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ON THE COVER: The photo above of Houston MetroRAIL illustrates a seamless integration of light rail onto an existing roadway.

**2009 National Highway-Rail Grade Crossing Safety Training Conference**

For additional information, please visit our website at http://tti.tamu.edu/conferences/rail09/.
Texas’ population of 23 million will grow at twice the national rate between now and 2030, to nearly 40 million. Over 75 percent live in the Texas Triangle — bounded by I-35, I-45 and I-10 — with 50 percent straddling the I-35 corridor alone. By 2030, 30 million Texans will live in the Triangle, more than in all of Texas today. One outcome is certain: urban and intercity congestion in the Triangle is poised to skyrocket.

To be sure, rural Texas faces its own transportation challenges. But Triangle commerce is the heart of the entire state economy, present and future, and relies heavily on mobility for continued expansion. For that reason, congestion in the Triangle represents Texas’ foremost transportation challenge.

Sixty years and more than $1.8 trillion have given our country the world’s most advanced highway and aviation systems. With more paved lane-miles and bridges than any other state, and airports rivaling the best in the world, Texas’ unprecedented mobility today fosters more economic firepower than that of most states and many countries. But federal programs that financed transport networks during the last half century have faltered. Although promising, rumors of a federal reauthorization hold little hope for the wholesale legislative response needed to reposition U.S. transportation programs to meet 21st century challenges. And in Texas, those challenges are arriving in droves.

Texas’ population of 23 million will grow at twice the national rate between now and 2030, to nearly 40 million. Over 75 percent live in the Texas Triangle — bounded by I-35, I-45 and I-10 — with 50 percent straddling the I-35 corridor alone. By 2030, 30 million Texans will live in the Triangle, more than in all of Texas today. One outcome is certain: urban and intercity congestion in the Triangle is poised to skyrocket.

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As Texas enters its distinctively urban future, an aggressive, coordinated mobility strategy for the Triangle as a whole becomes indispensable. And these days, any effective strategy must utilize all available financial sources and tools, individually and in combination. Highways and aviation will remain the heart of our transportation solutions. But no region in the U.S. appears better suited for high-speed rail than the Triangle (distances, densities, available right-of-way, environmental); and since it would take nearly two decades to evaluate, finance and develop high-speed rail, the time for first steps is now.

In short, for Texas to maintain its economic muscle for the 21st century, transportation leadership will have to depart from more politically expedient patterns of statewide resource allocation, concentrating like never before on urban and intercity mobility in the Triangle.

True, great urban centers sometimes thrive despite congestion. But too-rapid or uncontrolled a decline in Triangle mobility will create competitive options for businesses to grow elsewhere — and most other states have come to consider Texas their “elsewhere.” Our transportation challenge is to see that Texas holds that high ground.
Like their constituencies, local communities are stretching their traveling dollars further during difficult economic times. One way they are doing that is by finding innovative uses for the capacity they already have.

For the past 30 years or so, high-occupancy vehicle (or HOV) lanes have encouraged commuters to use alternatives, like taking a bus to work or carpooling with co-workers, which ultimately helps improve both air quality and traffic congestion. High occupancy toll (HOT) lanes represent the next step in the evolution of the high-occupancy concept.

“HOT lanes allow drivers to pay a toll and still use the HOV lane, even if they don’t have enough passengers to meet the HOV requirements,” explains Senior Research Engineer Ginger Goodin, manager of TTI’s Austin Office. Goodin is principal investigator on a Federal Highway Administration (FHWA) project developing a toolkit of resources for use in evaluating the need for and implementing HOT lanes.

So who decides how much a commuter pays to drive in “the fast lane”? Value pricing — or setting the price of a service based on supply and demand, and how the consumer perceives its value — is used to set the tolls for HOT lanes. To maintain uncongested travel (important in providing HOV users an incentive to rideshare), the price for other vehicles in the lane varies based on the level of demand in the lane. Often tolls vary given the time of day, with commuters more willing to pay a higher toll at rush hour than, say, at 1:00 p.m.

As of 2009, approximately 150 HOV facilities existed in over 20 metropolitan areas in North America. Currently there are seven operational HOT facilities in the U.S., and FHWA is encouraging their broader implementation nationwide.

