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

It is hard to believe that it’s May already and another construction and maintenance season is getting into full swing. There are many new things on the horizon in the T² world.

April saw the rollout of the FHWA Every Day Counts Phase 2 virtual summits. This set of four summits focused on the key technologies that are part of EDC 2. They included High Friction Surface Treatments, New Intersection and Interchange Geometrics, Traffic Incident Management / First Responder Training, and Geospatial Data Collaboration.

Starting in June, there will be a series of EDC Exchanges that will provide an opportunity to introduce a broader, local audience to the items and how they will be deployed in Delaware. Stay tuned for announcements.

This summer, the T² Center will be overseeing our largest intern program to date, having help fill requests by Delaware City, Wilmington and Cecil County, MD.

It’s never too early to get in touch with us regarding interns. Contact me or Matt to meet and discuss how your town can partner with the Center and provide service to your communities, while helping a student gain valuable practical experience.

There are also new initiatives coming with regard to bike and pedestrian safety that Matt or I will be contacting you about.

If there is anything our T²/LTAP Center staff can do to help, or answer any questions you may have, feel free to call or email us.

Delaware Tries Out New Bridge Construction Technique

The Delaware Department of Transportation (DelDOT) has ventured into an alternative design and construction technique for smaller bridges, and the Federal Highway Administration (FHWA) and the Delaware T²/LTAP Center joined forces for a technology showcase on March 27, 2013.

The new technique is the Geosynthetic Reinforced Soil Integrated Bridge System (GRS-IBS). GRS is an engineered fill of closely spaced, alternating layers of compacted granular fill material and geosynthetic reinforcement. IBS is a fast, cost-effective method of bridge support that blends the roadway into the superstructure using GRS technology.

DelDOT decided to try the technique for its replacement of Bridge 1-366 (Chesapeake City Road over Guthrie Run) and on Day 2 of the construction, 45-50 representatives from FHWA, state DOTs, local governments, and consultants gathered to learn more about the technique and visit the construction site.

GRS-IBS has numerous potential advantages. Compared to conventional concrete abutments, as much as 60% cost savings have been seen. Road closures have been reduced from months and years to as little as a few weeks, meaning less inconvenience to the traveling public, less risk for (Continued on page 8)
ITE Students Taking It On The Road

The student chapter of the Institute of Transportation Engineers (ITE) recently closed out a very active semester. Under the direction of chapter president Tucker Smith, the semester began with a trip to the Smithsonian Institute for the “America on the Move” exhibit. The exhibit was a showcase of how transportation shaped America — our lives, culture and communities. Next was a joint trip with the ASHE chapter on the Amtrak Rail Geometry Car. Finally, it was “Maritime Day” with a visit to the Port of Wilmington and a tour of the USS New Jersey.

The chapter, along with the University Transportation Center, co-hosted speaker Michael Dreznes of the International Road Federation, who gave an excellent presentation called “Forgiving Roads”.

The semester closed with the annual Mid Colonial District meeting of ITE and the Traffic Bowl. Two chapter members were asked to speak at the conference – Master’s student Mindy Laybourne on the Delaware Signal Timing Enhancement Program (DSTEP) and Doctoral candidate Sara Patterson on her work regarding complete streets on their impact on vehicle delay and emissions.

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Engineering Internships - Summer 2013

Delaware local governments, again this summer, have recognized the value of employing an engineering intern to assist with their transportation challenges. Gone are the days of viewing internships as simply cheap labor and make-work. Increasingly, it is recognized that engineering students bring intensity, innovation, and excitement for the work that sometimes translates to more creative solutions.

This summer, the Delaware T2/LTAP Center will assist with at least four internships. The City of Wilmington will hire at least one intern to update elements of its growing asset management system. Delaware City will hire an intern to begin a comprehensive mapping and inventory of transportation assets in support of their long term plans to enhance their pavement, sidewalks, and curbing throughout the city. Cecil County (Maryland) Department of Public Works will hire one intern to inventory signs and measure retroreflectivity while another intern attempts to inventory and inspect small (<20’ span) structures along its 600+ mile rural road network.

The T2/LTAP Center will play coordinative roles and provide some technical oversight for each of these posts.

ASHE@UD Closes Another Active Year

The American Society of Highway Engineers student chapter at University of Delaware has finished another busy year of construction site visits, invited speakers, and interaction with practitioners from the First State Section.

