Message from the Director - Earl “Rusty” Lee, Ph.D.

Well, fall is over and winter is upon us. This month and next, we will be hosting a series of Winter Maintenance workshops. I would like to thank Matt Carter and all of those who assisted in the development of training materials to make this series happen. We have already completed the New Castle County training and will be in Kent and Sussex Counties in January.

Also underway are the training series on the new Delaware Manual for Uniform Traffic Control Devices (MUTCD). This series is to aid the towns in understanding their responsibilities under the MUTCD and help start the dialog to solve specific issues in Delaware’s municipalities. I would like to thank Don Weber, Mark Luszcz and Adam Weiser of DelDOT as well as their consultants for assistance in developing the MUTCD training materials.

Registration information, dates and locations for all of this training can be found on the T² website.

January will also bring another technology transfer workshop on guardrail installation. This is a follow on to the training conducted last year and will focus on installation issues.

The T² / LTAP Center continues to develop new training materials to meet the needs of not only Delaware, but the LTAP Centers nationwide. Our West Virginia counterparts have started a series of information sheets called “Road Sleuths – Myths and Facts”. The purpose of these is to provide easy-to-read and short reference materials for towns to help separate fact and fiction. These will be distributed via our website and there will be email announcements as new topics sheets are prepared. Expect to see these in January or February. The T² Center continues to work with any town that needs a sounding board, an answer to a technical question, or a source of assistance for a pending project.

I remind all readers that the deadline for establishing sign management systems is almost here, January, 2012. If you aren't sure what this means to you, I would encourage you to attend the MUTCD training on Signs or contact Matt or me directly.

FHWA Launches Every Day Counts Exchange Program

Just over a year ago, FHWA rolled out a new initiative called Every Day Counts (EDC). The purpose of the program was to foster innovation in technology and administrative processes to reduce project delivery time. Efforts during the first year were focused on federal / state partnerships. The program is being expanded to foster this same level of cooperation and discussion among state, county and local governments. One of the key elements of this expanded program is the EDC Exchange.

EDC-EXCHANGE is a regularly scheduled series of "dynamic webinars". The in-person learning sessions will describe effective project development and delivery practices, tools and "market ready" technologies that local transportation agencies can readily implement into their programs. FHWA national subject matter experts, in conjunction with FHWA and State DOT field office experts, will provide information and materials, and facilitate discussions designed specifically for the local transportation managers. More information on the EDC Program and the EDC Exchange webinars can be found at http://www.fhwa.dot.gov/everydaycounts/.

The first of this series will cover project delivery by the Construction Manager/General Contractor (CM/GC) process. Described as the middle ground between Design – Bid – Build and Design – Build, CM/GC is a

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New ADA Guidelines - Update

The U.S. Access Board published draft guidelines in the Federal Register on July 26, 2011 and the public comment period ended November 23. The Public Right of Way Accessibility Guidelines (PROWAG), if adopted, will replace other guidelines that were originally developed for building interiors and building sites and have historically been inadequate for transportation engineers. For example, earlier guidelines did not adequately address sidewalks along steeper roadways (>5%), on-street parking, historic structures, alterations, maintaining accessibility during construction, pedestrian signals, and bus stops.

PROWAG in its draft form has been used as a best management practice since 2006, when the U.S. Department of Transportation said it should be considered the state of the practice that can be used for areas not fully addressed by, for example, the ADA Accessibility Guidelines (ADAAG).

But in its draft form, it is only a partial solution and many transportation designers are anxious for its adoption; they may not love every element of it, but overall, it will provide greater certainty to right of way design, particularly as we begin to fully embrace the notion of Complete Streets and multi-modal design.

Hopefully, the next edition of this newsletter will detail the adoption of PROWAG.