The FHWA toolkit includes a brochure, FAQ sheet, checklist of relevant issues to consider, case studies of successful HOT lane implementation projects and a video. These tools are aimed at decision-makers, such as elected officials or transportation policy board members, responsible for setting the transportation agenda in their communities, and practitioners, responsible for implementing those decisions. The toolkit helps users assess the appropriateness of HOT lanes for their communities and provides guidance for how to implement them.

Also in the toolkit is a set of screening criteria developed by FHWA for stakeholders to use in implementing HOT lanes. The criteria look at performance, facility and institutional considerations regarding conversion of HOV lanes for HOT use. Using these criteria, a community can assess whether or not a particular HOV facility would make a good candidate for conversion to a HOT lane.

“TTI has developed a set of tools that puts good information in the hands of those who need it,” explains Jessie Yung, program manager at FHWA. “The toolkit will help communities meet their local transportation needs.”
Toll roads and managed toll lanes, such as high-occupancy toll (HOT) lanes, can alleviate congestion and offer a convenient alternative for road users. However, such tolled facilities must first demonstrate they are financially viable to be successful. With millions, even billions, of dollars at stake with potential toll projects, the Texas Transportation Institute (TTI) is assisting the Texas State Comptroller of Public Accounts office by assessing the reasonableness of traffic and revenue reports regarding potential toll roads.

“Traffic and revenue reports contain an extensive amount of data, trends, calculations and assumptions,” explains Curtis Toews, an economist in the Revenue Estimating Division of the Comptroller’s office. “TTI’s review of these reports helps ensure that decisions are made based on accurate information.”

In an effort to more quickly generate and review preliminary toll studies and reports with their multiple variables, an enhanced toll project screening model is being developed by TTI researchers. This project is funded through TTI’s University Transportation Center for Mobility (UTCM) and builds on the Toll Viability Screening Tool (TVST) developed by TTI in conjunction with the Texas Department of Transportation (TxDOT) in a research project completed in 2004.

The enhanced model will have the ability to examine electronic toll collection, video toll collection, toll violation rates and revenue leakage (i.e., failure to collect revenue for every transaction captured). In addition to taking these items into account, this model will be accessible to a wider range of users by being solely built within Microsoft Excel®. (The previous TVST model required an add-on application to Excel that could cost several hundred dollars.)

“Both as an early screening tool and as a continuing reasonableness test, an enhanced toll project viability model will allow a user to simultaneously examine the interaction of multiple tolling variables and traffic scenarios so that agencies can make more informed decisions,” explains Beaty. “In addition, the enhanced screening tool will analyze the confidence of the resulting revenue estimates and the sensitivity of the model’s results to the input variables.”

While the enhanced model will offer great new capabilities and be a useful tool for those associated with toll road projects, Beaty believes more toll road research is needed: “Several new toll roads have been built in Texas over the last few years, and follow-up research on these roads (i.e., examining what was assumed will happen and is actually happening) would undoubtedly help us improve our initial studies for toll road feasibility reports.”

For more information, contact Curtis Beaty at c-beaty@ttimail.tamu.edu or (972) 994-0433.

TTI researchers are developing a toll project screening model to aid planners in determining the feasibility of potential tolling projects.
The Texas population is expected to more than double by the year 2030, which may lead some to wonder just how our already congested metropolitan area roadways will handle the load. The Texas Department of Transportation (TxDOT) is challenged with meeting the mobility needs of the growing population. With the help of a recently completed research project by the Texas Transportation Institute (TTI), TxDOT now has a better understanding of its role in another approach to moving people efficiently — rail transit.

“Roadway capacity has not been able to keep up with population, so looking at increasing the capacity of travel corridors through projects such as rail makes sense,” says TTI Research Scientist Jeff Arndt. “Also I think the $4 gasoline we were experiencing a year ago is a portent of days to come. We saw that not only in Texas, but nationally, there was a large shift toward looking for other options than driving alone when fuel prices got to those levels.”

