Traffic Incident Management Training Initiative Seeks to Improve Responder Safety and Reduce Delays on Tennessee’s Roadways

by Matt Cate, P.E.

There were 167,831 motor vehicle crashes reported on Tennessee’s roadways in 2013. Of this total, 44,434 crashes injured or killed at least one vehicle occupant or road user. This translates to an average of one serious collision every 12 minutes somewhere in our state. Congestion from these incidents often generates secondary crashes, further increasing traveler delay and frustration. The longer incident responders remain at the scene, the greater the risk they, and the traveling public, face. Minimizing the time and resources required for incident clearance is essential to meeting our goals for safety and reliability.

The second Strategic Highway Research Program’s (SHRP2’s) National Traffic Incident Management (TIM) Responder Training brings police, firefighters, DOT, towing, medical personnel, and other incident responders together to engage in interactive, hands-on incident resolution exercises. Learning to coordinate response activities and optimize operations in the classroom is vital to responding effectively in the field and to building a unified national practice on incident management. SHRP2’s National Traffic Incident Management Responder Training is endorsed by the International Association of Chiefs of Police, the International Association of Fire Chiefs, and the National Volunteer Fire Council.

Tennessee’s TIM Responder Training effort is led by a group of agencies including the Tennessee Department of Transportation, the Tennessee Fire Service and Code Enforcement Academy, the Tennessee Highway Patrol, and the Tennessee Division of the Federal Highway Administration. The TIM Responder Training program has two primary components. In train-the-trainer sessions, master instructors...
RoadTalk is a publication of the Tennessee Transportation Assistance Program (TTAP). TTAP is part of a nationwide Local Technical Assistance Program (LTAP) financed jointly by the Federal Highway Administration (FHWA) and Tennessee Department of Transportation (TDOT).

The views, opinions, and recommendations contained within this newsletter are those of the authors and do not necessarily reflect the views of FHWA and TDOT.

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From the Director

Spring has sprung—at least till today. After a beautiful weekend, the weather prognosticators are calling for a hard freeze tonight. Arggghh! There go our beautiful flowers, which are just now peaking. Oh, well, if you don’t like the weather in Tennessee, just wait a few hours and it’ll change.

With my traditional weather introduction out of the way, I’ll jump into my chosen quarterly topic—freight transportation. I’ve been fortunate to be involved for the past year with the Tennessee Freight Advisory Committee. This group, assembled by the Tennessee Department of Transportation, consists of representatives of government, industry, freight transportation providers, and academia having a common interest in improving freight transportation in Tennessee.

Why is freight important? Well, there are many reasons. First and foremost, almost everything we consume, wear, use, sell, or produce touches the freight transportation system. Without efficient freight transportation, our economy, and, therefore, our standard of living, would be severely affected. Second, freight transportation uses a significant portion of our transportation capacity. This is particularly important for our public highway infrastructure. The impacts of freight on our highways must be measured and addressed. Finally, in today’s global economy, freight providers are linked into a worldwide network. The shirt I buy may travel to the store shelf via ocean vessel, railroad, and truck in its journey from the manufacturer. Problems with transportation infrastructure in faraway places affect us here in Tennessee, presenting problems for the traditional state focused transportation planning and development process.

Trucks are an important part of freight transportation, and many good people make their living in the trucking industry. However, it is well known that heavy trucks affect highway infrastructure to a much greater degree than automobiles. Whether these trucks pay taxes in proportion to their impact is an issue of great debate, and I won’t get into that. However, there is a push underway to raise truck size and weight limits on federal highways. Naturally, there is concern about the impact of these trucks on our local roads and bridges.

Our so called “shortline” railroads offer an alternative way to reach some shippers. Railroads and truckers used to be bitter rivals, but today the trucking industry is the largest overall customer of the railroads. The partnership of these two modes offers advantages to both. By reducing truck traffic, railroads actually reduce highway congestion and infrastructure impacts. Unfortunately, the shortline railroads face an uncertain future in Tennessee because of recent court decisions striking down Tennessee’s tax on railroad diesel fuel. Since the 1980s, Tennessee has invested the proceeds of this tax in upgrading shortline infrastructure, much of which was in poor condition and inadequate to handle modern railcar loads. The future of this

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valuable program is in doubt, though efforts are being made to craft new tax legislation that will satisfy the courts. Time will tell if these succeed.

