



# TRAVEL-LOG

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

### Retirement Message From The Director

By Lawrence H. Klepner

When I began my career with DelDOT in 1969, I thought I would devote the next 30 years or so to the planning processes of improving existing roads or proposing new ones. I did this for some time, but along the way, I also had responsibilities for bus and taxi regulations, DelDOT internal management systems, and coordinating research programs. Regular changes of duties (sometimes with a promotion included) kept me interested and energized at work.

In 1991, with no advance notice, I was assigned as the director of the Delaware T<sup>2</sup> Center. My predecessor and first director since 1988, Oscar Sebastian, decided to retire after becoming ill. At the time, I had no knowledge or understanding of what a T<sup>2</sup> Center does. I was not sure that I could adequately fill his shoes.

Fortunately, my attitude changed quickly. I was “adopted” by the folks at the Pennsylvania Center. Ed Stellfox, Alan Gesford, and Bill Pogash showed me the ropes and gave me many helpful pointers. (Ed has since become the

director of the Maryland Center, and we have continued to work closely together.) I am also thankful to Mike Blankenship and Dr. Ron Eck at the West Virginia Center, Elmer Biggs in Maryland, Carolyn Goodman in Virginia, and Paul Lang at the FHWA division office in Dover for getting me off to a good start.

Over the years, I have met and gotten to know many dedicated T<sup>2</sup> people around the country. There are too many to single out, but I cannot fail to mention the following: Kim Carr in West Virginia who works tirelessly on behalf of the Roadway Management Conference, Duane Smith from Iowa who taught me that the most effective leaders are those who act with modesty and respect for others, and Hank Lambert from Vermont who demonstrated to me that you do not have to be from a big state to have a voice on the national scene.

I have been fortunate to have supervisors at DelDOT and the University of Delaware who have encouraged me not only to think

of new programs but also to implement them. I will always be indebted to Ralph Reeb and Dr. Arde Faghri for letting me grow personally and professionally.

I cannot end without recognizing the contributions that our two engineer circuit riders have made to our program. Alan Kercher who served from 1992 to 2008 helped numerous towns and cities to initiate and maintain asset management programs that saved them thousands of dollars and showed them how to spend their very limited resources wisely. His successor, Matt Carter, has continued this work and has brought many fresh ideas to bear on current municipal problems.

While I am proud to have contributed to the services and programs our T<sup>2</sup> Center has provided to the transportation community and citizens of Delaware, I think that in my retirement I will prefer to recall all my colleagues who have made my career so cherished to me. I hope that in some small measure I have affected them in the same way. Good luck to you all.

### UD Students Take Active Construction Interest

The University of Delaware student chapter of the American Society of Highway Engineers (ASHE) is a new group of engineering students with strong ties to the professional practitioners in ASHE’s First State Section (FSS). ASHE at UD students have been active this semester with their own meetings and attending FSS dinner meetings, but they’ve also linked up with FSS members to see several construction activities up close and personal.

Over the summer, a number of students, DelDOT personnel, and UD staff and faculty toured the rehabilitation/restoration of the Gilpin Falls Covered Bridge in Cecil County, Maryland. They also have several trips to the Indian River Inlet Bridge construction and plan several more, given the unusually large and complex nature of this project. ASHE at UD students joined DelDOT bridge inspectors as they conducted their

biennial inspection of Barkers Landing Bridge, including use of the Under Bridge Inspection Vehicle. Finally, students were able to witness full depth reclamation of a street in Middletown, cold in place paving in Milton, and a paving operation in Newark.

All these opportunities provide valuable insight for engineering students to compliment their academics. See photographs from many of these visits on the Delaware T<sup>2</sup> Center website.

