

TRAVEL-LOG

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

This has been an extremely busy first four months of 2011, with the Winter Workshop, the Materials and Research Workshop and four MUTCD trainings, and some OSHA and Flagger Certification training thrown in for good measure.

There are many events on the horizon which you should all be watching for. For example, this summer the Delaware T² Center, working with DelDOT and the Delaware Asphalt Paving Association, will be hosting a Warm Mix Asphalt (WMA) "Field Day" (tentatively, June 17). WMA is here in Delaware, and DelDOT anticipates that it will be the dominant bituminous pavement here in the next year or two. This field day will give any interested party a chance to

see warm mix installed and get their questions answered.

We are also building a series of Winter Maintenance training modules to be given this fall. This will include sessions for operators and a workshop for town administrators and DelDOT to exchange ideas regarding best practices and how the towns and DelDOT can better work together in preparation for and during winter storms.

The T² Center also is working with any town that asks to just be a sounding board on an issue, finding an answer to a technical question or a source of assistance for a pending project.

I remind all the newsletter readers that the deadline for

establishing sign management systems is approaching fast - January 2012. See our borrowed article on page 5 of this newsletter to remind you of the requirements and stay tuned because the T² Center will be offering sign retroreflectivity follow-up workshops this summer and fall.

And finally, with the expected finalization of the U.S. Access Board's Public Right of Way Accessibility Guidelines (PROWAG) later this year, we will likely be updating our Americans with Disabilities Act training for streets and sidewalks.

So, the next eight months will likely be as busy as the first four. See you soon.

T² Center Partners on Local Asset Management Projects

As an outgrowth of our work in Milton and Cheswold in 2008, the Delaware T² Center has begun work on two ambitious asset management efforts with the Town of Bethany Beach and UD's Facilities Management group. While the details vary, both projects center on systematic collection of transportation asset information to enable strategic planning for extended life cycles, better performance, and reduced costs.

Both projects are possible because of strong partnerships. Roger Bowman at UD's Facilities Management and Brett



The latest in Trimble hand held data collectors will support T² activities this summer.

Warner and Clifford Graviat at Bethany Beach have clear visions of what they want to achieve and have put forth their own resources to complement ours.

With the receipt of a new Trimble GeoExplorer XH 6000 hand held data collector and the construction of GIS base maps, we expect to begin data collection with engineering interns in late May, continuing through the summer. These demonstration projects will hopefully pave the way for us to assist other towns in the future, so stay tuned for updates.

For the second year in a row, UD's ITE students will move on to the national competition in St. Louis this summer.

UD's ITE Student Chapter Victorious Again!

On Thursday, April 28, the ITE Student Chapter Traffic Bowl team successfully defended its Mid Atlantic District title and is once again on the way to the Nationals in St. Louis, MO this summer.

The district championship team of Elisa Kropat, Bob McGurk and Kerry Yost sent home the teams from Villanova and Morgan State.

The student traffic

bowl has only been held the past two years and both years,

UD has prevailed. The event is held in conjunction with the ITE District Meeting which was held this year in Alexandria, VA.

This year the traffic bowl was a Jeopardy style competition with categories ranging from "Transportation goes to Hollywood" to more technical topics from the Manual on Uniform Traffic Control Manual, Highway Design and Traffic Engineering.



IPA was lauded for a forum that encouraged the diverse attendees to share experiences, solutions, and failures to arrive at a toolkit of best practices for sidewalk snow and ice control in the Delaware environment.

UD IPA Hosts Sidewalk Snow Removal Forum

University of Delaware's Institute for Public Administration hosted a forum on sidewalk snow and ice control best practices April 6, 2011. In addition to IPA staff, more than 25 participated, including representatives from municipalities, DelDOT, WILMAPCO, DART, UD Facilities Management, the T² Center, and others.

The IPA project team presented a background brief-

ing on the problem, how some jurisdictions have had some successes, and limiting factors, after which the diverse group of attendees engaged in a largely free-form discussion to explore the issues surrounding sidewalk snow and ice control.

The solution oriented group shared experiences, solutions, and even failures and queried each other to understand why the best solutions worked and how they might be

replicated. Many credited IPA with fostering the brainstorming session by minimizing the briefing and cutting the attendees loose to talk.

