

TEXAS TRANSPORTATION

Researcher

A Publication of the Texas Transportation Institute • Member of The Texas A&M University System • Vol. 38 • No. 2 • 2002

The Urban Mobility Challenge: *Creating, Operating and Understanding the System*

- Annual Mobility Study Results
- Managed Lanes Research
- Air Quality Campaign Launch

VARIOUS LANES CLOSED
9AM - 3:30PM

Improving our urban transportation systems

TTI research plays an important role

Three Texas urban areas grew enough from 1990 to 2000 to rank in the nation's top twenty population growth cities. Urban areas are centers of industry, finance and manufacturing and hubs of interchange for commerce and tourism. The dynamic growth of Texas cities testifies to their strength, vitality and contribution to our state's economic health.

It is in these areas, however, where many of the most serious transportation problems exist. Based on Texas Transportation Institute (TTI) estimates developed as part of its research program, the annual cost of congestion in Texas cities exceeds \$6 billion. Congestion, with its associated motorist delay, disruptions due to traffic incidents, and air pollution can lessen the quality of life enjoyed by Texans and the economic competitiveness of urban regions throughout the state.

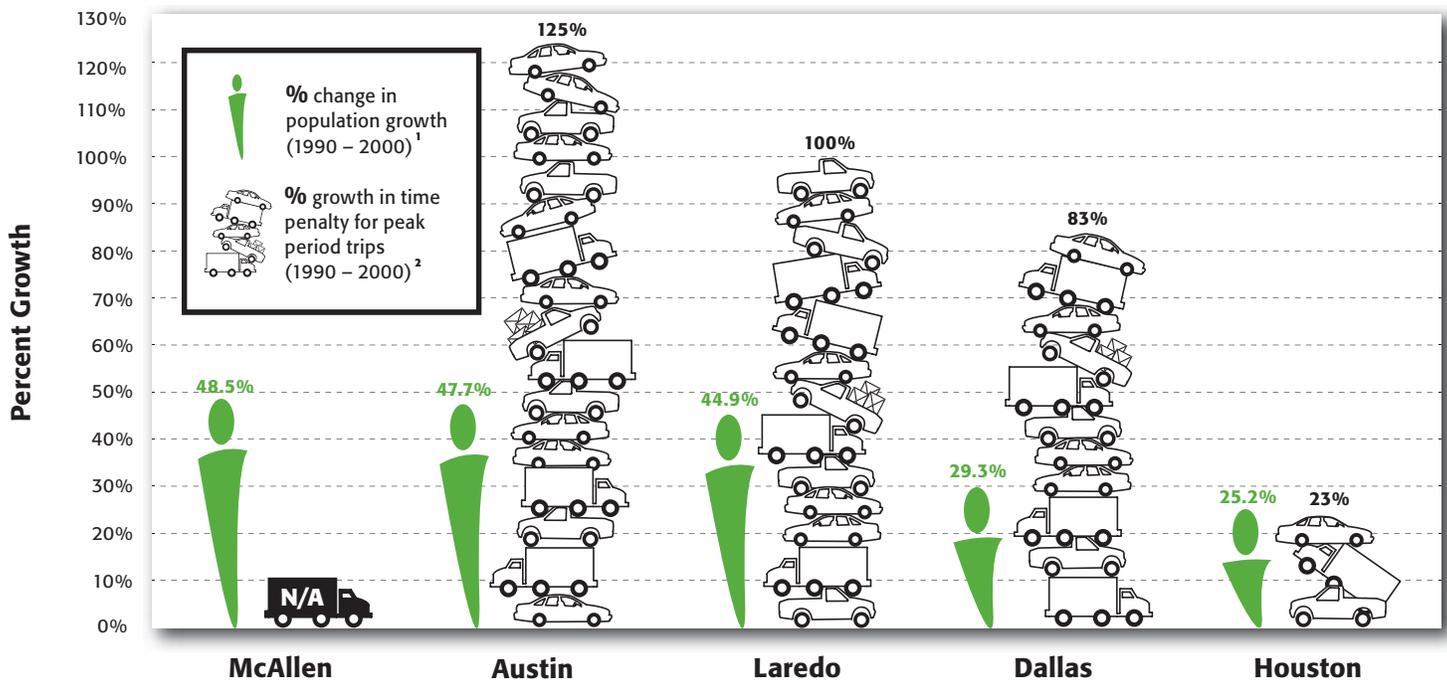
TTI maintains urban offices in Arlington, Austin, Dallas, Houston and San Antonio. In these urban laboratories, researchers have the opportunity to work on a daily basis with those responsible for addressing the challenges. This interaction is essential to an applied program of research, development and technology transfer. A presence in the urban setting—where many of TTI's research findings are being implemented—enhances the overall research program by facilitating definition of research topics, data collection, evaluation and im-