The research team examined the variety of impacts of light-rail and commuter-rail projects. Specifically, the team documented the role(s) that other state DOTs have played in planning, designing, developing and operating light and commuter-rail. Then the researchers examined current TxDOT policies associated with participation in rail projects in our urban areas. Finally, the research effort linked potential impacts to TxDOT agency goals and identified
Crash course in transit safety

When Houston’s light-rail transit system, METRORail, opened on January 1, 2004, the city welcomed its first on-street rail system in 64 years. The system opened to great excitement. However, concern accompanied the excitement with an unexpectedly high rate of motor vehicle collisions with METRORail vehicles during the first month of rail service. This led to METRORail requesting the assistance of the Texas Transportation Institute (TTI) for an analysis of the rail line’s traffic safety.

A research team from TTI and the light-rail industry examined data on METRORail’s design and operations, the collisions and similar experiences of other light-rail systems. The work was initiated in early February 2004 and included a review of collisions through that time. The research team also interviewed key staff and observed the conditions along the rail right-of-way, particularly at locations where rail vehicles and motor vehicles interface.

“The most common type of collisions that occurred between motor vehicles and METRORail vehicles through the first month involved illegal left-hand turns by motorists,” says TTI Senior Research Engineer Brian Bochner. “Despite traffic signs and signals designed to control the location and timing of left-turn movements along the rail line, several motorists turned into or in front of oncoming light rail vehicles, sometimes turning from an incorrect lane. All collisions examined appeared to have been due to improper or illegal turns or other driver errors.”

While the existing safety provisions of the design were found to be generally adequate, the research team recommended some minor adjustments to the traffic control devices and found that operational practices were needed to fine tune the system and its operation to work as intended. This included such aspects as traffic control system adjustments for current operating speeds and adjustment of signing.

A number of the recommended improvements were implemented almost immediately and others followed. Since the implementation of these safety improvements, the crash rates went down from 34 in the first six months of 2004 to only 13 collisions in the last six months of 2004.

any legislative or administrative changes that would be needed in order to permit TxDOT to participate in rail projects.

“We consolidated research at a national level on transportation, social and economic impacts for those types of rail projects,” says Arndt. “We started by looking at how the federal government evaluates rail projects because that tells you what kinds of impacts they are expecting when those projects are implemented.”

The researchers found that rail systems, for the most part, meet TxDOT agency goals since they are safe, environmentally friendly, expand mobility and reduce household investment in transportation. TxDOT’s interests are more closely aligned with commuter-rail than light-rail. Their economic impact was also examined, with the team concluding that impacts are strongest in station areas, as access to rail increases the value of nearby property. The positive impact of rail on property values does not hold true for property directly adjacent to the rail line, however.

So what does this mean for TxDOT’s role in urban rail planning? “TxDOT has already served as a catalyst in exploring regional rail in the San Antonio-Austin corridor and the Houston metropolitan region,” says Arndt. “TxDOT’s ability to assist in advancing these kinds of rail projects further would be enhanced through increased funding and possibly by providing TxDOT the ability to obtain rolling stock.”

MORE INFORMATION
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In the 1970s, the governor of Texas and State Legislature asked the Texas Transportation Institute (TTI) to evaluate rail for intercity travel. Below is an abridged version of the article published on this study in the April 1977 issue of the Texas Transportation Researcher.

**Historical Overview of Rail in Texas**

In the early 1800s what is now Texas was a vast undeveloped area. Lack of adequate transportation precluded the development of the state’s inland resources.

The first railroad [in Texas was operated] in 1853. Up until 1930, when approximately 17,000 miles of track existed in Texas, virtually all of it served both passenger and freight operations. [This] early railroad construction allowed inland developments to grow [as] did the demand for intercity transportation.

As a result, in heavily traveled corridors, an interurban rail service developed. This operation provided frequent, inexpensive service and provided the conventional railroads with their first significant competition. By 1915, although the interurbs operated over only 3 percent of the track-miles in Texas, they were serving 20 percent of the intercity travel demands.

[However, from] 1920 to 1930 rail ridership decreased by nearly 75 percent. [With] the development of paved highways, the flexibility of auto travel caused it to be extremely popular, and travel by this mode increased rapidly. Rail remained, however, the premier mode of travel for long intercity trips.