IPA will use the forum to further their current work to clarify responsibilities for sidewalk snow removal, improve timely removal, improve ADA accessibility, determine how to apply best practices here, and pose innovative solutions for the Delaware environment.



University of Delaware engineering students get an up close look at several aspects of NJ's turnpike widening project. Here, they look at specific aspects of bridge construction and take in a nearly bird's eye view of the Interchange 6 widening.

UD Students Visit NJ Turnpike Widening Construction

The New Jersey Turnpike Authority and its joint venture consulting team AECOM/GPI/PB welcomed a group of University of Delaware engineering students from the American Society of Highway Engineers (ASHE) and led an all day tour of its \$2.5 billion "Interchange 6 to 9" widening project.

With some six hours on the ground and with a host of designers, construction managers, and Turnpike managers,

the students saw only a sampling of the massive project, but they saw it close up. Moreover, the diverse personnel emphasized a consistent theme to students of professional licensure and the value of advanced degrees if they aspired to work on the most challenging transportation projects of the future. The passion of these professionals was palpable and they clearly wanted to infect this

next generation of engineers with the same level of excitement.

Engineering for the 35 mile widening of the Turnpike began in 2005, while construction began in 2009 and is expected to be complete in 2014.



The Science of Highway Safety

Highway Safety Manual is a valuable tool for local agencies

By John Ryynanen
Center for Technology &
Training; Michigan Tech Trans-
portation Institute

[Reprinted by permission from
the Bridge newsletter Vol. 24,
No. 4]

As a civil engineer (or one who works closely with civil engineers) you know that when you're designing an intersection and you have a question about sight distance, you can look in the American Association of State Highway Transportation Officials (AASHTO) A Policy on Geometric Design of Highways and Streets, also known as the AASHTO Green Book, for an answer. Similarly, when you have a question about signs, pavement markings and signals for the same intersection, you know you will find all the answers in your copy of the Manual on Uniform Traffic Control Devices, or MUTCD.

But where do you look when you have a question about traffic safety? For example, what is the safest method for handling left turn movements at a four-way signalized intersection? Until recently, you would have had to sift through multiple sources of information (including, probably, the Green Book, the MUTCD, and published research reports) to find an answer to such a question. But there was no guarantee that you would find a definitive answer. The question about left turn movements exposes a dilemma that safety professionals have grappled with for years: What constitutes safety on a road? Must a road simply adhere to established design standards to be considered safe, or does it require something more?

Standards not enough

Dr. Ezra Hauer, Professor Emeritus in the Department of Civil Engineering at the University of Toronto and internationally-recognized highway safety expert, introduced the adjectives "nominal" and "substantive" to help shed more light on the topic of roadway safety. In a 1999 paper titled "Safety in Geometric Design Standards," Hauer wrote, "Nominal safety is judged by compliance with standards, warrants, policies and sanctioned procedures ... substantive safety is measured by expected crash frequency and severity."

The problem with defining safety as a function of compliance with standards, Hauer asserted, is that "Limit standards do not tell the designer what the safest design is. Rather, they specify the limit of what is permissible."

Today the Highway Safety Manual (HSM), published through AASHTO, is the definitive source of substantive answers to roadway safety questions. The manual was developed and refined by a diverse team of roadway safety stakeholders over the past ten years to provide a single source for safety information and tools in a form that facilitates data-based decision-making.

Major effort

Creation of the HSM began in May 2000 under the direction of a group of volunteers from eight different subcommittees of the Transportation Research Board (TRB) in Washington DC. Research and development for the effort was funded in large part by the National Cooperative Highway Research Program (NCHRP). The Federal Highway Administration (FHWA) provided

supplementary funding and research support.

In 2006, a decision was made to publish the HSM as an AASHTO document, at which point a Joint Task Force was formed with representatives from the AASHTO subcommittees on Design, Traffic Engineering and Safety Management. Over the next three years, the task force examined the HSM to ensure that it would meet the needs of State Departments of Transportation and local agencies. During that time, members of the task force also worked to promote the HSM within their respective subcommittees.