provement of new technologies and methodologies. It also facilitates technology transfer of research findings directly to the practitioners within the various agencies.

These offices are also beneficial to the education of the many students who work within the TTI research program, as well as to development of the transportation workforce. For instance, through its Texas Summer Transportation Institute, TTI provides summer training to help university partners in Dallas, Houston, and San Antonio attract new students to the transportation profession.

Since 1950, TTI researchers have helped develop tools and methodologies that enable transportation professionals in Texas' cities to effectively address the mobility challenge. The Institute's pioneering research on freeway operations and automated traffic signal technology during the last half of the twentieth century led to the implementation of solutions such as freeway surveillance and control, high-occupancy vehicle (HOV) lanes, automatic vehicle identification technology, signal timing software, and many of the other intelligent transportation system (ITS) technologies used in today's traffic management centers. As we move into the 21st century, TTI research will become increasingly essential in addressing the wide-range of transportation-related problems confronting Texas. **R**

Five Texas cities are among the 20 fastest growing cities in the nation



1. U.S. Census Bureau

2. Urban Mobility Study (Texas Transportation Institute)

2002 Urban Mobility Study

Annual study shows traffic jams as a growing triple threat

Urban Mobility Study Sponsors

- California Department of Transportation
- Colorado Department of Transportation
- Florida Department of Transportation
- Kentucky Transportation Cabinet
- Maryland State Highway Administration
- Minnesota Department of Transportation
- New York State Department of Transportation
- Oregon Department of Transportation
- Texas Department of Transportation
- Virginia Department of Transportation.

The nation's longest-running study of traffic jams this year shows urban congestion growing in three increasingly visible ways.

- The time penalty for making “rush-hours” trips is greater.
- The period of time that travelers might encounter traffic congestion is longer.
- The percentage of streets and freeways that are congested is higher.

Upon examination, the annual report from the Texas Transportation Institute (TTI) reflects a classic good news / bad news scenario.

The good news is that there are solutions—more roadways and transit, ramp metering, HOV lanes, incentives to make trips at different times and better incident management (clearing accident scenes more quickly, etc.)—that can make a positive difference in addressing the problem. The bad news, researchers Tim Lomax and David Schrank say, is that even if transportation officials do all the right things, the likely effect is that congestion will continue to grow, even if more slowly, because not enough is being done.

An important part of controlling that congestion growth, they say, has to do with making roadway systems more *reliable*—a quality that leads to a more consistent commuting experience for travelers. Predictable and regular travel times have a growing value for businesses and urban travelers. Crashes, vehicle breakdowns, weather, special events and ever-present road work can have a dramatic effect on the reliability of transportation systems. The researchers point out that while ramp signals, carpool lanes and other operational strategies may produce a modest decrease in congestion, they can also significantly reduce variations in how roadways operate, and reduce traveler frustration in the process. “It’s also important to create more travel options, such as ways to pay to avoid congestion, and to apply a broader set of urban development strategies,” says Lomax. To implement these improvements, regions need to gain a consensus plan, agree on a funding package and implement the strategies in the plan.