T² Center Hosts Bridge Non-Destructive Evaluation Class

The Delaware T² Center took advantage of a limited time offer and brought a new training workshop by the National Highways Institute to Kent PolyTech. Approximately 45 participants from DelDOT, consulting firms, and the University of Delaware attended the Bridge Inspection Non-Destructive Evaluation Showcase on November 22. The one day course focused on five NDE technologies that are used to supplement visual inspection of bridges: eddy current, ultrasonic, infrared thermography, impact echo, and ground penetrating radar. The theory behind each technology was discussed, followed by video and live demonstrations of each piece of equipment, and students were able to try the equipment out during breaks.

Rusty Lee said, “as a new course, NHI was anxious for it to get some attention and offered a course fee waiver through the end of the year - by moving quickly, we were able to bring the course to Delaware at a savings of $13,000.”

Matt Carter attended the course and said, “the instructors raised our awareness of how these technologies could be most effectively used, but also their limitations; it was a valuable workshop.”

Rusty Lee Selected to Chair NLTAPA Region 3 Delegation

Rusty Lee has been selected as chair of the National Local Technical Assistance Program’s (NLTAPA) Region 3. As Chair, Rusty will represent the LTAP/T² Centers from Virginia, Pennsylvania, Maryland, West Virginia, and Delaware on NLTAPA’s Executive Committee (EC).

Rusty’s predecessor, Larry Klepner, was President of NLTAPA and the T² Center remains active in these volunteer, national efforts.

NLTAPA is the national organization of 58 Centers like ours across the country and it is a highly active group of diverse professionals dedicated to expanding and improving the service of local governments for their transportation needs.

Delaware’s participation in NLTAPA has brought the T² Center many benefits over the years and continues to add value to our program. The Centers share ideas, information, training materials, and even trainers. We jointly develop new product areas like infrastructure management and safety.

Rusty’s role on the EC is an important means of giving back for all of the assistance our Center has received from our friends across the country.
Need a Quick Technical Overview?
National Highway Institute Provides Free Web-Based Training

For most of us, time is a precious commodity and we sometimes need a technical overview for some technology, technique, or concept but we don’t have the luxury of attending a full day training workshop right now.

The National Highway Institute (NHI) can be a resource in such instances. NHI offers a host of web-based, self-paced courses that are free to use. The courses run as little as 30 minutes to as high as 12 hours or more. Some are very basic and others are intended for a more intermediate or advanced audience. Many of them provide continuing education units (CEUs) for those who need them.

See below for how to easily find these courses and browse through the whole collection. Topics range from pavement preservation (chip seals, micro-surfacing, fog seals, crack seals, thin lift asphalt, etc.) to concrete paving to inspection to basic math to GPS technology to surveying to plan reading to work zone design to traffic safety to CDL topics and many others in between.

Each selection has a “FHWA-NHI-XXXXXX” number next to it that is a link to the course description, its training level, expected time to complete, intended audience, and other information.

Many of the courses were developed by the Transportation Curriculum Coordination Council (TCCC), a partnership between the Federal Highway Administration (FHWA), state departments of transportation, and the highway industry.

To find these courses, start at their home page, www.nhi.fhwa.dot.gov, and in about the middle left of the page you will see an link for Search for a Course, below which you will see a “more search options” link - that will lead you to an expanded search engine that you can largely ignore except to select, under Delivery Type, “Web-Based Training (WBT)” and then hit Search.

Are these a substitute for more in-depth, classroom training? Usually not, but these can get you started on your own schedule. Then, contact the Delaware T² Center if you something more in-depth. We may be able to provide one-on-one assistance through our Municipal Engineering Circuit Rider, we may have an upcoming education workshop, or we may be able to develop something for you, given a little bit of time.

Meanwhile, explore NHI’s offerings and get an introduction to some new topics on your own schedule. For free.

The Federal Highway Administration’s (FHWA) National Highway Institute (NHI) can be a great source for web-based technological overviews at your pace - for free.
Establishing Local Speed Limits

Speed zones cannot be posted arbitrarily - they must be based upon statutory speed limits or result from an engineering study. The Delaware Manual on Uniform Traffic Control Devices (MUTCD) applies to all streets (private or public) open to the traveling public and it establishes how speed zones are determined and how they must be posted to be legally enforceable.