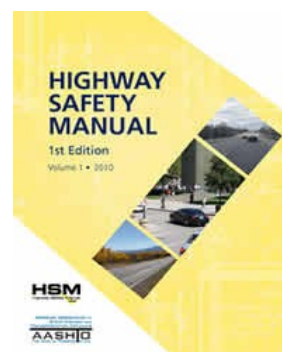
In 2009, after nine years of intensive development and careful refinement, the AASHTO board of directors approved the HSM for distribution.

Valuable resource, but not a standard

Priscilla Tobias, Bureau Chief of Safety Engineering for the Illinois Department of Transportation (IDOT) serves as Chair of the task force that oversees the maintenance and on-going development of the HSM. She is extremely pleased that such a powerful tool is available for road owning agencies. "This manual represents the best safety-related science of our day," she said. "And it has been thoroughly vetted by safety experts and representatives from all groups involved with roadway safety to make sure it's accurate and relevant for all stakeholders. This is the first time we have had such a resource."

Tobias is careful to stress that the HSM is not a standard, like the MUTCD. "The manual is intended as a guide; nothing about it consti-

(Continued on page 4)



The Highway Safety Manual was released last summer through the American Association of State Highway and Transportation Officials (AASHTO). This 1st Edition is a 3-volume compilation of safety approaches and crash modification factors within a "science-based" technical approach that takes the guesswork out of safety analysis."

The HSM's predictive methods can estimate crash frequency and severity with respect to proposed improvements and drive more informed project decisions. At first glance, the HSM can be intimidating and may be dismissed as a DOT-only tool, but with forthcoming training from FHWA and assistance from the Delaware T² Center, we believe local governments will benefit from it too.

"The problem with defining safety as a function of compliance with standards is that limit standards do not tell the designer what the safest design is. Rather, they specify the limit of what is permissible."

Dr. Ezra Hauer –
Professor Emeritus,
University of Toronto

“Nothing about the HSM constitutes a legal standard, nor does it mandate responsibilities. It’s simply a great tool for making informed decisions about how to allocate resources to address safety issues most effectively.”

Priscilla Tobias - Illinois Department of Transportation



Dedicated turn lanes, pedestrian refuge areas, adequate signage, roundabouts, and wide separation between traffic lanes all contribute to the safety of a road. The new Highway Safety Manual provides guidance for determining the best treatments to address safety concerns.



The Science of Highway Safety

Highway Safety Manual is a valuable tool for local agencies

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tutes a legal standard, nor does it mandate responsibilities,” she said. “It’s simply a great tool for making informed decisions about how to allocate resources to address safety issues most effectively.”

New direction in highway safety

The key to the manual’s usefulness lies in its thorough, scientific approach to identifying, analyzing and solving safety problems. First, by accounting for the statistical phenomenon of regression to the mean, many methods of site selection in the HSM help road agencies zero in on the most relevant sites by eliminating from consideration sites that are at a randomly high or low fluctuation in crashes. After a site is identified, the HSM provides a means for analyzing the safety impact of decisions at all stages of the project development process, which enables practitioners to quantify the effectiveness of safety improvements along with other transportation performance measures. Finally, the HSM includes an extensive catalog of proven crash modification factors (CMFs) for a variety of geometric and operational treatment types. Using CMFs, practitioners can predict the safety impact that a potential treatment or design may have on their road system.

Highway safety expert Dr. Hauer is pleased that the manual is available. “Publication of the Highway Safety Manual indicates wide recognition of the need for approaching safety in some evidence-based manner. With procedures that examine safety quantitatively rather than subjectively, the document is an important first step in the right

direction.”

Early adopters lead the way

At three volumes and nearly one thousand pages, the HSM contains a formidable amount of information, especially for those who are not experienced in the practice of analyzing and improving roadway safety. To help disseminate new information in the manual and to encourage road-owning agencies to use it, the NCHRP is sponsoring an effort that involves showcasing different states’ experiences with the HSM. The effort, officially titled the Lead States Initiative for Implementing the Highway Safety Manual, involves state and local transportation officials in thirteen states (see “Lead States Initiative” on page 4).