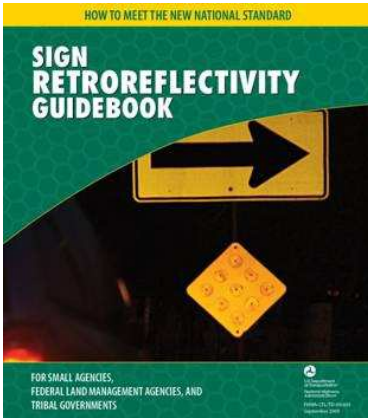
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#### Inside this issue:

<i>DelDOT Sign Purchasing Power Available to Municipalities</i>	2
<i>Maintaining Accessibility During Sidewalk Construction</i>	2
<i>DelDOT Sign Test Data To Help Towns</i>	3
<i>Construction Claims Avoidance</i>	4
<i>Notes from Tort Liability Workshop</i>	5
<i>T<sup>2</sup> Center Hosts APWA Webinar</i>	5
<i>Engineering Interns Yield T<sup>2</sup> Dividends</i>	6
<i>Upcoming Events</i>	7
<i>Feedback Form</i>	7
<i>T<sup>2</sup> Center Contacts</i>	8



A new sign retroreflectivity toolkit will soon be available through the Delaware T<sup>2</sup> Center, thanks to the Federal Highway Administration. The Guidebook and CD-ROM were developed to address the new MUTCD requirements in lay terms. This helpful toolkit will likely be distributed as part of the Delaware T<sup>2</sup> Center retroreflectivity training in 2010.



Well intended construction to improve sidewalk conditions or accessibility are too often executed with no accessibility or pedestrian detour plan



## DelDOT Sign Purchasing Power Available to Municipalities

With the need to replace many existing signs because of new minimum retroreflectivity standards in the Manual on Uniform Traffic Control Devices (MUTCD), coupled with unusually tight transportation budgets as of late, Delaware municipalities need to leverage every dollar more than ever. One way to do that is to take advantage of the purchasing power that the Delaware Department of Transportation (DelDOT) gains through its large sign materials contracts.

DelDOT replaces an estimated 27,000 to 30,000 signs per year, together with break-away posts, hardware, and other related items. It stands to reason that DelDOT enjoys unit prices that are more at-

tractive than a town replacing 100-200 signs per year can obtain. DelDOT extends those savings to Delaware municipalities that wish to participate by making these materials available to towns at their cost.

Yet, Bob Hutson and Rick Tracy of DelDOT's Signing and Pavement Markings say that few towns currently take advantage of the program. They remind Delaware municipalities that the program is easy to use by simply calling the Sign Shop Supervisor at (302) 760-2501 and making arrangements. Signs and assembly materials can be picked up on an as-needed basis, with the exception of

large orders, which should be called in ahead of time to ensure availability.

Bob, Rick, and others at DelDOT spend considerable time following the evolution of sign materials to ensure they're using the optimal materials for the safety of Delaware motorists and pedestrians and leveraging the competitive marketplace to gain the best pricing structures for each classification of material. So, if the opportunity to obtain large volume pricing on sign materials without having to purchase minimum lot sizes is attractive to your budget situation, contact the DelDOT Sign Shop Supervisor at (302) 760-2501 and ask them for more details.

## Maintaining Accessibility During Sidewalk Maintenance and Upgrades

Throughout Delaware, there are many on-going programs to upgrade sidewalks, crosswalks, and curb ramps. While many of these projects are primarily directed at providing accessible routes in accordance with the Americans with Disabilities Act, they often, ironically, obstruct the pedestrian route altogether during construction.

It is not uncommon, for example, to find all four corners of an intersection obstructed at once for the installation of new or improved curb ramps. Even when such construction is expedited, pedestrians can be given little choice but to enter the travel way, exposing themselves and motorists to potentially dangerous conditions. For the disabled community, the dangers and confusion can be worse. Imagine, for example, a blind pedestrian encountering the barricade shown to the left; without advance warning at the previous intersection or some other assistance, the pedestrian will be left to his/her own devices to navigate this

unseen obstruction in a pathway that may have been familiar and clear for them just a day earlier.

The Delaware adaptation of the Manual on Uniform Traffic Control Devices provides direction and guidance for maintaining bicycle and pedestrian access during construction. Section 6 addresses temporary traffic control in general and Sections 6D and 6G are particularly helpful. A paragraph here is no substitute for a careful read of the MUTCD, but some general tenets are important. Avoid disrupting existing accessible routes if you can. If you must, then provide a well signed and detectable alternative route. Keep pedestrians away from work site dangers and travel ways. Consider nighttime lighting conditions.

The Delaware T<sup>2</sup> Center will address these and other accessibility issues in the February 3, 2010 workshop; check our website for registration information.