Even the best efficiency-boosting ideas can’t entirely take the place of new roads, however. “The few cities that have added roads at the same rate that they’ve added car travel have seen slower congestion growth,” Lomax says. “The important thing to remember, however, is that roadway expansion isn’t a ‘wonder drug.’ It is very difficult to sustain the funding and approval that is required to use that as the only strategy.”

This year’s annual report also introduces “delay per peak period traveler” to better illustrate

the plight faced by those who use major roadways during “rush hours.” Lomax and Schrank say the new measure provides a more relevant illustration of the extra time spent traveling when roadway demand is at its highest. The new measure was made possible this year by a more thorough and comprehensive database of roadway and travel information drawn from several sources, as well as ongoing refinements in the annual study’s methodology.

Averages in the 75 study areas illustrate the growing severity of the triple threat faced by America’s travelers.

- The annual time penalty has jumped from 16 hours in 1982 to 62 hours per peak period traveler in 2000.
- The period of time when travelers might experience congestion has increased from 4.5 hours in 1982 to 7 hours in 2000.
- The volume of roadways where travel is congested has grown from 34 percent in 1982 to 58 percent in 2000.

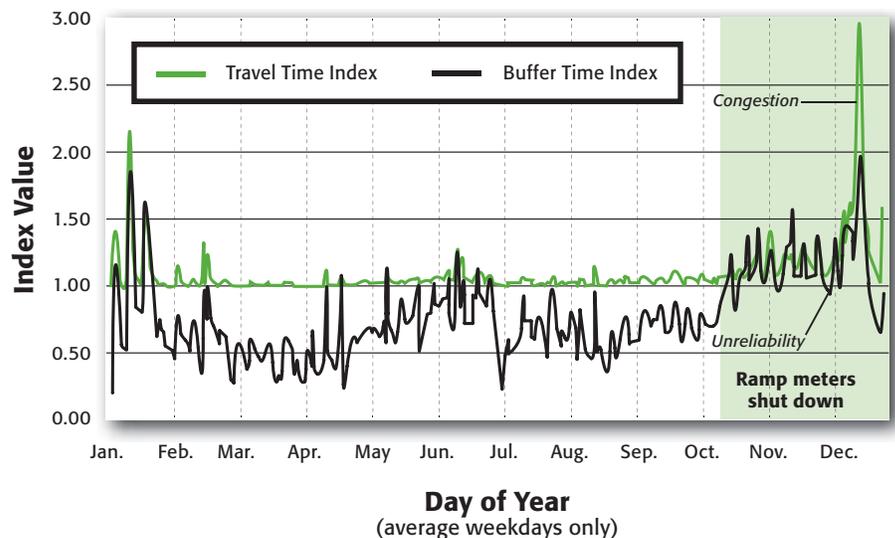
The Urban Mobility Report is produced annually by TTI and funded by a consortium of 10 state transportation agency sponsors. 



For more information, contact **Tim Lomax** at (979) 845-9960 or t-lomax@tamu.edu, or **David Schrank** at (979) 845-7323 or d-schrank@tamu.edu

Related Publication: 2002 Urban Mobility Report

The ramp meter system clearly improved transportation service in Minneapolis–St. Paul



Mobility research presented at U.S. and Texas Senate Committee Hearings

“First, a truth. Road construction can help reduce the growth of traffic congestion. Second, a myth. We should invest all our money and effort in adding roadways.”

—Tim Lomax

Explaining the research that supports the above realities was the focus of testimony given by Texas Transportation Institute Research Engineer Dr. Tim Lomax to the United States Senate Committee on Environment and Public Works in March, and then to the Texas Senate Affairs Committee in April.

Establishing the severity of the growing traffic congestion problem across the country was an important element of the explanation. Lomax pointed out that in the 75 urban areas studied over the last 19 years, the travel time penalty has increased 180% since 1982, with that number jumping to over 250% in areas with populations of 500,000 to 3 million. This translates into growth from 750 million hours of delay in 1982 to 3.6 billion total hours of delay due to traffic congestion in 2000.