After World War II, commercial air service rapidly became the most popular mode for servicing long distance travel. The bus had become the least expensive mode of travel, and the flexibility of the auto caused it to be the desired mode of travel for short trips. As fewer persons used the rail mode, its financial condition deteriorated. The U.S. Congress responded by enacting the Rail Passenger Service Act of 1970, which created Amtrack. Between 1970 and 1975, train-miles and passengers served in the state declined by 40 percent.

**Conclusions and Recommendations**

- The existing transportation capacity in both the Dallas-Fort Worth to Houston and the Dallas-Fort Worth to San Antonio corridors will be inadequate by 1990. It is recommended that action be taken to increase transportation capacity in those corridors.

- Some increased capacity will be provided by the air mode. However, this increased capacity, by itself, will not be sufficient to serve increasing passenger and freight travel. Some improvement in either highway capacity or rail passenger capacity will be needed.

- An initial comparison of highway versus rail suggests that improving highway capacity (i.e., expanding I-45 and I-35 from their present four lanes to at least six lanes) may be the better approach. It is recommended that a study be undertaken to more accurately determine the feasibility and cost of that alternative.

- In order to accommodate projected travel demand, any increase in capacity should become operational between 1985 and 1990.

- The State of Texas should become involved in multimodal intercity transportation planning. Without such planning, it is quite possible that the cost and congestion associated with intercity travel will, based on current design standards, become unacceptable. This will adversely affect the economy of the state.
The song “City of New Orleans” tells the story of a lonely train with “15 cars and 15 restless riders” making its way along the 500 miles from Chicago to New Orleans. The lyrics would have you believe that this proud, stately way of travel belongs to a bygone era.

But the Age of Rail just might be returning.

While no solution to congestion is inexpensive, simply building more roadway has become increasingly cost-prohibitive in the last decade or so.

“At one time, building more highway capacity was judged the most cost-effective way to meet mobility needs,” explains Curtis Morgan, program manager of TTI’s Rail Research Program. “In fact, TTI research conducted in the 1970s proved that point.” (See the historical story on the previous page for more on this study.)

Now, more than 30 years later, new factors, such as changing demographics and a burgeoning state population more on the move than ever, have changed the equation significantly. The Texas Department of Transportation (TxDOT) predicts that, over the next 25 years, the population of the state will increase by 64 percent, and road use will grow by 214 percent. By comparison, state road capacity will only grow by 6 percent if funding remains at recent historical levels.

“Given these projections, we asked TTI to provide recommendations on where to invest resources for developing the statewide transit system further,” explains Orlando Jamandre, TxDOT’s project director.

Morgan and his team examined 18 different intercity corridors, ranking them by projected needs through the year 2035. They based their analysis on

- Current and future population and demographic projections along the corridors;
- Projected future demand based upon forecasts by the Texas State Demographer and other state agencies and
- Current network capacity and routes for intercity highway, bus, air and rail travel.

Morgan’s team found that trains, along with enhanced intercity bus transit, have the potential to significantly aid in meeting Texas’ future capacity needs.

I-35 and I-45 — considered the most traveled corridors in the state — are currently at 80 percent capacity when measuring traffic between cities on a weighted, per-mile basis. TTI found that, by 2035, those two corridors and 11 others will exceed 100 percent of current capacity. In fact, some highway sections in the urban areas may be approaching or exceeding capacity now. Unlike their 1970s predecessors, the research team found that additional highway lanes — at today’s prices — may not be the most cost-effective way of addressing growing intercity travel demand.

TTI isn’t saying that trains and buses are the solution. Highway, air, rail and transit all have a part to play. Equally important, cities need to develop local transit options (like the Dallas Area Rapid Transit, or DART, system) that seamlessly interface with intercity solutions, so travelers aren’t left without a way of getting around once they reach their destinations.

“The results of this project will help us plan how to best optimize the state’s future transportation system,” says Jamandre.
Most mobility research focuses on urban, economically developed areas.

It makes sense — more densely packed people cause more congestion, which reduces mobility, increases pollution and poses a greater challenge to safety. But sometimes that means mobility research can overlook smaller, less-affluent communities.

To try and balance that equation, Texas A&M University and the Texas Transportation Institute (TTI) studied mobility in the border colonia of El Cenizo, 10 miles outside Laredo. The study was sponsored by the Southwest Region Transportation Center.