Delaware Code, Title 21, Chapter 41 (Rules of the Road), establishes speeds for classes of roads that are considered the maximum reasonable and prudent. For example, §4169 establishes 25 mph to be the maximum prudent and reasonable speed in business and residential districts, 20 mph in school zones under specific conditions, and 50 mph on 2-lane roadways.

However, §4170 permits local authorities to post higher or lower speed limits than those listed in §4169 under certain circumstances, the most basic of which is an engineering study. To post speed limit signs contrary to this process is non-compliant with the Delaware Code and the Delaware MUTCD, is likely unenforceable, and potentially exposes your agency to tort liabilities from which your attorney may not be able to protect you.

An engineering study must be completed by someone licensed to perform engineering in the State of Delaware - see Delaware Code, Title 24, Chapter 28 (Professional Engineers). But a so called “speed study” need not take a great deal of time or cost very much money. Indeed, the Delaware T² Center can often assist you with speed studies for free through our Municipal Engineering Circuit Rider program.

Such a study begins with the collection of existing speeds on the section of roadway in question. It is essential that data is gathered from non-biased, free flowing traffic. A location must be selected that is representative of the selection in question and that is away from intersections and other boundary conditions where vehicles may be braking.

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Winter’s Coming - Thought Much About Deicers Lately?

With our first taste of snow coming before Halloween this year, it is probably fool-hardy to hope for a mild winter, but we should do so anyway. Nonetheless, we need to be prepared for snow and ice and sleet and freezing rain. And if you are still just using dry rock salt after the storm starts because that’s the way you’ve always done it, maybe it’s time to re-evaluate your plan.

Deicing is the traditional use of dry rock salt (road salt, sodium chloride, whatever you like) in a reactive mode after snow and/or ice have already begun to fall or form. Almost all agencies perform deicing as at least part of their winter maintenance strategy. Many use deicing salts in some combination with abrasives (usually sand).

Anti-icing is a proactive strategy, using either dry or liquid salt applications before deicing or anti-icing approach. Studies vary but have shown that 90% or more of the salt spread in the center of the roadway can be retained where it is needed through pre-wetting and significant material reductions have been seen with pre-wetting, with the same or better levels of service.

Finally, various organic liquids are increasingly used with some effectiveness in pre-wetting. These are usually, but not always, sugars (e.g., sugar beet juice, sugarcane, corn syrup) and the resulting brine sticks to the roadway better than simple 23% saltwater. Think how a soda spilled on the garage floor is still sticky days later (plus, there’s ants, but that’s a different problem). So, if you haven’t thought about other strategies, maybe it’s time to experiment a little. It’s going to snow one way or another.

The Delaware T² Center has developed a winter maintenance educational workshop, to be offered throughout the state in November and January (free for government employees). See our website for details and learn more about plows, deicers, techniques, weather, and much more.
Student Internships - Another Successful Summer

University of Delaware Engineering Students enjoyed another productive summer, with a number of robust internships.

For example, Matthew Galenas (Class of 2014) spent the summer with the Pennsylvania Department of Transportation as a construction inspector and performing quality assurance with work zone setups. “This was a lot of responsibility; however, I caught on quickly and was able to gain a vast amount of knowledge about various types of bridge construction,” said Matthew.

Kelly Fearon (Class of 2014) spent her summer at the City of Gaithersburg (MD) Public Works Department. One of her most interesting assignments was road condition assessments for 700 sections of roadway in aid of a system for future paving and rehabilitation. Kelly said she, “really enjoyed working there and learned a lot about many different branches of civil engineering, such as transportation and water resources.”

Mike Kelly (Class of 2012) so impressed the professionals at the New Jersey Turnpike 6 to 9 Widening Program as he setup a site visit for ASHE at UD students last spring that they insisted he come to work as an intern. Over the summer, he was exposed to roadway excavation, pipe jacking, paving, MSE wall construction, utility installations, concrete pours, sign structure erection, drainage work, pile driving, and more during his inspection duties. Mike commented that he, “gained very valuable experience during my time working on [the project]...and I loved how I was given the opportunity to participate in the project.”