The project manager for the Lead States Initiative is Charles Niessner, senior program officer at NCHRP. To kick the project off, Niessner worked with Tobias’ AASHTO task force on the HSM to solicit participants from among State Departments of Transportation (DOTs). He was encouraged by the response. “Thirty DOTs initially expressed interest,” Niessner said. “That was encouraging. We didn’t expect that kind of response from the states because launching something like this is not a simple thing – it’s a major effort.” Niessner thinks the willingness to get involved is thanks to the requirement in the transportation bill of 2005 (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, or SAFETEA-LU), that required each state DOT to establish a strategic highway safety plan by October 1, 2007. “Requiring strategic highway safety plans

really elevated the importance of roadway safety and helped everyone move more purposefully in that direction. I think the response to our invitation shows that our State DOTs see the HSM as another great tool to help refine our collective approach to improving the safety of our roads.”

Michigan is a lead state

Tracie Leix, supervising engineer for the Michigan Department of Transportation (MDOT) Safety Programs Unit, is managing MDOT’s participation in the Lead States Initiative. Leix is especially excited about the HSM because she expects it to enhance her group’s already healthy relationships with local road agencies. She and her team have seen first-hand how engaging with local partners on safety projects can produce great results. In 2004, Leix’s group, at the time under the leadership of Dale Lighthizer (retired 2010), established the Local Safety Initiative to help local road agencies in Michigan implement safety improvements. “Through the local safety initiative, we stress the importance of measuring safety and quantifying the effectiveness of improvements,” Leix explained. “The HSM will be a great tool to support these efforts as we continue to work together with our local partners to improve the safety of Michigan roads.”

To help local agencies understand and use the HSM in Michigan, Leix and a Local Agency HSM Implementation Team are working with Michigan’s Local Technical Assistance Program (LTAP) to produce training materials for various groups of stakeholders that are involved in making roadway

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Equipment Solutions That Help?

Do you have tow behinds? Equipment trailers, variable message signs, compressors, light plants, etc? If you do, you know that backing to one without a spotter can take several shots, requiring several jumps in and out of the tow vehicle (except for those of you who are really, really good; this isn't for you - move on). The jumps in and out take time, risk falls (particularly with dump trucks on rainy days), and can expose the operator to traffic dangers longer than necessary. Often times, the places we need to

put some of these trailers (particularly, light plants and VMSs) are along high volume and/or high speed travel ways and we're anxious to get out of there. Bottom line, we'd like a speedier connection.

So one solution is some form of moveable hitch that can extend to the trailer if we get reasonably close. One such example (and there are many others) is the TeleSwivel®. These are fully rated hitches (up to 14,000 lb MGTW and 1,400 lb tongue weight) that

typically work with your existing hitch receiver, but they have the ability to extend out (4") and swivel (4" also) to grab the trailer tongue. Then, pulling the tow vehicle forward and braking brings the hitch into its locked travel position.

These and similar hitches may be a good solution if you hitch often or in tricky locations like busy roadsides.



From time to time, we like to expose you to technologies or equipment you may not be aware of or have thought about in a while - just to keep you thinking.

Let Me Count the Ways

By Lisa Harris, Kansas LTAP [Adapted with permission from the Kansas LTAP Newsletter, Spring 2010 issue, a publication of the Kansas Local Technical Assistance Program at the Kansas University Transportation Center]

The federal deadline for having a sign management system in place that includes an assessment method for retroreflectivity is less than one year away: January 22, 2012. This is the first step in assuring compliance of all traffic signs with federal minimum standards for retroreflectivity. These standards are designed to improve safety and save lives on all public roads in the US. Replacement of noncompliant signs is required by 2015 or 2018, depending on the type of sign.

If your county, city or township has not yet chosen a retroreflectivity assessment method as part of a sign management plan, this article is for you. This requirement is not

going to go away, and it carries serious implications for future sign-related litigation if you choose to ignore it. The good news - there are a several options for assessing retroreflectivity. Buying a retroreflectometer may or may not be right for your jurisdiction. It's important to understand the pros and cons of the methods available and choose the one(s) best for your situation.

Five options

In implementing an assessment or management method for your signs, your agency has the following options, per the *Manual on Uniform Traffic Control Devices*. You can use one option or a combination of them.

1) Visual Nighttime Inspection.

Requires a trained sign inspector 60+ years of age driving an SUV or truck.

2) Measured Sign Retroreflectivity.

A retroreflectometer is placed against each sign to measure

sign retroreflectivity. Signs with below-minimum levels must be replaced.