“We can promote a better quality of life in traditionally disadvantaged communities by improving the mobility of the people in them,” explains Dr. Cecilia Giusti, assistant professor in Texas A&M’s Department of Landscape Architecture and Urban Planning.

“But we first must understand how mobility impacts residents.”

The team considered the transportation, urban design and planning, safety (traffic and crime), public health and socioeconomic dimensions as potential indicators of residents’ mobility behaviors, environmental perceptions and quality of life. Researchers developed instruments to record residents’ perceptions and habits as well as to observe and record the community environment. What they discovered surprised them.

Rather than ride a bike or drive short distances within the colonia, residents walked whenever it was practical. This was true even at night, despite the border’s reputation as a high-crime area.

Although having small businesses in the community also encouraged walking, “we found that people walked more for social/recreational purposes, to interact with their neighbors, for example,” says Dr. Chanam Lee, associate professor in Texas A&M’s Department of Landscape Architecture and Urban Planning. “Part of that is culturally representative of the Hispanic community, but it also speaks to the mobility limitations of residents and the lack of utilitarian destinations in the colonia.”

According to the study, walking encouraged community cohesion, since residents are more likely to get to know one another. And it had another effect too — walkers have a more negative impression of their environment than non-walkers. The reason for that is simple: when you walk, you have more time to evaluate the environment around you.

Still, the prevailing feeling among residents was positive toward their community, something the researchers attribute to their personal investment in building it. Sweat equity, it seems, helps determine community self-pride.

“Although we didn’t really look at ‘sustainable transportation’ in this community, we touched on a number of its basic concepts,” explains Dominique Lord, assistant professor in the Zachry Department of Civil Engineering and associate research scientist with TTI’s Center for Transportation Safety. “The idea of building community solidarity by designing communities that encourage social activities — like walking when possible, and getting to know your neighbors — is fundamental to the idea of sustainable transportation.”

Giusti says a small investment in a community like El Cenizo can yield large returns in terms of community cohesion and safety: “Simply updating the bus stops and making sure the transit system runs on time would add significant value to the quality of life in this colonia.”

For more information, contact Dominique Lord at d-lord@tti.tamu.edu or (979) 458-3949; Cecilia Giusti at cgiusti@archmail.tamu.edu or (979) 458-4304; or Chanam Lee at clee@archmail.tamu.edu or (979) 845-7056.
A mid much excitement, the first section of Dallas Area Rapid Transit’s (DART’s) newest line, the Green line, opened on September 14, 2009. The Green line joins DART’s successful light rail network that also includes the Red and Blue lines. Along with excitement, the Green line brings a challenge to the entire DART network — an increase in train traffic through downtown Dallas.

This section of the Green line runs from just north of downtown to MLK station at Fair Park. In total, five new stations have opened with this first

TTI’s expertise and the City of Dallas’ willingness to work alongside DART.

The new TSP system was designed to detect train locations as they travel through the downtown area. The system is comprised of four components: a train detection system, a communications system, traffic signal logic and peer-to-peer messaging. Working together these components provide nonstop station-to-station travel for DART trains while maintaining the current vehicular street traffic level of service.

If designing these components to work cohesively as one system wasn’t challenging enough, coordinating deployment activities and testing the system lurked right around the bend. Full-scale testing of a system that involves passengers and runs on a schedule is difficult to do in advance. To help test the system, a simulation model was developed by TTI that can test the system at its expected capacity of 24 trains per hour in each direction. It will also give DART the capability to simulate future changes to the TSP logic to assess their impact without affecting service trains and vehicular traffic.

“The simulation model TTI built proved to be helpful,” explains Abukar. “Testing the system with multiple scenarios and variables allowed us to fully stress the system, which in turn showed us any deficiencies it had before it was launched.”

While light-rail systems present their own challenges, they are being increasingly looked at as a solution that improves mobility and air quality, bolsters economies and provides an overall better quality of life.

“A collaborative effort between DART and the City of Dallas is making DART’s light-rail system both innovative and successful,” states TTI Research Scientist Roberto Macias. “The expansion of this light-rail network and advanced TSP system offers other cities considering light-rail transit a blueprint for success.”