Gregory Lavenburg (Class of 2013) worked on the Delaware Center for Transportation’s traffic congestion data collection efforts. He and other interns immersed themselves in Delaware beach traffic during the Friday through Sunday rush hours, collecting important information about delay and congestion to aid in DelDOT’s planning and safety efforts. He remarked that it was, “a rather odd work schedule [but]...I came out a more knowledgeable person than when I started.

Collin Mohr (Class of 2012) worked on a variety of projects for UD’s Facilities Planning and Construction. Collin said, “the experience of working as a project manager gave me a great insight into the job that ties all engineering work together; it was a great experience because I maintained control of the flow and effectiveness of my projects.”

Ryan Barton (Class of 2012) worked at C.S. Davidson as a structural engineering intern. He too had a great experience, noting, “there is nothing that can educate an individual better than working on real issues in a real environment.”

The common thread in all these student accounts is an enthusiasm for engineering that is only enhanced by meaningful and thoughtful internships. These are winning propositions for both the student and the employer. As we can see, students gain great experience, they get to try out an area of engineering to gauge their taste for it, and they earn a few bucks to help defer college costs. Employers find they can put students in positions of surprising responsibility and they will rise to the occasion with a little bit of training: all at much less than they would have to pay a graduated engineer.

Both student and employer often find the internship as a low risk way to size each other up over a three month period. As opposed to the 15 minute interview, the student is able to really understand the company or organization and decide if this or one like it will be right for him/her upon graduation. The employer gets to see the student in action and can gauge if he/she truly is a ‘team player,’ a ‘self-starter,’ and a ‘highly motivated professional.’ The result is that both can make a more informed decision about a possible longer term relationship.

Regardless of the long term, employers that offer internships are providing important mentoring to the next generation of engineering leaders and students are making smart use of their summers in preparation for an engineering career where they will have a jump start on those that went back to their high school life-guard job.
Snow Plow Simulators
A “New” Tool to Improve Safety and Performance

In television they say if you haven’t seen it then it’s new to you. Well, there are some “new” tools being used in our area to enhance safety and performance during snow and ice response activities.

Snow plow simulators are in fact not new - in many of the snow belt states, they have been in use for many years and various studies have shown improvement of efficiency (e.g., lower fuel costs), reduced wear and tear, less equipment down time, reduction in crashes and other equipment damage, and even higher levels of service. The simulators provide a 270 degree view for the driver, including engine sounds, rear view mirrors and dash gauges/controls that mimic the trucks operators will typically use. They enable snow plow operators to practice their response to a variety of circumstances in a risk free environment.

For example, the simulator can pose day or nighttime snow events, rural or urban road networks, sun glare, various snow and ice conditions, deer jumping into the roadway, and equipment malfunctions such as overheating, loss of air pressure, or tire blowouts.

Minnesota DOT’s simulator control program coordinator, Andrew Kubista, notes, “we’re not teaching them driving skills, but decision-making skills.”

Recently, a mobile training unit with two of the state of the art simulators made their way through the area, including stops in Maryland, Delaware, and Virginia. In October, the Virginia Department of Transportation placed about 80 personnel through the simulator in VDOT’s fifth year using it. Cecil County Public Works (Maryland) put 48 operators through the simulator over four days in October. The City of Elkton, Maryland put 28 of their personnel through the training a few days later. And in November, 63 operators from the Delaware Department of Transportation tested themselves in the simulators.

Participants generally find the training realistic and worthwhile. “I didn’t know what to think. I was kind of nervous about it and it’s got a lot of good points a lot of realism,” said DelDOT operator, Carl Wolfe.

David Woodson has been plowing roads for VDOT for 21 years and said, “It’s just like real life, really, because you gotta watch everything that comes in front of you, behind you, beside you. Next thing you know you’ll be in an accident if you don’t watch yourself.”