They began in late September with a barbeque at White Clay Creek Park that once again substituted for the First State Section dinner meeting that month. In October, the students were hosted by the DelDOT bridge inspection team to look under the Route 9 bridge over the Leipsic River in the Under Bridge Inspection Vehicle (UBIV). In November, they visited Rinker Materials for a better understanding of the design and manufacturing of precast concrete pipe. And, of course, the Punkin’ Chunkin’ in Bridgeville.

In February, they toured DelDOT’s Traffic Management Center. In March they were hosted on Amtrak’s Track Geometry Car on its voyage to NYC and back and invited Don Steele, P.E. from the Pennsylvania Turnpike Commission to speak. Then, in April, the students visited the first GRS-IBS bridge construction in Delaware and were again hosted by the DelDOT team for an all-day, in-depth look at nine bridges throughout New Castle County.

And they can’t wait for the fall — stay tuned.
Effective Transportation Management for Special Events

By Michael Rivera, Special Events Manager, Delaware Department of Transportation

Planned special events are occurring on Delaware’s roadways with ever increasing regularity. Last year alone, the Delaware Department of Transportation (DelDOT) processed nearly five hundred special event permit applications. Large scale events such as Punkin Chunkin, the Delaware State Fair, the Firefly music festival and NASCAR races, as well as smaller events such as motorcycle rallies, concerts, organized bicycle rides and races, running events such as 5Ks and marathons, festivals and block parties have varied impacts to our roadways throughout the year.

Special events pose a unique challenge to motorists and to transportation infrastructure itself. Unlike congestion which is generally time and location specific, special events can have far reaching impacts to peripheral roads and often catch motorists off guard. To accommodate some events, roadway and lane closures must be orchestrated safely. Some events draw very large crowds for which alternate or temporary traffic control is necessary. Effective travel disruption mitigation and increased event participant safety begins with the DelDOT Special Event Permit Application.

Three years ago, DelDOT promulgated the Special Events Policy to establish guidelines and safety parameters for planned special events taking place on Delaware’s roadways. As part of this policy, DelDOT requires the organizer of a special event, which will either directly or indirectly impact the transportation system, to submit a Special Event Permit Application. DelDOT has taken steps to streamline the application process and offers the option to submit the application online. More information regarding the Special Events Policy and the Special Event Permit Application can be accessed through the “Community Programs and Services” tab on DelDOT’s website (www.deldot.gov).

In addition to events sponsored by private event organizers and planners, schools, etc., events sponsored by, and located within, municipalities require the submission of a permit application. All cities, towns and municipalities should coordinate with DelDOT to ensure public safety and to minimize travel disruptions. Municipal or

Source page for DelDOT’s Special Event Permit: http://www.deldot.gov/information/community_programs_and_services/planned_spec_events/index.shtml

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Proof: Training Saves Budget

By Don Bruey, Public Works Director (retired), City of South Jordan, Utah, Member, APWA Small Cities/Rural Communities Committee.

[This article was originally printed in the APWA Reporter, March 2013 issue; reprinted with permission.]

As public works managers we are always seeking ways to save money and improve our levels of service. This is the story of how one city, in the face of budget restrictions, funded training that successfully achieved both goals. Yes, the City of South Jordan, Utah, found a way to keep training going with a reduced overall budget, saved money and increased its service levels. How did they do it?

First, it began with the introduction of an award-winning Safety Program. Why safety first? There were three good reasons. The program saved money by reducing costly equipment damage and loss. This resulted in the savings of over ten thousand dollars alone in the first year. Next, it reduced the number of lost workdays due to personal injuries. In fact, in the first year of the program they saved the equivalent in lost man-hours of two full-time positions.

Another major benefit derived from this program was an increase in employee morale (see Maslow’s Hierarchy of Needs). The program was coached in a way that said, “This organization cares about you and your well-being.” That created an instant understanding and bonding between employees and leadership. By including employees in the process as part of a Safety Council, it bought buy-in and cooperation.

This program required internal training and time with minimal costs but was well worth the efforts. As an unexpected bonus, the City received the lowest increase in annual insurance rates in the entire State of Utah, saving tens of thousands of dollars! The Safety Program won the APWA Safety Program Award two years running.