“Our study only covers 75 of the approximately 400 urban areas in the United States, but it includes all of the largest 40 urban areas—and most of the U.S. urban travel delay,” said Lomax in response to questions from the national committee.

With regard to the truth and myth about constructing more roadways as a solution to congestion, Figures 1 and 2 illustrate why it’s not a panacea. Figure 1 shows three lines indicating the dramatic difference in travel time penalty growth between areas that added roads at a rate close to the rate of travel growth and those areas that added few roads in relation to their travel growth. The cities in the bottom group added roads at a rate close to travel growth, and the time penalty only increased 57% in those areas. Time penalties increased 245% for the “least aggressive” roadway adding areas. So clearly, adding roads can help.

But Figure 2 shows why it is unlikely that a strategy of investing all of the funds and effort in adding roadways as the only solution to congestion will succeed. Since 1982, urban areas have added only about half the roads needed to stop the growth in travel delay. And much of this “added” roadway is really just streets and highways that have been redesignated from rural to

urban. The figure shows that the percentage is about the same for all four urban population ranges tracked in the study. “Whether the city is small or large, lack of funding, land, public support, and environmentally supportable alternatives make it impossible to add roads quickly enough,” says Lomax.

So where do we look for solutions? According to Lomax, even if road construction can’t keep pace with annual traffic growth, adding roadways is part of the solution. However, there is a range of several alternatives that can slow the growth of congestion and make travel conditions more reliable. “Our studies show it will take a set of alternatives including construction, operational improvements, transit and carpool enhancements, incident managements programs, and demand management.” **R**

Percent of Roadway Added

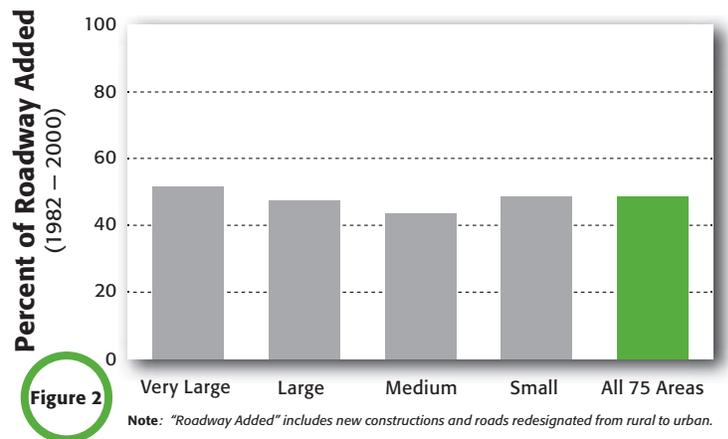
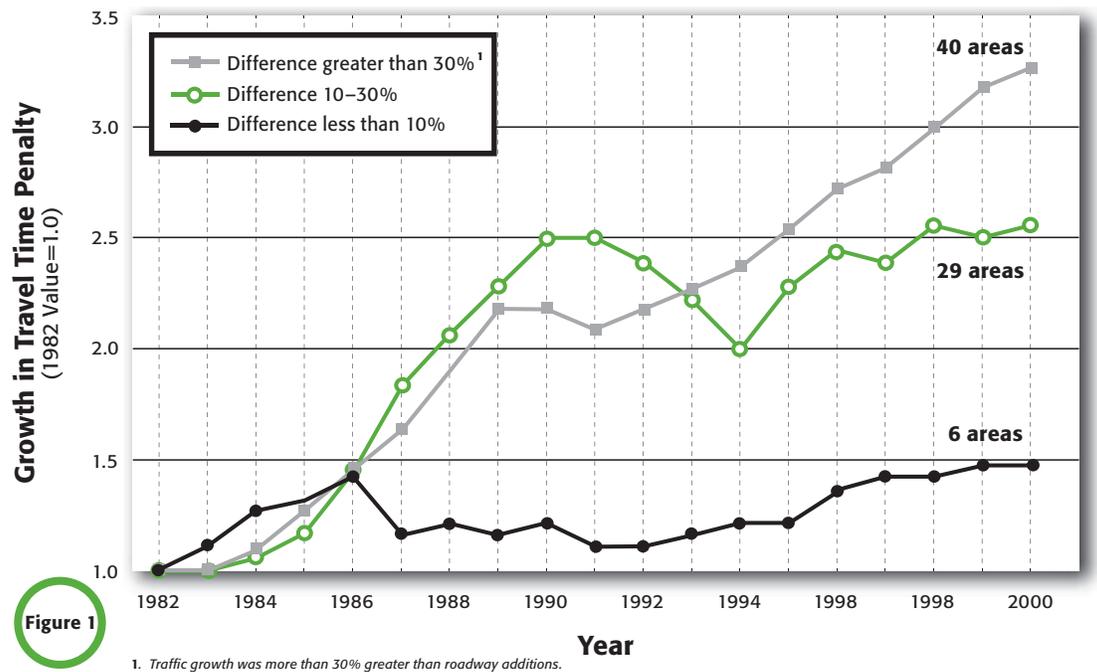


