same in Table 2A-3.
  - Finally, there is some clarification as where the MUTCD applies. The phrase "open to public travel" does indeed include roads within shopping centers, airports, sports arenas, and other similar business and recreational facilities that are privately owned but where the public is allowed to travel without access restrictions. Parking areas and their driving aisles are not subject to the MUTCD (although it does remain good practice).
  - New and changed signage has been added to reflect up to date designs and management techniques, so you'll see, for example, significant changes to reflect electronic toll technology.
  - A new Table I-2 consolidates compliance dates for specific provisions in the MUTCD, which should help those who
- need to know where they stand.

### Part 2 (Signs):

- Fluorescent yellow-green color will now be required for school area signs. Other uses of fluorescent colors remain an option, including fluorescent red.
- In alleys with restrictive physical conditions, minimum sign size may be decreased by six inches, reflective of the Urbanization Needs Survey.
- Consistent with increasing numbers of older drivers, sign lettering height is now based on 1 inch of height per 30 feet of sign legibility, based on the 20/40 vision allowed in most states.
- Text and figures in Section 2A have been clarified and made consistent for minimum horizontal offsets from the edge of travel lanes or shoulders.
- Larger required signs on multi-lane roads with speed limits of 40 mph or greater.
- New factors for establishing intersection right-of-way control.
- Prohibition of 2-WAY, 3-WAY, and 4-WAY plaques, but requirement of All-WAY plaques where all approaches are STOP controlled.
- REDUCED SPEED LIMIT AHEAD sign recommended where speed reduction is more than 10 mph.
- Divided Highway signs required on approaches to highways with medians  $\geq 30$  feet, AADT  $\geq 400$ , and speed  $\geq 30$  mph.
- Chevrons may be mounted at a minimum height of 4', rather than the normal 7'.
- A new depth gauge sign has been added to provide additional information to drivers for road sections frequently subject to flooding.
- Clarification has been added that SHARE THE ROAD plaques cannot be used alone (see page 4).

(Continued on page 4)



*Some sign changes and uses found in the new MUTCD...*





*Below, one of the signs you won't see in the new MUTCD...*



## New MUTCD Published (cont'd)

(Continued from page 3)

- All capital letters for signs (e.g., street names) is no longer permitted. Initial capital letter followed by lower case has been determined to be more recognizable.
- Background colors for street name signs have been expanded to include green, blue, brown, or white, but no other colors. This particularly assists adjacent communities in densely developed areas to distinguish themselves.
- Purple has now been designated for electronic toll collection facilities, regardless of the service provider.
- Fluorescent pink has been designated for emergency aid or shelter directions.

### Part 3 (Markings):

- Single yellow centerline stripe specifically prohibited.
- A new section of pavement markings to prohibit blocking of intersections can be helpful where downstream factors (another signal, on-street parking) creates frequent and excessive queuing.
- New guidance on when crosswalk markings are appropriate and when mid-block crossings should be avoided.
- Clarification of speed hump markings.
- A new chapter for pavement markings in and on approaches to roundabouts.

### Part 4 (Highway Traffic Signals):

- Significant changes and additions to signal warrant analyses.
- Minimum size for signal faces (12" in most cases).
- Pedestrian hybrid beacons are now permitted for at unsignalized marked crosswalks. In the past, these have often been referred to as the HAWK. Similar provisions allow these to be used for emergency vehicle crossings.



### Part 5 (Low Volume Roads):

- This part applies only to roads outside the built up part of a city, town, or community and so specifically does not apply to residential neighborhood streets.

### Part 6 (Temporary Traffic Control):

- High visibility safety apparel now required for all workers within the public right-of-way of all roads. Law enforcement and first responders may use new ANSI "public safety vests."
- Reflective of the requirements of the Department of Homeland Security, the MUTCD now references required use of the Incident Command System for all planned and unplanned incidents.

### Part 6 (School Areas):

- SCHOOL BUS STOP AHEAD word message sign has been deleted in favor of a new symbol sign.
- Operating procedures for adult crossing guards have been changed from recommended to required.



### Part 8 (Railroads):

- STOP or YIELD signs required at passive highway-rail grade crossings.
- New chapter for pathway grade crossing designs and traffic control devices.

### Part 9 (Bicycle Facilities):

- New signage for when lanes are too narrow for side by side use by both motorists and bicycles.



The Delaware T<sup>2</sup> Center can assist municipalities and other public agencies with interpretation and understanding until such time as an updated Delaware MUTCD is adopted, which is currently the intensive subject of a DelDOT team. At that time, we will provide training to municipalities consistent with the Delaware MUTCD.

## Tom Vanderbilt, Author of TRAFFIC, Speaks at University of Delaware

Traffic challenges have their humorous side. That's one of the things Tom Vanderbilt showed us when he spoke before a crowd of about a hundred or so at the University of Delaware on March 19th. The author of the bestselling TRAFFIC Why We Drive the Way We Do (and What It Says About Us) covered a host of transportation issues in about an hour and half and then took questions and signed his book for a number of attendees.