Public Works then developed a Career Path Program that required the attainment of advanced certifications, training, and skills for each step from basic maintenance worker through the leadership staff. The program was presented to the City Manager with the projection that the training would produce additional savings and increased levels of service. The program was funded from part of the savings generated from the Safety Program and insurance cost savings. The program was approved and implemented in the next budget year. An Annual Training Plan that included managerial and leadership programs as well as technical training was created and implemented with near immediate positive results.

First, the employee responsible for the Streets Sign Program attended a class on a computerized sign-making machine. He did his homework and brought a plan forward to purchase the computer program and bring sign-making capabilities in-house. By implementing his plan, South Jordan saved nearly 25 percent of the annual sign budget including the startup costs that first year and is now replacing signs in a matter of hours rather than weeks.

Next, they sent a Streets Lead-Worker to the annual APWA Snow Conference. He came back with multiple ideas. First, the division calibrated their salt spreaders. That reduced the cost of salting during snow events from $3.48 cents per lane mile to $2.53 cents. He also learned about mixing red and white salts to work more effectively based on weather conditions. That also improved service level by improving efficiency and effectiveness of road salting.

Second, the employee learned about the advantages of pre-wetting roads with salt brine. He and his coworkers presented a proposal to build and utilize a brine system. When the numbers were crunched, they were given the go-ahead to design and build the system and dispensers. This program further reduced the cost of salting from $2.53 cents per lane mile to $1.15 cents. The mixing, storage and pumping plant was constructed in-house as were the dispensing systems for mounting on multi-use hook trucks that replaced limited-use 10-wheelers and bobtails (a plan developed by the Fleet Division to reduce fleet costs and improve usability of fleet assets). For the cost of less than $40,000, the City will save more than that annually.

Another idea came from the concrete crew. Rather than tearing out and replacing damaged sidewalks, they proposed to purchase a pumper that raised sunken sidewalks. The cost was $15,000 to start up and allowed a two-man crew to repair more sidewalk in a week than a full crew of six could replace in a month for a fraction of the cost. This idea (Continued on page 5)
Proof: Training Saves Budget

(Continued from page 4) came forward after attending a local training session on concrete care and replacement.

Their latest program came in the form of building a dispenser for GSB-88. In the never-ending struggle to keep roads in good repair, the City has a treatment program designed to extend the service life of its roads. Part of the program calls for treating roads with regenerating agents. A bid was let for GSB-88 that came in at 11 cents per square foot. When the Streets Division manager and his staff came up with the plan to build their own dispenser and put the numbers to it they determined that they could do the treatment for 4.3 cents per square foot and build the dispenser for $6,000 to be used on the same hook truck as the brine dispenser. They saved more than the cost of the system on their first job.

I give great credit to the right-headed thinking of the South Jordan leadership to continue to invest in training that has proven to pay continuing dividends in cost-effective and service level improvements in the face of tough budget decisions. I also give great credit and thanks to the young men and women that have taken that training and put it to great use. The benefits will be realized by the residents of South Jordan for years to come. It pays to train!

Don Bruey can be reached at Dbruey44@gmail.com

ITE Students Taking It On The Road

(Continued from page 2) The Traffic Bowl team of Elisa Kropat, Mindy Laybourne and Anna Duryea, competed for the fourth consecutive year against teams from Villanova, Penn State and Morgan State in a single elimination, Jeopardy style tournament. The UD team defeated Morgan State in the first round but lost to Penn State in the finals. They were outstanding representatives of the program and were strongly supported by the large number of UD alumni in the audience.

UD Engineering Students toured the USS New Jersey in Camden, New Jersey, as well as the Smithsonian Museum in Washington, D.C.

Recent Student Field Trips
Effective Transportation Management for Special Events

(Continued from page 3)

community events like parades and fireworks displays often cause significant impacts to the traveling public. DelDOT will coordinate efforts and partner with the municipality to approve the event.

One benefit of the DelDOT Special Event Permit Application process is access to information about impending road projects that may adversely affect a planned special event. DelDOT is also available to assist with developing a traffic control plan and, at the organizer’s expense, can provide assets and resources to help bring temporary traffic control into compliance with Part 6 of the Delaware Manual on Uniform Traffic Control Devices (DE-MUTCD). Part 6 deals exclusively with temporary traffic control and the standards set forth in Part 6 of the DE-MUTCD apply to all roads open for public use. Reference material regarding Delaware’s temporary traffic control standards can be found on DelDOT’s website in the “Manuals” section under the “Publications” tab.