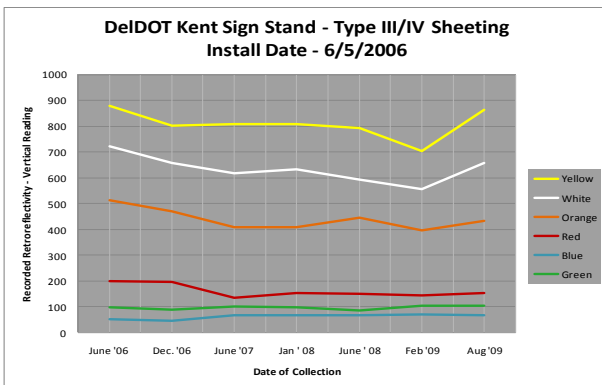
# DeIDOT Sign Test Stand Data Can Assist Towns Manage Their Retroreflectivity

The Delaware Department of Transportation (DeIDOT) constructed sign test stands at their Kent and Sussex County facilities in the summer of 2006 and have been tracking retroreflectivity levels since then. With only 3½ years of data yet available (equivalent to 7 years service in the field, due to 45° angle facing due south), trends are beginning to reveal themselves and the data will prove increasingly useful over time.



The test stands consist of several sheeting types from three manufacturers in multiple colors. The selected sheeting types and colors were intended to be representative of the majority of signs DeIDOT has in service and for which minimum retroreflectivity levels either exist or

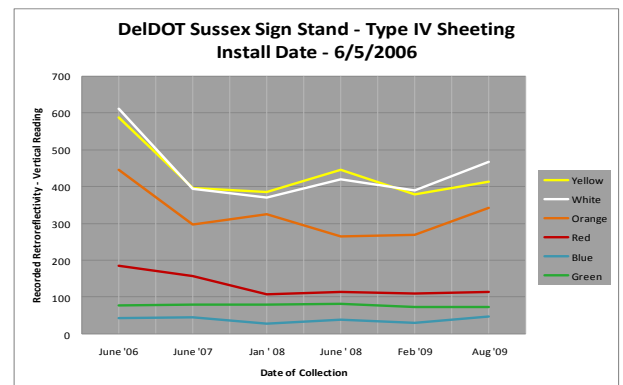
are forthcoming in the Manual on Uniform Traffic Control Devices (MUTCD). Now that the program is well established, DeIDOT's Signing and Pavement Markings group measure each sign on each test stand twice per year. DeIDOT follows specific measurement protocols, similar to those of the American Association of State Highway Transportation Officials' (AASHTO) National Transportation Production Evaluation Program (NTPEP) and consistent with ASTM D 4956 (American Society of Testing and Materials). With hundreds of thousands of signs in service throughout Delaware, the test stand program is a critical element for DeIDOT to manage and maintain its signs in a fiscally prudent manner. But Delaware municipalities that choose the Expected Sign Life management method to comply with the MUTCD can also benefit from DeIDOT's efforts, as they have shared their data with the Delaware T<sup>2</sup> Center for use with the towns. As municipalities prepare for the first MUTCD deadline (January 2012), some will select a management method that will benefit from DeIDOT's test stand data (as well as the NTPEP data) and the T<sup>2</sup> Center can help these towns select replacement timeframes that are reflective of the brand and sheeting types that they utilize. In doing so, local governments can avoid the unnecessary expense of replacing signs too soon while also complying with the MUTCD standards. As the DeIDOT test stand program continues in years to come, the data will become even more robust and an increasingly valuable tool to manage sign retroreflectivity in Delaware.



A brief overview of the new sign retroreflectivity requirements can be seen on the T<sup>2</sup> website. The T<sup>2</sup> Center will also conduct multiple training workshops in 2010 to assist local governments with MUTCD compliance. Contact Matt Carter at (302) 831-7236 or matheu@udel.edu for more information.



Above, one of DeIDOT's retroreflectometers used to monitor sign retroreflectivity; below, the Delaware T<sup>2</sup> Center's retroreflectometer being used in the field. These instruments are important elements for some of the management and maintenance methods required in the Manual on Uniform Traffic Control Devices (MUTCD). DeIDOT has monitored sign sheeting retroreflectivity levels since June 2006 and their data will help Delaware municipalities manage their signs.