3) *Expected Sign Life*. When signs are installed the installation date is labeled or recorded. The age of the sign is compared to the expected sign life, based on the experience of sign retroreflectivity degradation in a geographic area. Signs older than the expected life should be replaced.

4) *Blanket Replacement*. All signs in a given area or of a given type are replaced at specified intervals. This eliminates the need to assess retroreflectivity or track the life of individual signs. The replacement interval is based on expected sign life for the shortest-life material used on the affected signs.

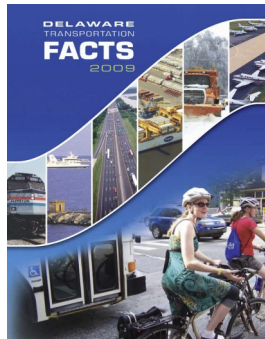
5) *Control Signs*. Replacement of signs in the field is based on the performance of a sample of control signs in the maintenance yard or in the field. All signs

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Delaware municipalities, much like the Kansas experience, are generally thinking of this deadline as distant...but it's not, considering the planning necessary to comply.





"Delaware Transportation Facts 2009" is the latest update on the transportation system and is available on DelDOT's website.

Reducing Roadway Crashes - the Goal That Really Matters

Total crashes are down in Delaware - some 5.5% from 2007 to 2009 - according to DelDOT's most recent "Delaware Transportation Facts" (available on their website under the link for "Publications"), and fatal crashes were down by 3.8% during that period. Of course, vehicle miles traveled also dropped in that period from 9.5 million to 8.7 million.

Pedestrian crashes were about the same (277) but fatalities were down from 21 in 2008 to 14 in 2009. Delaware

saw 140 bicycles crashes in 2009 (up from 130 in 2008) and six riders died (same as 2008).

Regardless, even one death is too many (hence Federal Highway Administration's "Towards Zero Deaths" initiative) and we all know that crashes are avoidable.

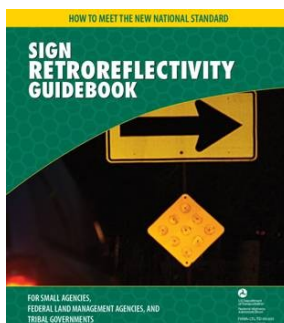
The Delaware State Police Statistical Report lists the top five causes of crashes for 2009 as:

1. Inattention, distraction, or fatigue

2. Other/unknown
3. Followed too closely
4. Careless or reckless driving
5. Failed to yield right of way

The best designed and maintained roads imaginable (the lofty goal of any DOT) cannot solve four of those top five causes. As drivers, pedestrians, and bicyclists, we have to do our part to ensure our safety and the safety of others.

FHWA's Guide is available free for Delaware local governments from the Delaware T² Center - call or email us and we'll send one or more out to you.



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represented by the control sample should be replaced before the retroreflectivity levels of the control sample reach minimum levels.

Methods developed and based on an engineering study can also be used.

How to decide which methods are right for you? You have a few options here, too.

First, we recommend reading FHWA's *Sign Retroreflectivity Guidebook*, which is the source for information in this article. The *Guide* is specifically designed for small agencies. It includes a spiral-bound guide and a DVD with some interactive features, including an easy-to-use decision tool for choosing an assessment method, based on your particular road system's characteristics.

Another way to make your decision is to find out how others made theirs. At the Kansas County Highway Association's

Yet another option is to turn your sign management and retroreflectivity maintenance over to someone else, typically in the private sector. This may be more costly, but may also present some efficiencies, depending upon the structure of your workforce and your resources otherwise. The Delaware T² Center can help you explore these options also.

were planning to base their programs primarily on Expected Sign Life or Blanket Replacement. An advantage to those approaches is ease of budgeting; sign replacement is more predictable, because you will know in advance which signs you are going to replace.

FHWA's *Guide* contains an excellent article on how Pierce County, Washington chose their sign retroreflectivity assessment method. Theirs includes elements of Measured Retroreflectivity, Expected Life, and primarily, Control Signs.

A third option is to talk with experts on the topic in Delaware. Your colleagues at neighboring municipalities can help point you in the right direction, the approaches the Delaware Department of Transportation is taking can be instructive, and we at the Delaware T² Center are available to assist you as you prepare for January 2012 as well.