Figure 1. Road Growth and Mobility Level



Creating a Flexible System

Reconstructing high volume roadways

Researchers to identify best practices for increased safety and mobility

Urban freeways and arterials are designed to move vehicles quickly and with limited interruptions. When construction or maintenance is required on these high-volume roadways, safety and mobility can be compromised.

The Texas Transportation Institute (TTI) is currently working on a project to identify and document safe and timely practices for reconstructing high-volume roadways using concrete pavements. The project is sponsored by the Innovative Pavement Research Foundation. The project tasks include:

1. Gather and summarize existing information and surveys of motorists and local residents that identify perceptions about road closure and disruption due to pavement rehabilitation and reconstruction.

2. Identify, study and document existing projects (during construction) to establish the best practices for reconstructing high-volume roadways using concrete pavement.

3. Citing specific projects, demonstrate viable approaches for determining the public's needs and expectations and how these were incorporated into the traffic management process.

4. Identify and recommend proposed reconstruction projects suitable for conducting traffic management conceptual studies.

5. Organize, conduct and document up to five conceptual studies. These will be studies of actual roadways requiring reconstruction in the near future.

6. Summarize the information gathered from the studies of ex-

isting projects and conceptual studies in formats suitable for technology transfer.

The project is split into two phases. TTI recently completed the first task in phase one, which involved gathering literature and reviewing public opinion surveys related to construction projects in high-volume traffic roadways. Another task in the first phase is to look at actual projects under construction and document what the departments of transportation (DOTs) are doing in traffic management control, public perception and public awareness campaigns, as well as how they handled construction-related issues. Two studies have been completed using projects from the Michigan DOT, and two other studies are underway.

"The whole idea is to identify success factors and how these success factors might apply in other concrete paving projects under high traffic volumes."

"We wanted to find out what measures different DOTs are using to inform the public and what they are doing to gain public support," says Stuart Anderson, program manager in the Materials and Pavements division at TTI, who heads the project. "The whole idea of that is to identify success factors and how these success factors might apply in other concrete paving projects under high traffic volumes."

The project has started phase two, which focuses on conceptual planning. Researchers have taken the information gathered in phase one and are using it to conduct workshops for projects that are in the late programming or early design phase. The purpose of these workshops is to brainstorm ways to manage traffic, construction and public relations campaigns.

The TTI research team performed its first conceptual planning workshop with the Mississippi DOT and is currently working with the Washington DOT in Seattle to perform a study on I-5 through downtown Seattle.