## Construction Management: Claims Avoidance Is No Accident-Be Proactive

There are, admittedly, some contractors, large and small, that intentionally practice the art of construction claims to dig themselves out of holes created by project bids that were too low or even just to add to the bottom line. Most don't practice this way, at least intentionally. How to avoid those who do will have to wait for a future newsletter. But assuming you have the mechanisms and experience in place to attract and select contractors that want a successful project for all parties, the next step is to approach your construction project with claims avoidance in mind.

Larger projects and larger agencies often benefit from well tested standard details, specifications, and construction procedures, so the challenge is generally greater for smaller projects commissioned by smaller agencies.

Claims avoidance can't be boiled down to three columns, of course. But we can use this space to remind and reinforce a few good practices. Perhaps the first of these to talk about is full disclosure. Tell your prospective bidders what you know. If you have soil borings or surveys, provide them for inspection or include them in the bid package. If you know that some project residents are less than enthusiastic about the project and may take a very literal position of "stay off my property" tell your bidders. Generally speaking, tell them what you know. Anything a contractor can claim he/she didn't know and couldn't have reasonably known can be fodder for a

claim for additional costs or schedule, or both. If they can show you knew it or should have known it and you failed to disclose it, well, you're in a bit of a pickle.

Ask contractors, during the bid phase, to point out any concerns or errors they believe exist; even require it. It may help you if they raise something later that they could have raised during due diligence in a bid. Be careful here, though; don't run afoul of a reasonable position by a contractor that the observation or concern is somehow intellectual property. Always handle requests for confidentiality with care.

In the contract documents and during the bidding phase, look for any indications that bidders may not understand elements of the job, may be confused about the level of quality expected, or may interpret more "latitude" than you intend to provide. Correct any of these misconceptions before they have a chance to be a basis for their bids. And, as with any significant information you provide during the bidding phase-tell one, tell all.

Set performance expectations appropriately. Don't specify an arterial highway pavement standard for use in your curb and gutter street littered with stormwater inlets, manholes, water valves, and driveway entrances; if you do, you may find you have to accept any surface that doesn't quite rattle your kidneys, because the contractor will argue that a court won't find your performance standard reasonable. Similarly, if you're replacing

sidewalk curb ramps, don't specify a 2% cross slope. What if it's built to 1.8% - is that okay? How about 1.5%? How about 2.5%? With these types of things, either specify a minimum/maximum (e.g., the ramp shall not exceed 8.33%) or specify a range (e.g., no less than 1.5% nor greater than 2.0%).

If you're a local agency and you don't like recreating the wheel, look at state or other jurisdiction standards and adopt them by reference. However, make sure they aren't overkill for your project; i.e., don't pay for more horsepower than you actually need. Read those standards carefully before you adopt them and if there are only parts rather than the whole that you want to use, be clear in your bid documents as to the appropriate citations.

During construction, remember the phrase, "trust, but verify." Develop good working relations with your contractors. Talk with them in the field and consider appropriate concessions that don't compromise your project goals. But also collect pictures, videos, detailed construction diary entries, and meeting minutes, and perform independent testing. These will be some of your greatest tools against frivolous or embellished claims.

And, be consistent. You can legitimately confuse the contractor when you're lenient one day and tough as nails the next. This goes back to performance standards and you must be clear.

## T<sup>2</sup> Center Hosts Tort Liability Workshop

Mark A. McNulty, Esq. presented concepts of tort liability at Kent Polytech on November 24, 2009. Mr. McNulty is currently a lawyer in private practice, but was previously an Assistant Public Defender, a Deputy Attorney General, the Director of the Delaware Transportation Authority, DeIDOT Special Counsel, and the Secretary of Transportation. He is the recipient of several AASHTO and National Science Foundation awards. Mark's long history with Delaware law and transportation provide a great foundation for this important topic.

Some 60 participants asked questions and shared experiences as Mark detailed several general tenets. He discussed the State of Delaware's Sovereign Immunity, the elements of government or discretionary immunity, and the Delaware Tort Claims Act. Within these various protections, he then discussed their limita-

tions, the potential for them to erode or disappear over time, and cautioned that they did not protect private sector employees. He summarized by advising public employees to know their roles and authorities, act only within those authorities, perform the work well, and document, document, document, particularly in instances where departures from standard policies and design guidance are appropriate.