Spring meeting, four counties spoke during a panel discussion about which method they were gearing up to use. All of them

What are Tier 4 Engine Emission Regulations?

Considering a new piece of diesel engine equipment? A skid steer, a tracked excavator, a backhoe, a loader? If so, you'll hear a lot of talk about Tier 4 emission standards (and interim Tier 4 and Tier 3 and so on, depending upon who makes it and how "new" it is). In the past, you've perhaps given little consideration to this part of equipment specifications - don't do that this time around, because it can be a factor in how the machine performs, what kind of fuel and additives can be used (or must

be used), different maintenance demands, and even the useful life of the engine.

In a nutshell, EPA issued its "Tier 1" emissions standards in 1994 for new nonroad diesel engines more than 50 HP and subsequent tiers have tightened those emissions and expanded their reach to smaller engines and different engine applications. Tiers 2 and 3 came along in 1998 and expanded beyond nitrogen oxides (NOx) and particulate matter (PM) to include hydrocarbons (HC). In 2004,

EPA issued the Tier 4 emission standards, which phase in between 2008 and 2015, and require an additional reduction in NOx and PM by about 90% - along the way, you will see terms like Interim Tier 4, Stage IIIB, and Stage IV, reflective of the phase in. When the Final Tier 4 standards are in place, regulated engines will emit nearly no PM or NOx.

Now, don't be alarmed; major equipment makers are ready for these standards and have great information available

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Is a new piece of diesel equipment in your future? In the past, exhaust systems have been pretty low on your radar. Well the Tier 4 emissions standards mean you, and your mechanics, need to look closely at this part of the specifications before you buy.

The Science of Highway Safety

Highway Safety Manual is a valuable tool for local agencies

(Continued from page 4)
safety decisions. "Among our local agency partners, we have metro, urban, and rural agencies. And within each agency we have people dedicated to design, development, safety, and other focus areas," Leix said. "No matter where someone fits in the process of improving roadway safety, certain aspects of the manual apply to them. We're working to make sure the training is relevant to each groups' needs."

Not just for State DOTs
Tony Giancola, Executive Director of the National Association of County Engineers (NACE) is also excited about the availability and relevance of the HSM for road-owning agencies across the country. "This is a very useful tool," he said. "It will be a big help for road agencies at state and local levels as they evaluate, design, plan for and implement safety improvements in their respective communities."

Everyone familiar with the HSM agrees that it will



The Delaware Department of Transportation (DelDOT) is also keenly interested in the Highway Safety Manual and looks forward to applying its more comprehensive safety approaches to its on-going efforts to improve the safety of Delaware roads. To that end, DelDOT personnel will attend a Train the Trainer session coordinated by the Federal Highway Administration and bring that training back to other DelDOT personnel.

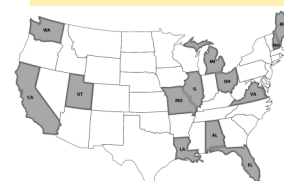
For more information about the Highway Safety Manual, including how to order it, please visit www.highwaysafetymanual.org.

be a great tool for improving roadway safety, but some are expecting more—especially those who have experience with implementing safety improvements at the local level. Wayne Schoonover, P.E., County Highway Engineer for Ionia County Road Commission in Michigan, says the HSM could help local road agencies pay for road projects. He has been an enthusiastic participant in the Michigan Department of Transportation's (MDOT) Local Safety Initiative program since it was created in 2004. "The success we've had in securing federal safety funding for Ionia County road improvements is a great example of the value of a data-driven approach to safety," Schoonover said. "If not for the quantifiable solutions that MDOT's Local Safety Initiative group helped us define, we would not have qualified. The Highway Safety Manual can help any agency define quantifiable solutions to their safety problems, which could help them secure similar funding."

Thirteen states are participating in the Lead States Initiative, which is sponsored by the National Cooperative Highway Research Program (NCHRP). Objectives of the project are to:

1. Provide the participating states with access to experts who are familiar with HSM development and implementation
2. Facilitate the exchange of HSM implementation experiences among the lead states
3. Develop an HSM user guide to assist other state and local road agencies in implementing the HSM.

For more information, go to: www.MichiganLTAP.org/pubs, and then select "NCHRP Lead States Initiative" from the list.