"The workshop was very beneficial," says Danny Walker, assistant district engineer with the Mississippi DOT. "We had a big concern about making our traffic plan as user-friendly as possible, and it was good to have someone there with Stuart Anderson's background in dealing with a variety of complex projects to offer advice and reinforce our plans." **R**

For more information, contact **Stuart Anderson** at (979) 845-2407 or s-anderson5@tamu.edu



Managed lanes offer choices, flexibility

The term “managed lanes” may be unfamiliar to many people, even those within the transportation community. This relatively new term encompasses a variety of strategies and facility types used to increase freeway efficiency. Managed lanes are typically separate or exclusive lanes that package operational and design strategies to offer flexibility in matching changing needs and goals.

“People hold different perceptions of what the term ‘managed lanes’ means. When we use it, we are referring to the evolution of high-occupancy vehicle lanes to include a wide variety of management tools and techniques,” explains Ginger Goodin, Texas Transportation Institute (TTI) associate research engineer.

In a particular corridor, for example, managed lanes might be used specifically for high-occupancy vehicles (HOVs), single-occupancy vehicles, commercial vehicles or special uses. Strategies might include time-of-day adjustments, vehicle type restrictions, fee-based use or incentives to rideshare.

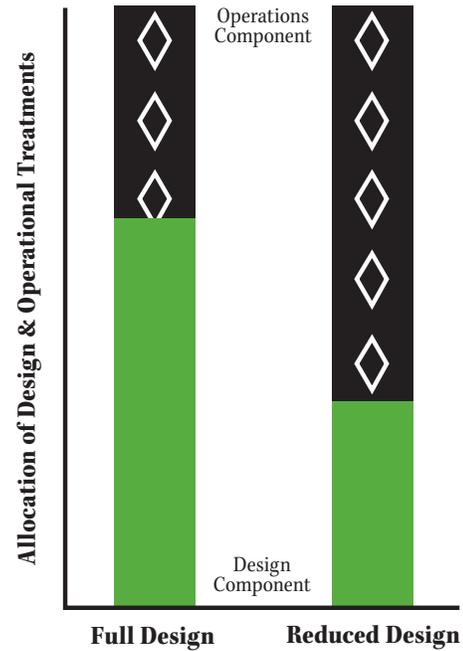
Establishing a Framework

In 2000, the Texas Department of Transportation (TxDOT) and TTI began a one-year project designed to provide preliminary guidance for planning, operating and designing managed lanes in Texas (Project 0-4161). The project resulted in guidelines for managed lane facilities regarding:

- Identifying roles and responsibilities of agencies and groups and planning for general-purpose lane conversion, priority pricing, public involvement, environmental issues and other issues
- Operational concerns such as access management, vehicle eligibility and requirements, hours of operation, transit service, enforcement and incident management
- Design elements including geometric characteristics and design criteria, cross sections, access type and location and enforcement area design
- Signs and pavement markings necessary for clear and consistent information
- Additional research needs

The findings highlight the relationship between design and operations components, notes Bill Eisele, TTI associate research engineer and co-research supervisor on the project with TTI assistant research engineer Angelia Parham.

“A facility built to full design needs fewer operational treat-



ments than a facility built to a reduced design,” explains Eisele (see figure above). “For example, in the real world we often have to retrofit managed lane designs into existing roadways. If we can’t spend as much money or take as much space as we need for a full design, a retrofit facility might need increased technology applications to detect and clear incidents. With a combination of design and operation treatments, an effective project can be implemented and achieve good results.”

Expanded Investigation

A multi-year project is now underway investigating the broad scope of interrelated issues surrounding managed lanes (0-4160).

Benefits

“One of the biggest potential benefits of a managed lane facility is that it provides motorists with travel choices,” says TTI Associate Research Engineer Beverly Kuhn. “Normally, in congested areas motorists can either drive a car and sit in traffic or take transit and sit in traffic. With managed lanes they can choose to carpool, take transit vehicles with reliable trip times, pay a toll to avoid congested lanes or choose other alternatives that improve travel time and trip reliability.”