Mark explained that these liability protections continue to exist in Delaware for specific reasons. Namely, the Legislature continues to recognize that public officials must feel reasonably free of liability if they are to make the type of risk-based decisions that we ask them to make. However, he was quick to repeat that officials must nonetheless follow standards of care if they wish to enjoy these protections.

## T<sup>2</sup> Center Hosts APWA Click, Listen & Learn Webinar

On March 26, 2009, the Delaware T<sup>2</sup> Center hosted a free viewing of the American Public Works Association's Click Listen & Learn webinar "How to Initiate and Implement a Right of Way Program." APWA routinely presents these webinars on a variety of topics and they are often of interest to folks in the transportation field. However, the \$175 cost (\$225 for non-members) of the typical webinar is usually not justified when only one representative at a local government will be benefiting from what is typically a two-hour overview. The Delaware T<sup>2</sup> Center wanted to gauge the interest of Delaware local and state officials for these types of webinars in a group setting where any number of individuals can benefit for the cost of a single site fee (paid for by the Center, along with some light refreshments). A group of seven viewed the webinar in a conference room in DuPont Hall at the University of Delaware, in Newark. Participants were able to view the presentation on a large projection screen in a comfortable setting.

In the setting of a two-hour session, the four speakers were restrained to broad overviews, but their presentations (largely based on ex-

periences in Colorado Springs, CO and San Antonio, TX) provoked some interesting discussions and questions from the Delaware group. The presentations began by briefly discussing the challenges of managing rights of way and balancing the needs of the traveling public, the rights of utility companies, and the integrity of substantial public infrastructure investment. They then discussed alternative approaches to managing utilities (moratoria, protected streets, permitting and degradation fees, restoration requirements, outreach, collaboration, etc.). The balance of the presentations then discussed the software approaches in the two case cities and how they have met the specific needs of the citizens and utilities in those areas.

The Delaware participants felt they gained helpful information from the webinar and the Delaware T<sup>2</sup> Center hopes to host future transportation webinars, perhaps in cooperation with the APWA Delaware State Chapter. Stay tuned – if you'd like to be on our email list for such events, send your information to Matt Carter at [matheu@udel.edu](mailto:matheu@udel.edu).



*Mark McNulty presents a day-long workshop on tort liability at Kent Polytech. The audience of DeIDOT personnel, local government folks, and FHWA representatives were active with questions and examples throughout the day.*

### What's a Webinar?

Webinars have become a popular way of distributing information and educational materials to broad audiences in a cost effective way. Some webinars are free, while others usually charge a per site fee, enabling any practical number of people to gather in a single room for one fee. The typical webinar consists of a slide presentation that the webinar producer advances at the pace of the speaker, whose voice is heard over a telephone; videos are often added also. There are variants – e.g., some webinars broadcast image and voice over the internet connection together. Question pods are usually available to the participants, along with presentation downloads and lists of other participants. Webinars are best suited for educational overviews or awareness-raising topics. Training that is highly interactive, requires more than about two hours, or that merits greater detail is less suited for webinar applications.



## Engineering Internships Yield T<sup>2</sup> Center Dividends

The Delaware T<sup>2</sup> Center had great success with two engineering interns this summer, and the dividends extend beyond the specific work they completed; tools they developed during the scope of their work can be used over and over by the Center for years to come and have generated ideas for yet other ways in which we can serve local governments.

With the help of supplemental funding from the Safety Circuit Rider Program, the Delaware T<sup>2</sup> Center was able to hire two University of Delaware engineering interns to assist with asset inventory and analyses to help the towns. It was quickly evident that Kate Smagala and Bob McGurk were up to the task and they brought with them great creativity and innovation that improved the immediate work and yielded data tools that we are already applying to other work.

Our Municipal Engineering Circuit Rider, Matt Carter, challenged Bob and Kate on a number of fronts to think of ways to make the data collection and analyses less intimidating to the average town resident or councilperson so that the work would have wider readership and use. One example of such innovation was Bob's early development of expanded data presentation. A substantial data set was collected using our retro-reflectometer, our cameras, and routine measuring devices, but tabular data in spreadsheets are intimidating to those not used to viewing them and annotating photo locations can be time consuming.