As he did in TRAFFIC, Tom explored roundabouts, highway design practices, pedestrian behavior, signage practices, driver behavior, and the state of multi-modalism in substantive terms without pretending to be a traffic expert. The research for his book took him all over the world and the referenced interviews are a veritable who's who and who's not so much in the transportation world. Tom certainly met with

some of the true elite of the industry, but he made a point to also seek out lesser known figures, including those who have tried rather unusual, unconventional, and perhaps even unorthodox methods to trick motorists and pedestrians into doing what's good for them.

His presentation at UD intrigued and delighted the crowd, with a mix of images and video that brought otherwise dry issues to life in ways that participants could relate to their own experiences. A video of ants moving along a trail, for example, generated some giggles as Tom explained merging and work zone theories.

Mr. Vanderbilt spoke at UD as a guest of the Delaware T2 Center and the University Transportation Center as part of the Distinguished Guest Speaker series.



*Tom Vanderbilt spoke on a broad array of transportation issues at the University of Delaware's Trabant Center Theatre March 19th. Much like his NY Times bestseller, TRAFFIC, his talk was an entertaining and substantive look at how we drive, how we walk, how we bike, and how planners and engineers attempt to save us from ourselves.*

## James M. Mwape of E-ZPass Speaks at University of Delaware on ETC

James Mwape was welcomed by the Delaware Center for Transportation as part of the Guest Speaker Series to talk about Electronic Toll Collection (ETC) and how it increasingly saves time, money, and environmental impacts. Mr. Mwape is part of the business management group with E-ZPass Interagency Group (IAG).

Three are an estimated 28 million ETC transponders in use in the US alone, and there are a number of recognized brand names for these systems across the country. While we in the northeast recognize E-ZPass, Florida has the SunPass, and Texas has TxTag. The U.S. Department of Transportation's push for interop-

erability in the tolling industry is creating new challenges and opportunities and Mr. Mwape spoke of the difficulty in finding ETC knowledgeable graduates, describing potential career opportunities.

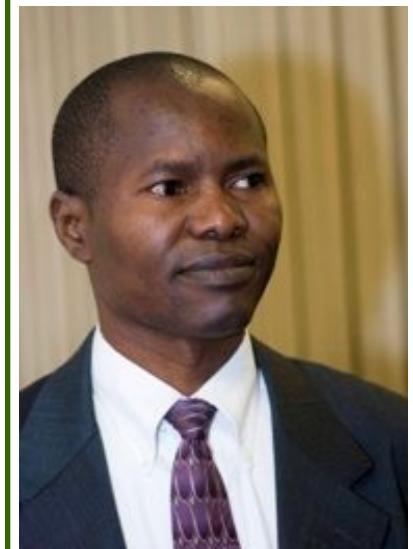
James also spoke of the origins of ETC and how the system works in its various forms. With graphics and videos he was able to show how ETC can tie into other transportation management strategies like high occupancy vehicle (HOV) lanes and high occupancy tolling (HOT) policies. He went on to explain that the industry is as much about banking, finance, management, public policy, and planning as it is engineering and there are diverse opportunities within the industry.

James finished by noting that ETC is not a significant part of the curriculum in engineering and other fields, despite its origins in 1994. He feels that more direct roles in curricula will be necessary to meet the growing challenges.

Of local interest, Delaware Department of Transportation's P.J. Wilkins is currently the Chairman of E-ZPass's IAG Executive Committee.



*James Mwape spoke at University of Delaware on April 9th on the state and future of Electronic Toll Collection.*





## Delaware T<sup>2</sup> Center - What We Are About

We're new to some of you. For others, we haven't been in touch for a while. Regardless, we are evolving to meet updated challenges, to bring updated technologies to you, and to reflect the realities of limited resources.

Here's what we're about in just a few words.

### Our Four Focus Areas:

#### Safety

- Safety trumps everything!
- Protect your employees as they maintain utilities, repair sidewalks, replace signs, and fill potholes.
- Safety vests, work boots, safety glasses, hard hats, harnesses
- Well designed and well maintained work zone protections protect construction personnel, motorists, and pedestrians.
- Properly trained, alert, and motivated flagging personnel are the front line of defense for many work zones, so don't take them for granted!
- Everyone (contractors, inspectors, pedestrians, motorists) has a role to play in safety.

#### Infrastructure Management

- Pavement, sidewalks, traffic signals, signage, underground utilities, and storm-water facilities.
- Alternative technologies, methods, equipment, and materials.
- Best management practices in planning, design, construction, maintenance, management, and operations.
- Emerging techniques and materials.

#### Workforce Development

- Ensuring a future supply of well educated and energized planners and engineers for tomorrow's transportation challenges.
- Internship coordination.

#### Organizational Excellence

- Effective use of limited funds through innovation and partnerships.

- Evolving training content with continually improved delivery.
- Overcoming time and geography challenges by "taking it to them."
- Broad outreach to all local government agencies to increase their ability to participate.