That's it for now. As always, if we can help, please don’t hesitate to call or email. TTAP looks forward to assisting you. Be safe!

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provide participants with in-depth discussion and demonstration of 11 SHRP2 TIM training modules. Students who complete these 2-day classes are certified as local instructors and are qualified to deliver this material to a broader local audience. These certified instructors deliver the 4-hour TIM Responder class to local responders in agencies across the state.

In Tennessee, more than 150 participants have completed the TIM Train-the-Trainer course and more than 1,400 participants have completed the 4-hour TIM Responder class. Nationally, more than 37,000 responders have been trained using this curriculum. The results have been very positive. Washington State cleared one accident five hours faster than expected using the training techniques. Indiana reported that a multi-vehicle crash on I-70 west of Indianapolis in a driving snow storm was cleared in 5.5 hours – eliminating six additional hours of potential road closures because of the TIM training. The Tennessee Highway Patrol now requires its officers to take the training, and all TDOT field maintenance and construction personnel will have completed the TIM training by the end of 2014.

TTAP will be working with TDOT’s Traffic Operations Division to bring this important training to local agencies across the state. These volunteer-led classes are available upon request at no cost to participants. The ideal participant mix includes responders from law enforcement, fire and rescue, emergency medical services, public works and highway maintenance, and other incident responders to discuss effective crash-scene procedures that will result in improved responder safety, better communication and coordination of effort, and reduce clearance times. All participants will receive printed workshop materials that can serve as a reference after the training event.

Learn More about TIM Training

To learn more about Tennessee’s Traffic Incident Management training initiative, visit our website at http://ctr.utk.edu/ttap/tim/index.php. To learn more about TIM training or to schedule a class in your area, contact Frank Horne, TDOT Transportation Management Program Manager, at (615) 253-0042 or Frank.C.Horne@tn.gov. Please share this training opportunity with your colleagues in law enforcement, fire and rescue, emergency medical services, emergency management agencies, E-911 centers, and others that may benefit from improved traffic incident management.
How about some Transportation Planning?

by Dr. Airton Kohls (Source: Federal Highway Administration)

You may have noticed that TTAP has enhanced its continuing education program by updating and developing new workshops. We have focused in the area of Transportation Planning, offering workshops like Traffic Access Management and Planning for Special Events. Right now we are developing workshops on Planning for Operations, School Site Planning and Traffic Impact Analysis. For our training calendar, please go to: http://ctr.utk.edu/ttap/training/index.php

In the mean time I would like to share some interesting information and tools that I found on the FHWA Travel Model Improvement Program webpage - https://www.fhwa.dot.gov/planning/tmip/

The Travel Model Improvement Program (TMIP) has conducted research, provided technical assistance, and delivered training to local, regional and state transportation planning professionals since 1994. Much has changed over this period, with shifts in transport policy, advances in modeling theories, and progressions in practical lessons. Throughout, TMIP has worked to advance modeling capabilities and support transportation professionals as they respond to current and future challenges. Today, TMIP continues its mission of improving analysis practices to ensure that transportation professionals are well equipped to inform and support strategic transportation decisions.

Smart Growth Area Planning Tool

Developed through the second Strategic Highway Research Program (SHRP2), the Smart Growth Area Planning tool (SmartGAP) provides planners with scenario-forecasting tools that allow them to estimate smart growth strategies impact on peak-hour transportation, as well as its effects on sprawl, energy reduction, active travel, and carbon footprints.

The SmartGAP tool allows a user to test different scenarios for land use, population growth, and transportation strategies, and then evaluate their effects on several significant performance measures. SmartGAP tracks individual households and firms in a region to determine transportation impacts from growth. The tool has several advantages:

- Requires relatively low-resolution inputs,
- Is based on high quality science,
- Can handle complex interactions,
- Allows for a rapid configuration of scenarios,
- Provides numerous performance measures, and
- Is **FREE**, open-source, and user-friendly.