Bob found relatively simple ways to clean up and convert data in Excel spreadsheets so that they would act as an overlay for Google Earth; the example at right shows sign locations and a popup data set for a stop sign. This allows residents to use free software to browse

data in a way that many of them are used to doing.

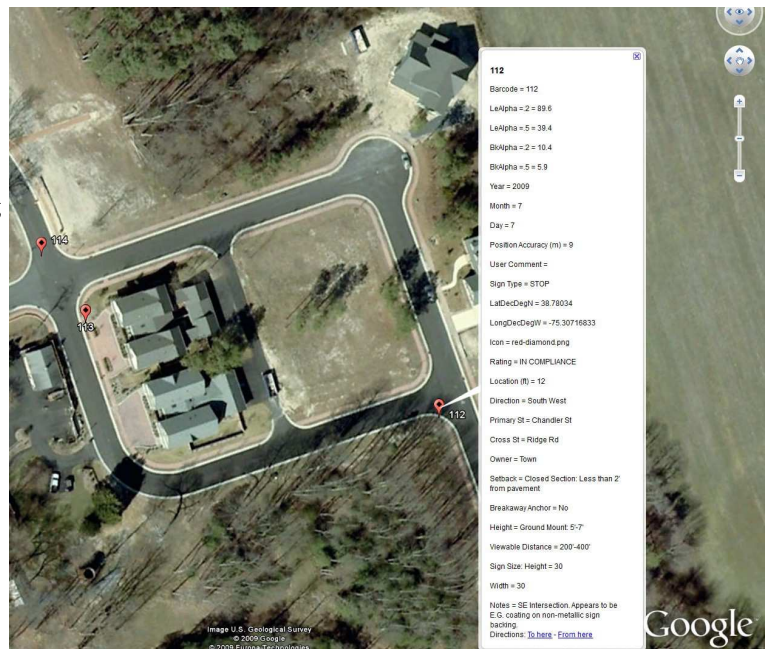
Similarly, our camera geocodes photographs and Bob found an inexpensive utility program that would generate a Google Earth overlay. These are handy ways to point out problem areas, pavement distress, damaged signs, and other issues to a colleague without laboriously narrating where a picture was taken and the smaller file size makes it easier to email.

These innovations made the summer's deliverables more robust and much more likely to be actively used by a diverse audience. Generally, any spreadsheet data set with GPS coordinates can be converted to an overlay like that shown below, and even photographs that are not geocoded by a camera can be attributed to GPS coordinates and used to create a pictorial overlay.

The methods to produce these data and pictorial overlays are not complex and we have developed step by step instructions for employing them. Anyone interested can contact Matt Carter at (302) 831-7236 or [matheu@udel.edu](mailto:matheu@udel.edu) and he will email the directions and some example files.



*Bob McGurk and Kate Smagala gathering field data and completing analyses back at the office.*



# 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.

- National Highway Institute (NHI) Course 133078 – Access Management Location and Design - Date TBA
- NHI Course 142047 – Water Quality Management for Highway Runoff - Date TBA
- Concrete Workshop - January 20th, 21st
- Cementitious Mixtures for Concrete - January 27th
- Chemical Additives for Concrete - January 28th
- Updated Techniques for Holding Public Meetings - January 28
- Sign Retroreflectivity (MUTCD) - Date TBA
- Sidewalks and the Americans with Disabilities Act (ADA) - February 3rd, Rehoboth Beach
- Distinguished Speaker Series - James Mwape, Business Manager, EZ Pass IAG, February 26
- Distinguished Speaker Series - Tom Vanderbilt, author of Traffic - March 19



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

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[HTTP://WWW.CE.UDEL.EDU/DCT/T2/T2.HTM](http://www.ce.udel.edu/DCT/T2/T2.HTM)

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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.

*Asset  
Management  
Conference*



*See the  
presentations  
on our website*

*The Delaware and Maryland T<sup>2</sup> Centers joined forces to host a one-day Asset Management Conference at University of Delaware's Clayton Hall on November 5th. Some 60 attendees from Delaware and Maryland DOTs, local governments, Federal Highway Administration, and the private sector benefitted from a similar array of speakers who inspired participants to think anew as to how asset management could help them stretch their funds and achieve better infrastructure.*



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