More Information
For more information, please contact Roberto Macias at r-macias@tamu.edu or (972) 994-0433.
Fuel prices that began rising at the end of 2007 helped ease the nation’s congestion slightly, according to the Texas Transportation Institute’s (TTI’s) Urban Mobility Report, released on July 8. The popular report found that, as a result, time wasted for the average commuter was cut by about one hour. Even so, most rush-hour travelers still spend nearly a full work week stuck in traffic each year.

Researchers Tim Lomax and David Schrank conduct the study, which has been analyzing the nation’s congestion since 1982. The Urban Mobility Report determines the annual delay per traveler and the amount and cost of fuel that’s wasted. In 2007, American commuters wasted 2.8 billion gallons of fuel for a total congestion cost of $87.2 billion, or $760 per traveler.

The nation’s 439 urban areas are studied — the top 90 locations are ranked in order of congestion, from Los Angeles, California, to Wichita, Kansas. Commuters wasted the most time in traffic in the following regions:

- Los Angeles - Long Beach - Santa Ana, California;
- Washington D.C. - Virginia - Maryland;
- Atlanta, Georgia;
- Houston, Texas;
- San Francisco - Oakland, California;
- Dallas - Fort Worth - Arlington, Texas;
- San Jose, California;
- Orlando, Florida;
- Detroit, Michigan; and
- San Diego, California.

“Chances are, most commuters did not notice the slight decrease in congestion from 2006 to 2007,” says Schrank.

“However, we think the recession will have more of an impact on rush hour in some hard-hit areas,” Schrank and Lomax believe that overall congestion in 2008 and 2009 may also show a decline as a result of the economic downturn. However, they warn that any congestion relief as a result of the recession will end as the economy improves.

“Historically, when the economy rebounds after a downturn, so does the traffic problem,” Lomax points out. “But a lot of it may hinge on the price of gasoline at the time.”

The 2009 Urban Mobility Report was front-page news across the country. About 750 television and radio broadcasts and newspaper articles were aired or written on the report.

“Getting the word out to all the media is a major task,” says TTI Director of Communications Richard Cole.

Months before it is released, reporters from across the country inquire about the issue date of the Urban Mobility Report. For months following, the report is cited by reporters when their stories focus on traffic and transportation.

Sponsors for the 2009 Urban Mobility Report were the University Transportation Center for Mobility at Texas A&M University, the American Road & Transportation Builders Association – Transportation Development Foundation, the American Public Transportation Association and TTI.
OUT OF HARM’S WAY:  
Permeable friction courses improve safety on the road

The difference is dramatic. After a downpour, one pavement sprays water everywhere, obscuring the vision of motorists and making it harder for them to steer. On the other pavement — hardly a whisper of water comes off the roadway.

The latter pavement has a permeable friction course (PFC), a porous pavement layer that allows water to drain away from the roadway. This hot-mix asphalt surface course has a high air void content, which makes it highly permeable. PFCs improve safety in wet weather conditions, since the water on the roadway travels through the air voids and off the road, instead of over the surface, and have good friction and skid resistance. Other benefits are cleaner runoff water and less roadway noise.

“We successfully completed a project for the Texas Department of Transportation [TxDOT] on mix design of PFCs,” says Amy Epps Martin, a Texas Transportation Institute (TTI) associate research engineer and associate professor of civil engineering at Texas A&M University. “Now our focus is on the performance of these mixtures.”

The questions now are — how are PFCs working for TxDOT, how long do the benefits last and can we change the mix design to make PFCs last longer? TTI with the help of The University of Texas is working to answer these questions for TxDOT. The current four-year project, led by Epps Martin, is in its first year of research on PFC performance.

PFCs are more expensive than conventional surface mixtures due to the high-quality aggregates and polymer-modified binders that are required,” says Cindy Estakhri, a TTI research engineer working on the project. “You also have the added cost of removing it at the end of its life in order to resurface the roadway. The PFC layer could potentially trap water if another surface were placed over it.”

The life expectancy of PFCs — and their benefits — are crucial questions. “PFCs tend to degrade over time,” says the TxDOT project director, Robert Lee. “The air voids fill with dirt and debris, and the surface gets compacted and worn by traffic. We need to determine how long the benefits of PFCs will last under different conditions so that long-range planners know what to expect.”