SmartGAP considers 13 built environment place types and features that address the complexity of land use and transportation interactions:

- **Congestion impacts** – Accounts for recurring and nonrecurring congestion on local streets, arterials and freeways as a function of smart growth and vehicle miles travelled (VMT) from autos, trucks and buses.
- **Induced demand** – Forecasts the change in VMT for each household due to changes in urban form as well as the short and long term induced demand effects.
- **Transportation policies** – Forecasts the change in VMT for each household due to various transportation policies, such as pricing, intelligent transportation system strategies, and vanpool, telecommuting, ridesharing and transit pass subsidy programs.

SmartGAP is a decision support tool for planners to test smart growth scenarios and evaluate their impact on travel demand. The software is designed to be accessible to land use and transportation planners with no modeling experience. In certain cases, the tool can be applied to supplement more sophisticated modeling methods.

Results from the pilot tests indicate that:

- Performance measure outputs were consistent with expectations,
- Installation and input file preparation were easy,
- Regional policy scenario testing is useful for: (a) smaller MPOs, local jurisdictions without advanced travel demand models, and (b) bigger MPOs, state agencies to pre-screen policy scenarios before undertaking extensive travel demand modeling, and
- Model run times are reasonable.

**SmartGAP software: The tool is available on the SHRP 2 Web Site.**

For the final report, software, and user’s guide visit: http://www.trb.org/main/blurbs/168761.aspx

- **R software**: SmartGAP was developed in R, an open source statistical software platform, and therefore must be installed on the user’s computer prior to running the tool. R is available at: http://cran.r-project.org/

For additional information on Smart Growth Area Planning Tool please contact Sarah Sun at sarah.sun@dot.gov
The Roadway Safety Foundation has developed a guide designed to provide community leaders and local elected officials with basic information to improve roadway safety in their communities. It is intended to be a hands-on, user-friendly document, providing you with:

- Strategies you can use to begin making roads, roadsides, and bridges safer.
- Basic information needed to work with state and local transportation departments, highway engineers, highway safety officials, civic groups, and other safety advocates.
- Clear descriptions of key funding and decision-making processes that affect roadway safety.

Roadway departure crashes account for over 50 percent of all U.S. highway fatalities each year. In 2011, 16,948 people were killed in fatal crashes of this kind. According to the Transportation Research Board (TRB), many of these casualties result from collisions with roadside objects, such as trees or poles that are located dangerously close to the side of the road. In the nation’s major urbanized areas, motor vehicle crashes cost society roughly $300 billion per year. The economic costs in medical expenses, worker losses, property damage, and emergency services compound the personal tragedies resulting from highway crashes.

Source: 2009 National Highway Traffic Safety Administration Data

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There are a variety of cost-beneficial crash countermeasures and design strategies that have been shown to be effective in reducing the number and/or severity of highway crashes. Consider what the following strategies can achieve in your community:

- Removing or relocating fixed roadside objects can reduce fatal or injury crashes by 64 percent.
- Installing a median barrier system can reduce fatal/injury crashes by 88 percent.
- Rumble strips can reduce drift-off-road crashes by as much as 80 percent.
- Restoring surface friction with timely removal of ice and snow reduces crash frequency by over 88 percent, and deicing pays for itself within 25 minutes of salt application.

Chapter 1 of the Roadway Safety Guide helps answer questions regarding the identification of roadway safety problems, who is responsible for community roads, what kind of information is needed to fully describe roadway safety problems and how to work with transportation professionals to minimize roadway safety problems.

Chapter 2 covers case studies and best practices looking at effective initiatives and techniques as countermeasures to roadway safety problems. One interesting technique being successfully used in Pennsylvania and Kentucky is the HFST – High Friction Surface Treatment. It is a common driver error to approach a curve too fast, which can cause the vehicle to skid, spin, and/or run off the road. Vehicles that approach a curve too fast require greater pavement friction to maintain controlled contact with the road. HFST projects are used in the toughest road conditions and in small sections to increase pavement grip and keep vehicles on the road.

Chapter 3 is about showcasing relevant measures that provide safety for vulnerable road users, like bicyclists, motorcyclists, young and older drivers and pedestrians. Finally, Chapter 4 and 5 provide information on how to reach out to local stakeholders and guidance on potential sources of funding, as well as information on data tools available to traffic safety professionals.

So, if you would like to add the 2014 Roadway Safety Guide to your toolbox go to:

http://www.roadwaysafety.org/.

New FHWA Pedestrian Hybrid Beacon Guide Available

by Matt Cate, P.E.