Costing $100,000 or more to purchase, many agencies contract a mobile unit for a few days that comes with instructors and these typically cost $275-300 per student for 2 hour trainings. This can seem like a lot of money, but in relation to the costs from just a single mishap during the snow fighting season, more agencies are deciding this is money well spent. Indeed, some jurisdictions (like Cecil County) receive grants from their insurance company to cover some or all of the cost. For other agencies, the costs are viewed in relation to behind the wheel training that doesn’t expose the operator to some or all of the conditions they can see in the simulator and those behind the wheel excursions cost money, too (fuel, vehicle wear and tear, instructor/mentor time, etc.).

Dan Webber, Cecil County Roads Chief, called the tool a, “creative approach that allowed our drivers an experience to improve and learn snow/ice removal

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Snow Plow Simulators

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The simulator training can provide much needed operational flexibility. “It’s training that can be offered throughout the year, rather than trying to once the snow is actually on the road. That’s when we need them fully prepared to drive,” said DelDOT spokesman, Gary Laing. According to Jim Westhoff, DelDOT Community Relations Officer, DelDOT is “looking into having it every year,” adding, “it’s important that our people are well-trained.”

As state and local transportation agencies are increasingly pressured to provide higher levels of service under stressed budget conditions, tools like these may become more common in our area because of their cost effectiveness, and the improvements to safety and levels of service they have been shown to provide.

Sources:
1. TwinCities.com - Pioneer Press
2. WMDT 57 News
3. NBC 29.com
4. WMDT 57 News
5. Delaware State News

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situations/conditions hopefully before they had to actually encounter the real life situation/condition.”

Other Recent T² Center Training

Rusty Lee instructs at a December MUTCD for Local Roads session (left) and Roger Bowman addresses the November 30 session of the Winter Maintenance educational workshop. These sessions will be offered again in both Kent and Sussex Counties; sign up now.
Establishing Local Speed Limits

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or accelerating with regularity. The data collection should be as surreptitious as possible, so uniformed officers with big radar guns sticking out of police cruisers isn’t the way to go. Small, yet accurate, radar guns are available for just a few hundred dollars that could be mistaken for a cellular phone and, used by a plain-clothes person leaning against a parked vehicle (leaning on the side nearest the sidewalk; safety first), the operation can go largely unnoticed. Of course, passive tube counters and similar devices can also be used to collect speed data.

The radar gun is used to collect spot speeds as cars go by in each direction. Any vehicles operating unusually should be noted (a lost delivery truck, someone hunting for a parking spot, etc.), because these data points probably should be omitted as non-representative. Speeds should be collected from no less than 30 vehicles or over at least a 30 minute period to be statistically valid in most cases, but more vehicles and more time will yield better results, up to a point.

Speed data can then be reduced to produce the 85th percentile speed for that road and those conditions. The speed zone should be posted within 5 mph of the 85th percentile speed (and the MUTCD does require that speeds be posted in 5 mph increments). However, the MUTCD does provide for other factors that can be considered in posting speeds. These include road characteristics, shoulder condition, grade, alignment, sight distance, the pace of traffic, roadside development and environment, parking practices, pedestrian activity, and reported crash history (at least 12 months). However, speed zones should not be established arbitrarily, and the additional considerations listed in the MUTCD have meaning within the practice of engineering - hence the need for a licensed engineer to carry out such studies.

Once the speed study is completed, MUTCD-compliant signs should be posted in accordance with the placement standards of Section 28.13 and consideration should be given to viewable sight distance and retroreflectivity. If your goal is compliance, the speed limit signs should have the utmost authority and credibility and that starts with a professional speed study and end with properly erected signs that are well maintained over time.

Arbitrarily established speed zones are not compliant with the MUTCD and as such, are prone to be challenged in court. An engineering study can yield the appropriate speed limit and improve enforcement.
MUTCD Compliance Dates - What is Going On?

The Greek philosopher Heraclitus said “the only constant is change.” Is it not the truth? Can we have no permanence here?

We just got a shiny new Manual on Uniform Traffic Control Devices (MUTCD) and there’s already a proposal to radically change the compliance dates (Table I-2); see the proposed changes at http://mutcd.fhwa.dot.gov/. The proposed rule change begs two questions, but let’s look at the proposal first.