Researchers plan to study the performance of PFCs throughout Texas, under a wide range of weather and traffic conditions. At regular intervals, they will monitor the field performance of sections from previous and new construction. When they find a pavement with performance problems, they’ll identify the problem, take cores and try to determine why the pavement failed.

“We hope to be able to correct some issues in the design phase,” says Lee. “For example, we had some issues with pavements in Houston using tire rubber. The rubber was closing up the air voids in the PFCs. It’s possible that we can redesign the mix to solve that problem.”

The research project will ultimately produce a database of PFC performance, including functionality (noise reduction and permeability), durability and safety. This database will help researchers produce guidelines that TxDOT can use to design, construct and maintain its PFCs.
Institute News
TEXAS TRANSPORTATION RESEARCHER

Communications staff designs motorcycle safety trailer

The Texas Department of Public Safety (DPS) showed off its eye-catching, mobile motorcycle training unit at the Texas Transportation Institute (TTI) in July as board members of the Texas Motorcycle Safety Coalition held a meeting at the Institute.

The mobile classroom is part of the DPS Motorcycle Safety Training Program Enhancement project, which allows safety classes to be held even in rural areas. The trailer and tow vehicle were purchased by DPS using Section 2010 grant funds provided by the Texas Department of Transportation. The modern, billboard-type design was the creation of TTI Art Director John Henry using photographs by Jim Lyle.

“The mobile training unit enables us to increase our training capabilities by more than 25 percent,” says Dave Metcalf, an instructor with the DPS Motorcycle Safety Unit. “This is particularly important when the new law takes effect September 1 requiring riders to complete a basic motorcycle course before they apply for a license or endorsement.”

Lomax honored with prestigious ITE award

Citing his 30-year career of transportation research — and specifically his work with TTI’s Urban Mobility Report — the Institute of Transportation Engineers (ITE) has honored Research Engineer Tim Lomax with one of the association’s most prestigious awards.

The Theodore M. Matson Memorial Award has existed since 1957 and recognizes outstanding contributions in the field of traffic engineering. “Throughout his career, Timothy Lomax has demonstrated a strong commitment to the advancement to the transportation profession,” the association wrote in a news release about the award. “He accomplished this as a career employee of TTI, focusing on transportation research in the areas of performance measurement and mobility improvement.”

Lomax is co-author of the Urban Mobility Report, which tracks traffic congestion across the country. Lomax received the Matson Award during ITE’s Annual Meeting in San Antonio in August.

ITE/TTI celebrate past accomplishments, future relationship

Members of the Institute of Transportation Engineers (ITE) Executive Committee and International Board of Direction arrived in College Station this summer for their annual board meeting in advance of the organization’s annual meeting and exhibit in San Antonio August 9-12. While at Texas A&M University, ITE management conducted business and toured the Texas Transportation Institute (TTI) — which included a visit to the Riverside Campus for a crash test.

“This commemoration is overdue,” said TTI Agency Director Dennis Christiansen. “Since the Texas Transportation Institute was formed 60 years ago, we have had a strong and productive association with ITE. It is time we properly acknowledge the accomplishments that have been possible because of this historic affiliation.”

ITE Executive Director Tom Brahms, who has held the position since 1976, agreed. “TTI has had a huge impact on ITE because of its active leadership within our organization,” he said, pointing to the numerous TTI employees who are members of, or who have had appointments to, ITE leadership positions.

“The need for what we do has never been greater,” Christiansen said “I am confident that ITE and TTI will remain leaders in our profession as we face the difficult challenges ahead, and we will walk that walk together.”
TRB report identifies roadway surface safety issues

Two current and several former TTI researchers collaborated on a new Transportation Research Board (TRB) Circular, Influence of Roadway Surface Discontinuities on Safety, published in May 2009. The report is an update to a 1983 report and addresses hydroplaning, holes and bumps, edge conditions and positive effects of road surface discontinuities. John M. Mounce and Richard A. Zimmer of TTI collaborated with former TTI staff members Don L. Ivey, Lindsay I. Griffin III, Jack Humphreys, Dean Sicking and Bob Gallaway, as well as others on the TRB Surface Properties—Vehicle Interaction Committee to produce the report.