Your mechanics will be a greater asset than ever in the purchase of your next machine, because the technologies to achieve Tier 4 emission standards are varied and each pose challenges and advantages, depending upon your existing fleet, available fuels, and your mechanic's experiences.

What are Tier 4 Engine Emission Regulations?

(Continued from page 7)
for you - make use of it and insist that your equipment dealers answer all your questions so that you can make an informed decision.

Different manufacturers will tackle these emission standards differently and there is not necessarily a right or wrong way. For example, John Deere has committed to cooled exhaust gas recirculation (EGR) with an exhaust filter, saying that EGR cools and mixes measured amounts of exhaust gas with incoming fresh air to low the

engine's peak combustion temperature and reducing NOx (but increasing PM because of the lower temperature, thereby requiring a filter and a diesel oxidation catalyst, DOC). Deere compares EGR to its opposite, selective catalytic reduction (SCR) - SCR raises the peak combustion temperature and reduces the PM, but in turn produces more NOx, requiring the introduction of a diesel exhaust fluid (DEF, or urea). Caterpillar seems to be of a similar mind, so you may see a good deal of EGR in our area.

However, it doesn't mean that's the solution for you and emissions will be a new criteria for you to consider for new equipment.

So, more than ever, your maintenance mechanics should be consulted before you make a purchase - they can help you determine how one choice might be a better option, given your existing equipment fleet, the types of fuel you use and are available to you, and how you are setup to both use and maintain equipment.



Delaware's New MUTCD is (Almost) Here

Thanks to thousands of man-hours and tedious review on the part of a host of Delaware traffic professionals, DelDOT has completed its draft of the Delaware version of the new Manual on Uniform Traffic Control Devices



(MUTCD). DelDOT is currently conducting training on the changes to the MUTCD and the Delaware T² Center will present a somewhat more detailed version (that does not presume a previous working knowledge) beginning this fall, focused towards local and municipal roadways.

At the DelDOT Winter Workshop, Mark Lutzcz (DelDOT) displays new, larger signs required by the MUTCD and puts their size

into some perspective. While this four foot high Yield sign may seem large, five footers will be required on freeways.

And even the familiar Yield Here to Pedestrians will now be 36"x 48"! In municipal environments, a whole new level of planning will be necessary just to fit these kinds of signs within required setbacks and without creating sight distance concerns.

So be on the lookout for upcoming training - there's a lot to learn.

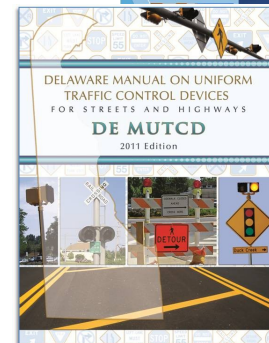
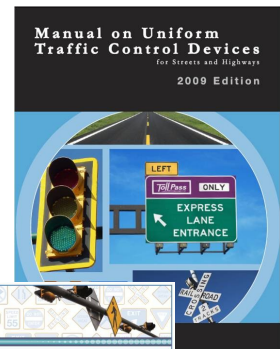
Upcoming Events

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.

- May 10-11, 2011: Water Quality Management of Highway Runoff
- May 16, 2010: MUTCD (Part 4 Traffic Signals & Part 7 School Areas) Training
- June 2, 2011: Roadside Safety Systems Design Mentor and Guardrail Designer Training
- June 15, 2010: MUTCD (Part 8 Railroads & Part 9 Bicycle Facilities) Training
- June 21-24, 2011: Bridge Maintenance Training
- TBA: Local training for MUTCD
- TBA: Sign Retroreflectivity
- TBA: Streets and Sidewalks ADA
- TBA: Winter Maintenance (Snow and Ice Control)

Manual on Uniform Traffic Control Devices (MUTCD) training will be half day sessions.

Except as noted, all events will be held at Kent County Polytech High School Adult Conference Center in Woodside, Delaware.



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

**Care to
contribute an
article? Just let
us know by
filling out this
form or
emailing us.**

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The Technology Transfer (T²) 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 T² Center Travel-Log is published semi-annually by the Delaware Technology Transfer Center at the University of Delaware. T² Center articles also appear semi-annually in the Trans-Search - 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.



Delaware T² Center



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