The State of Delaware is unique among all states in that 89% of Delaware’s roads are maintained by the State, far more than in other states. Submitting a DelDOT Special Event Permit Application is the best way to ensure a safe and trouble-free planned special event. Knowing about an event beforehand allows DelDOT to provide travelers with advanced notice about delays and expectations when appropriate. Informed and prepared motorists pose less of a safety risk to planned events on the roadways. Coordinated effort and proactive traffic management for special events ensures the public safety of residents and visitors alike on Delaware’s roadways.
Recent Student Field Trips

UD Engineering Students rode with Amtrak’s engineers on the Track Geometry Car to New York and back, with an inside look at the equipment that diagnoses the health of the rails.

UD Engineering Students were hosted by DelDOT for a tour of nine Delaware bridges. Students saw the inside of steel “tub” beams, the control room and motor rooms of a lift bridge, and the substructure of several others, including two covered bridges.

The T2/LTAP Center organizes and supports many student field trips each semester to operational centers, construction sites, labs, and maintenance facilities. While these are sometimes associated with specific academic classes, most trips are centered around student groups from professional associations like ITE, ASHE, ASCE, etc. These excursions are very instructive to students as they decide how to focus in engineering and they are an important part of our workforce development charge.
The Heat’s Coming - Be Prepared

Remember last July? That was some serious heat, even for those of us that love it. Well, it doesn’t take a heat like that to get you in trouble, so prepare yourself and your crews for this summer’s heat now.

There are a host of heat illnesses you can develop, including relatively minor conditions like heat cramps, heat syncope (fainting), and heat exhaustion (heavy sweating, rapid breathing, fast, weak pulse). Generally speaking, these are your body’s way of telling you to take some remedial action.

And that’s the key with summer heat and humidity. Be smart from the outset with lots of water and loose-fitting, light colored clothes. Frequently drinking smaller amounts of cool water is better than downing a whole quart when you “can’t believe how thirsty you are.” Get out ahead of it. And, dress in clothes that don’t hold heat in - light colors are key and styles that promote air circulation around key parts of the body.

A much more serious condition is heat stroke, where the body temperature exceeds 104 °F and results usually from heavy exercise or work in hot environments with inadequate fluid intake. Symptoms include dizziness, confusion, and a rapid, strong pulse.

When these symptoms develop, quick action is important. Call 911 while you get the patient indoors or in the shade. Rapid cooling with cold water, ice, or wet towels to the torso, head, neck, and groin is important, but also keep ventilation going by fanning the patient to draw away the heat. Ironically, draping them in wet towels can actually insulate and trap the heat.

But again, prevention is the key. Don’t go crazy on the hottest days. Drag the work to the shade if you can. Make sure there’s plenty of water on the job and that everyone is making use of it.

Be safe this summer.

Delaware Tries Out New Bridge Construction Technique

(Continued from page 1) emergency response, and fewer environmental impacts. The technique affords greater flexibility for the construction schedule and site conditions. Off the shelf materials, light equipment, and no deep foundations translates to ease of construction. Because there’s no abrupt change from a flexible roadway to a rigid structure, the jarring bump can go away.

In time, DelDOT hopes to bring those advantages to local roads here. But like any tool, it has its role to play, so don’t look for these at every stream.

For more information, see FHWA’s Every Day Counts site: http://www.fhwa.dot.gov/everydaycounts/technology/grs_ibs/index.cfm.

Upcoming Events

The T²/LTAP 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.

• Highway Capacity Manual Training, June 4, 5 & 6, University of Delaware Newark Campus

T²/LTAP Center Request Form

Your feedback and interests help us increase the T²/LTAP Center’s effectiveness, so please complete and return this form or email us—all compliments, criticisms, and ideas are welcome!

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_____ I have an idea for a future T²/LTAP newsletter article
   Topic: ____________________________________________

_____ I volunteer to author this article—please contact me

_____ Please consider these topics for future training sessions
   Topic: ____________________________________________

_____ I would like to learn more about the T²/LTAP Center and how its free services can assist my municipality or agency—please contact me
   Name: __________________________________________
   Agency: __________________________________________
   Address: __________________________________________
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Please return this form to:
Delaware T²/LTAP Center, Delaware Center for Transportation
360 DuPont Hall, University of Delaware, Newark, DE 19716
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