High speeds test TTI-designed roadside safety devices

Passenger cars and trucks slammed into a Texas Transportation Institute (TTI)-designed bridge rail in August at speeds never before tested at the Texas A&M Riverside Campus. The vehicles reached 85 miles per hour in tests designed to prepare for high-speed roadways under consideration by the Texas Department of Transportation (TxDOT).

“TxDOT is investigating very high design speeds between 80 and 100 mph to promote faster and more efficient travel within the state,” says TTI Research Engineer Roger Bligh. “We know how our roadside safety devices react to crashes performed at normal highway speeds, but above 80 mph is not something we have tested before now.”

Two of the high-speed tests involved a bridge rail modified with pipe inserts between a concrete barrier and steel rails. “The energy-absorbing mechanism did its job,” Bligh says. “But, as a result of the tests, we know these faster speeds will require a taller rail in order to ensure stability for vehicles with higher centers of gravity, like pick-up trucks.”

To be deemed successful, the roadside safety device must keep the tested vehicle stable and upright with little intrusion into the passenger compartment. As part of the TxDOT project, Bligh and his team also tested a guardrail system designed to accommodate high-speed impacts.

State Department awards TTI crash test project

The U.S. Department of State has awarded nearly $500,000 to the Texas Transportation Institute’s (TTI’s) Crashworthy Structures Program to test how existing perimeter barriers hold up to European-style trucks. The seven separate crash tests will begin this fall.

To conduct the full-scale crash tests, several of the “cab-over” trucks, commonly used in Europe and Japan, will be shipped to TTI.

“I think our main advantage in securing the contract is our ability to do so many tests in a relatively short amount of time,” said Program Manager Dean Alberson. “The large amount of space we have here at the Riverside Campus gives us a definite advantage.”

The State Department will test steel bollards and concrete “knee walls” — both designed to keep vehicles out of high-security areas, like embassies. “We know that American-style vehicles can’t penetrate the barriers...but we need to know if these cab-over trucks and vans, that have the driver directly over the engine, react any differently,” Alberson said.

Texas teen crash rate declines, TTI program shares credit

During a July news conference in Austin, Texas Transportation Institute (TTI) Agency Director Dennis Christiansen and the chair of the House Committee on Public Health, State Rep. Lois Kolkhorst, touted the connection between the TTI’s Teens in the Driver Seat (TDS) program and the dramatic decline in teen fatalities in Texas.

Teens in the Driver Seat, which began in 2003, is a peer-to-peer public awareness campaign in which teenagers encourage their friends to drive safer by being aware of the causes of teen crashes — driving at night, cell phone use and having too many kids in their car. TDS has been implemented in 300 Texas high schools.

The state capital event was planned after a TTI study examined teen fatal crash rates in 37 states, all of which had a graduated driver license (GDL) law in place for at least five years. (GDL laws place restrictions on new drivers, such as how late they can drive at night or how many passengers they can have in the car.) The study found that teen fatalities in Texas dropped 32 percent from 2002 to 2007, much more than any other state.

Representative Kolkhorst, who co-authored the GDL legislation, told the media that the TDS program deserves much of the credit for lowering the teen death rate because “this is something we can teach and we can empower these drivers to control their destiny.”

“Our research team found that a graduated driver license law can be made more effective when it is reinforced by a peer-to-peer effort like the Teens in the Driver Seat program,” Christiansen said. “We have made great progress, but there is much more to be done.”

State Rep. Lois Kolkhorst answers questions from the media during a news conference in Austin about a new TTI study that shows a dramatic decline in teen crash deaths in Texas. Also addressing the news conference were TTI Agency Director Dennis Christiansen and Laredo High School Student Albert Torres.
TECHNICAL REPORTS


“Driver Comprehension of Managed Lane Signing,” by Sue Chrysler, 0-5446-3, September 30, 2009.


“Studies to Determine the Operational Effects of Shoulder and Centerline Rumble Strips on Two-Lane Undivided Roadways,” by Melissa Finley, 0-5577-1, August 21, 2009.


PROJECT SUMMARY REPORTS AND PRODUCTS


“Guidance on Mitigating Impacts of Large Distribution Centers on Texas Highways,” by Brian Bochner, 0-5335-1, September 17, 2009.