The Federal Highway Administration (FHWA) has published a new Pedestrian Hybrid Beacon Guide. The pedestrian hybrid beacon (or PHB, also known as the HAWK signal) is a pedestrian-activated warning device located on the roadside or on mast arms over midblock pedestrian crossings. FHWA has designated the PHB as one of nine Proven Safety Countermeasures. The PHB joins median and pedestrian crossing islands and road diets on this list as a proven but underutilized tool to improve pedestrian safety. The guide provides users with information on the operation and safety benefits of PHBs, guidelines and recommendations for their use, and an in-depth case study of a PHB installed on Buford Highway in DeKalb County, Georgia.

PHB Background

The PHB is a traffic control device similar to a European pedestrian signal (PELICAN) that was imported to the US and adapted by engineers in Arizona to increase motorists' awareness of pedestrian crossings at uncontrolled marked crosswalk locations. A PHB is distinct from pre-timed traffic signals and constant flash warning beacons because it is only activated by pedestrians when needed.

PHBs are becoming increasingly popular with State and local transportation agencies to fill the gap between unprotected crosswalks and full traffic signals to serve pedestrians. PHBs are useful in locations where traditional crosswalk signings and markings do not result in adequate motorist yielding rates, and where the deployment or cost of a full traffic signal would not be warranted. This includes mid-block crossings or uncontrolled mainline crossing points.

PHB Operation

The design of the PHB consists of two horizontally-arranged red lenses above a single yellow lens. As shown below, the signal face...
for drivers remains unlit or “dark” until the pedestrian activates the system. While the signal is dark, the pedestrian display shows a Don’t Walk indication. To activate the PHB pedestrians push an accessible button located on a pole or post at the roadside. The actuated beacon then begins to flash yellow to warn motorists that the beacon has been activated. This brief flashing yellow interval is followed by a steady yellow interval, then by a steady red signal indicating motorists need to come to a complete stop and wait at the stop line. While motorists are seeing the steady red indication, the Walk sign is lit for pedestrians, allowing them to cross the roadway. After the pedestrian WALK phase ends, the pedestrian signal indication changes to a flashing DON’T WALK to notify pedestrians not to begin crossing. During the flashing Don’t Walk phase, the PHB displays alternating flashing red lights to drivers. The flashing red indicates to drivers that they are to stop and yield to pedestrians in the crosswalk, and can proceed once pedestrians are clear.

**Safety Benefits of PHBs**

PHBs can lead to lower conflict and crash rates for pedestrians and vehicles. FHWA’s evaluation of pedestrian PHBs found that their installation can reduce crashes. Pedestrian crashes were reduced by 69 percent. There was a 19 percent reduction in total crashes. The research also concluded that severe crashes were reduced, while rear-end collisions did not increase. The FHWA study also suggested that crashes categorized as “severe” could be reduced by 15 percent. In addition to improving safety for pedestrians, PHBs provide benefits to motorists as well: Compared to traditional signalized crossings, PHBs reduce delays at pedestrian crossings by 50 percent.

In most states (including Tennessee) it is illegal to pass a motorist who has stopped to yield to a pedestrian in a crosswalk. However, it may be unclear to following motorists if a car is stopped for a pedestrian or for some other reason. The first yielding motorist can obscure pedestrians from the following motorists, which can lead to pedestrians being hit by “second threat” motorists. The PHB addresses this potential problem by clearly indicating that the crosswalk is being used and that all motorists must come to a complete stop.

To learn more about the Pedestrian Hybrid Beacon, view the Pedestrian Hybrid Beacon Guide online at http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwasa14014/. To learn more about other options to improve pedestrian safety, visit FHWA’s Pedestrian & Bicycle Safety website at http://safety.fhwa.dot.gov/ped_bike/.

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**A PHB in Phoenix, Arizona, provides protection for pedestrians near a high school.**

*Photo Credit: Mike Cynecki*
TALK TO TTAP

We are always looking for your comments, ideas and suggestions to help make the TTAP Program more useful to you. Please fill out and fax the form below to TTAP at (865) 974-3889 or mail to TTAP; Suite 309 Conference Center Building, Knoxville, TN 37996-4133.

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2. Please list any additional training workshops you would be interested in attending.

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