In addition to offering choices to motorists, the concept is giving transportation professionals increased options to address congested freeways. Managed lanes represent a tool available to the transportation community to use as part of a comprehensive plan to achieve regional goals. They can:

- Add flexibility to daily operations and incident management
- Maximize use of existing capacity
- Manage demand
- Offer choices to planners and motorists
- Improve safety
- Generate revenue

“Some corridors, particularly in heavily populated urban areas, are unable to expand existing facilities due to limited space or money. They may face right-of-way constraints or community concerns that prevent expansion. Managed lanes may provide an option for improved mobility on these corridors and give planners and designers alternative choices,” notes TTI Associate Research Engineer Ginger Goodin.

The project, which runs through 2005, is developing guidelines for planning, designing and operating managed lanes.

“This project is approaching the concept from a variety of ways. One of the main tasks accomplished this year is evaluation of operational scenarios and design needs,” says Carlos Lopez, TxDOT Traffic Operations Division director and project director. “We have identified what we need to look for in planning and designing managed lane facilities, and the information will be helpful to the entire transportation industry.”

An advisory group comprised of individuals directly concerned with managed lanes was established to help guide the project. Toll authorities, cities, counties, metropolitan planning organizations and TxDOT division and district personnel are participating in the group.

“The idea is to create an opportunity for dialog among major stakeholders to bring out issues that can be addressed during the research or to give an opportunity to bring forward ideas from several perspectives,” says Beverly Kuhn, associate research engineer, who serves as TTI co-research supervisor of the project with Goodin.

The current project integrates previous work regarding HOV lanes with ongoing activities. Researchers are also working with the American Association of State Highway and Transportation Officials (AASHTO) by assisting in the update of its design guidelines for both HOV and park-and-ride facilities.

The project’s website serves as a growing resource for managed lane information and interaction (managed-lanes.tamu.edu). In addition to links to projects across the country, the website contains a calendar of events, a quarterly newsletter, and project reports and products as they become available. The project maintains an electronic distribution list for communicating with people interested in managed lane projects.

“The challenge of this project is to make it as applicable as possible across the state,” says Kuhn. “Every community has different goals for potential managed lanes. We are working with TxDOT project managers to provide resources and to help identify what approaches will work best to meet specific community needs.” The current project has produced position papers for statewide use with media and policy makers, and researchers are also looking at the challenge of interoperability with technology necessary for operation.

“Managed lanes are a moving target,” says Lopez. “We are learning something new about them every day. This project is recognized as the most extensive managed lanes research going on right now anywhere in the country.” **R**



For more information:

Bill Eisele, (979) 845-8550 or bill-eisele@tamu.edu
Angelia Parham, (979) 845-9878 or a-parham@tamu.edu
Beverly Kuhn, (979) 862-3558 or b-kuhn@tamu.edu
Ginger Goodin, (512) 467-0946 or g-goodin@tamu.edu

Related Publications: 4161-S, *Guidance for Managed Lane Facilities in Texas*; 4161-1, *Guidance for Planning, Operating, and Designing Managed Lane Facilities in Texas*; 4160-5, *Developing a Managed Lanes Position Paper for a Policy-Maker Audience*; 4160-6, *Developing a Managed Lanes Position Paper for a Media Audience*

Value Pricing: *What’s it worth to get there faster?*

Value pricing is a concept that may help manage congestion by providing enhanced travel choices using monetary incentives.

It might work like this—

A congested freeway corridor has a wide median, but the transportation department will not have funds to widen the freeway for several years. However, a toll road authority can build a lane in the median sooner if drivers pay a toll to use it. The toll can be collected using freeway-speed electronic tolling (instead of traditional toll plazas), so the lane is built in the near term and pays for itself instead of waiting for tax-funded improvements.