#### How We Do It:

- Training workshops – national level courses, collaboration with DelDOT and other state agencies, collaboration with other T<sup>2</sup> Centers, and home grown courses.
- Hosting conferences and symposia.
- When we can, spreading training out geographically and repeating it so everyone can participate.
- One-on-one assistance and advice to local governments through our engineering circuit rider.
- Research here at the University of Delaware.
- Working with student groups of professional organizations.
- Working with student interns to bring direct assistance to local governments, as funding permits.
- Career days, guest speakers, and other outreach.
- Newsletters, technical briefs, and other publications.
- Distribution of education materials, DVDs, and manuals.

In summary, we're a small program with a broad mandate - use our limited resources as effectively as possible to ensure that the best of technologies and practices are available at the most local reaches of government. From DelDOT to the smallest of Delaware towns, we can provide some form of assistance and you can be sure we learn from you as well. If you think we can help (realize that most of our assistance is free to Delaware agencies), give us a call.

### What is a T<sup>2</sup> Center?

Our Delaware T<sup>2</sup> Center is called LTAP in some other areas - Local Technical Assistance Program. Created by the Federal Highway Administration, the program dates to 1982 and was expanded in 1991 to provide technical assistance, training, and technology transfer through 58 centers - one in each state, one in Puerto Rico, and seven others across the country to serve tribal areas. Each is funded equally by the FHWA with at least a 100% match from the states and roughly two thirds of the centers are located at state colleges or universities.

LTAPs are given broad flexibility to use their resources as effectively as possible to meet the unique needs of their local agencies, resulting often in great innovation, unusual partnerships, and sharing of best practices, ideas, and experiences in both directions. In other words, some of the best practices are born at the local level and LTAP takes those ideas and shares them with the world.

Yes, FHWA asks "are we doing the right things and are we doing things right," but LTAPs answer focuses on whether we are doing the right things the right way for the benefit of what our local governments need rather than a cookie-cutter, one-size-fits-all approach.

So, why T<sup>2</sup>? Technology Transfer is TT, which, for geeks like us is T<sup>2</sup>. We can't help it.

## Upcoming Events

The T<sup>2</sup> Center is currently planning the following upcoming events. Others will follow. We will announce exact dates, locations, and other information as we finalize details. Monitor our website for up to the minute details and registration.

- Sidewalks and the Americans with Disabilities Act (ADA) - June 8, Blue Hen Corp Center
- Sign Retroreflectivity (MUTCD) - June 15, UD's Gore Hall
- Sidewalks and the Americans with Disabilities Act (ADA) - June 22, UD's Gore Hall



*Participants at the October 2009 Highways and Utilities training course (above) and Gene Donaldson introducing DelDOT's Traffic Management Center to a group of UD students (below).*



## T<sup>2</sup> Center Request Form

Your feedback and interests help us increase the T<sup>2</sup> Center's effectiveness, so please complete and return this form or email us—all compliments, criticisms, and ideas are welcome!

Please add my name to the T<sup>2</sup> Travel-Log subscription list—subscriptions are free

via U.S. Mail

via email

I have an idea for a future T<sup>2</sup> newsletter article

Topic: \_\_\_\_\_

I volunteer to author this article—please contact me

Please consider these topics for future training sessions

Topic: \_\_\_\_\_

Topic: \_\_\_\_\_

Topic: \_\_\_\_\_

I would like to learn more about the T<sup>2</sup> Center and how its free services can assist my municipality or agency—please contact me

Name: \_\_\_\_\_

Agency: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

email: \_\_\_\_\_

Please return this form to:

Delaware T<sup>2</sup> Center, Delaware Center for Transportation

360 DuPont Hall, University of Delaware, Newark, DE 19716



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Helping to  
Bridge your  
Transportation  
Gaps

## Delaware T<sup>2</sup> Center

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The Technology Transfer (T<sup>2</sup>) Program is a nationwide effort financed jointly by the Federal Highway Administration and individual state departments of transportation. Its purpose is to interchange the latest state-of-the-art technology into terms understood by local and state highway or transportation personnel. The Delaware T<sup>2</sup> Center Travel-Log is published semi-annually by the Delaware Technology Transfer Center at the University of Delaware. T<sup>2</sup> Center articles also appear semi-annually in the TransSearch - the newsletter of the Delaware Center for Transportation. Any opinions, findings conclusions or recommendations presented in this newsletter are those of the authors and do not necessarily reflect views of the University of Delaware, Delaware Department of Transportation, or the Federal Highway Administration. Any product mentioned in the newsletter is for information purposes only and should not be considered a product endorsement.

OSHA 10-hr  
Training  
provided to  
Delaware  
transportation  
officials



nearly 60 DelDOT, local government, and FHWA students in two back-to-back 1½ day sessions. Camille Villanova brought years of OSHA experience to bear on a broad

array of safety topics, including fall protection, night work, excavation, trenching, confined space, high visibility gear, and fall protection. The training was partially funded by the American Road and Transportation Builders Association (ARTBA) through a federal grant.



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