To grossly oversimplify, the August 31, 2011 proposed amendment would revise Table I-2, “to eliminate, extend, or revise most of the target compliance dates for upgrading existing traffic control devices [signs, pavement markings, lights, cones, barricades, etc.] in the field that do not meet the current MUTCD standards.”

So for example, the January 22, 2012 deadline to implement a retroreflectivity assessment or management method would be extended some two years and the 2015 and 2018 dates for minimum retroreflectivity of different sign types would be removed from the list. The December 22, 2013 compliance date for signs on the back of Stop or Yield signs to not obscure the shape of those signs would be removed. Lettering height deadlines for street name signs (2012 and 2018) would be removed. And so on. If the proposed amendment is adopted.

The natural questions are: 1) will the proposals pass and if so when; and 2) what practical impact does this have on my road agency?

Will the proposed amendments pass? We don’t know for sure. There was tremendous pushback after the 2009 MUTCD revisions for changes that many transportation agencies claimed placed too great a financial burden on them and that will surely weigh on the determination. When will we know? We don’t know that either. The comment docket closed October 31 and review of comments often takes months. But given that there are upcoming deadlines in January that would be affected, a quicker ruling is expected.

If the proposed amendments are adopted, what does that mean to a road agency? Practically speaking, not much.

Why is that? First, federal law (23 U.S.C. 402(a)) requires each state, in cooperation with its political subdivisions, to have a program for systematic upgrading of substandard traffic control devices and for the installation of devices needed to comply with the MUTCD. Such a program must include some means of regularly inspecting/assessing devices and replacing or upgrading them when they are damaged, degraded, stolen, or have reached the end of their useful life.

Second, just because there is not a specific compliance date for an MUTCD component doesn’t mean you aren’t on the clock. Any time that a device is replaced or reconstructed it must be brought to full compliance with the MUTCD - this is often referred to as programmatic changes. Specific compliance dates simply establish a fail-safe date where devices must be brought up to the MUTCD standard whether they are being replaced or reconstructed or not.

So if a compliance date goes away, what does that mean to me? It simply means that a particular part of the trigger has gone away. But don’t mistake this as a license to put off proper management of traffic control devices. As devices are replaced for various reasons, you must consult the new requirements of the MUTCD and ensure they comply. If you are using federal funds for a project, you may find that your project is delayed or ineligible because of MUTCD non-compliance. Even state funded projects might have the same limitations.

Finally, MUTCD non-compliance is fodder for civil lawsuits (tort claims). Under some circumstances, plaintiffs will argue that your agency knew of the need to upgrade devices, failed to do so in a “timely manner” and they were injured as a result. You may object to such a claim, but your attorney will have a much better story to tell in court if you have a reasonable program for inspection, assessment, upgrade, and replacement of your traffic control devices.

So, the moral of the story is to worry less about the proposed compliance table changes and more about enhancing your program as if the deadlines were going to remain. Which they might. Stay tuned.
Upcoming Events

The T² 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.

- Local training for MUTCD; Parts 1, 2, 3, & 6 (three 4-hour sessions)
  1. Kent County - January 5, 10, & 18, 2012
  2. Sussex County - March 6, 13, & 20, 2012
- Winter Maintenance (Snow and Ice Control)
  2. Sussex County - January 19, 2012
- DelDOT Winter Workshop - Save the Date: February 20, 2012
- TBA: Materials & Research Training
- Highway Safety Manual (HSM) Lite - Save the Date: March 20 & 21, 2012
- HSM for Practitioners - Save the Date: March 22, 2012
- Roundabouts - Save the Date: March 30, 2012

T² Center Request Form

Your feedback and interests help us increase the T² 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 T² Travel-Log subscription list—subscriptions are free

_____ I have an idea for a future T² 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 T² 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 T² Center, Delaware Center for Transportation
360 DuPont Hall, University of Delaware, Newark, DE  19716
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