Given the option of the toll lane or the free lanes, drivers can choose which best suits their needs based on the urgency of their trip. Typical “urgent” trip purposes include: not missing a flight at the airport, not missing a child’s soccer match, being on time to a critical work activity, or not being late to child care where late fees of \$1.00 per minute may apply. Each driver decides for her or himself whether or not the trip is worth a typical toll. Drivers choose to pay the toll when the value of their trip is worth the money—hence the term “value pricing.”

Like other capacity-limited services (e.g., airlines and electric utilities), the fees for these toll-financed lanes can be adjusted to keep the priced lanes flowing smoothly. Examples of value pricing projects are underway on:

- SR-91 in Orange County, CA
- I-15 in San Diego, CA
- Lee County bridges in Fort Myers, FL
- I-10 (Katy) Freeway high-occupancy vehicle lane in Houston, TX

Do bottleneck improvements really reduce congestion?

What is a “bottleneck”? Congestion problems in this category can be visualized as the neck in an hourglass. Not enough capacity for just a short distance, but a constraint that stacks up traffic.

What is all the fuss about? These are projects without a dedicated funding source. Not large enough to be studied as major investments, but too large or complex to be fixed in a few hours by a maintenance crew.

To meet a recognized need of the profession to better understand the impacts of projects designed to reduce or eliminate bottlenecks, the Texas Transportation Institute (TTI) on occasion collects before and after data to determine whether an improvement in travel time or capacity has been realized. Over the course of many years, a database has been developed showing results of selected Texas Department of Transportation (TxDOT) initiatives to remove bottlenecks and improve the operations of urban freeways. Many lessons have been learned from examining this database.

An example is a recent effort in the Dallas district to improve merging/weaving at the entrance to southbound US 75 (North Central Expressway) from the recently constructed President George Bush Turnpike. The problem was at its worst during the morning peak period, as is shown in the photo to the left obtained by the North Central Texas Council of Governments, which sponsored a Low-Level Aerial Photography Assessment of the entire Dallas/Fort Worth urbanized area in 1999. Not shown in the photo is the cause of the bottleneck, which was a forced merge of the ramp traffic into the southbound mainlanes of US 75.

Figure 1 illustrates the solution developed by TxDOT in conjunction with the City of Richardson. The restriping improvement was implemented recently, and TTI was asked to evaluate the benefits. Before and after data established that each vehicle using the ramp connection averaged one minute in travel time savings, with a peak savings of over three minutes. At the same time, mainlane traffic maintained or enjoyed a slight increase in speed; volumes increased on both facilities. An annual benefit of over \$500,000 in delay savings was calculated based on morning peak period traffic alone, compared to an implementation cost of less than \$20,000.

Why are more of these types of projects not being implemented wherever bottlenecks exist? Although the dollars are small, there are no dedicated moneys for them; implementation comes from the maintenance budget, and potholes and damaged guard rails must take precedence in a budget that is constrained. TTI's research effort has been directed toward review of benefits that result from the selected projects that have been evaluated. Eventually, this may provide planners adequate data to consider a wider program. A sampling of other evaluation results is included in Table 1.

In Table 1, the ramp reversal designed by TxDOT converted a little used exit ramp to an entrance ramp from the eastbound collector roadway paralleling the mainlanes in the “Canyon” near downtown



Dallas North Central Expressway

To meet a recognized need of the profession to better understand the impacts of projects designed to reduce or eliminate bottlenecks, the Texas Transportation Institute (TTI) on occasion collects before and after data to determine whether an improvement in travel time or capacity has been realized.

Table 1 ▶ Cost evaluation results.

Location	Facility and Direction	Improvement	Cost	Benefit/Year
El Paso	I-10 East at US 54	Auxiliary Lanes	\$530,000	\$1,300,000
Dallas	I-35 E., I-635 to Loop 12	Shoulder Conversions	\$1,900,000	\$11,000,000*
Dallas	I-35 E. North, I-30 to Tollway	Auxiliary Lanes	\$130,000	\$600,000*
Dallas	I-30 East, I-35 E. to I-45	Ramp Reversal	\$660,000	\$740,000*

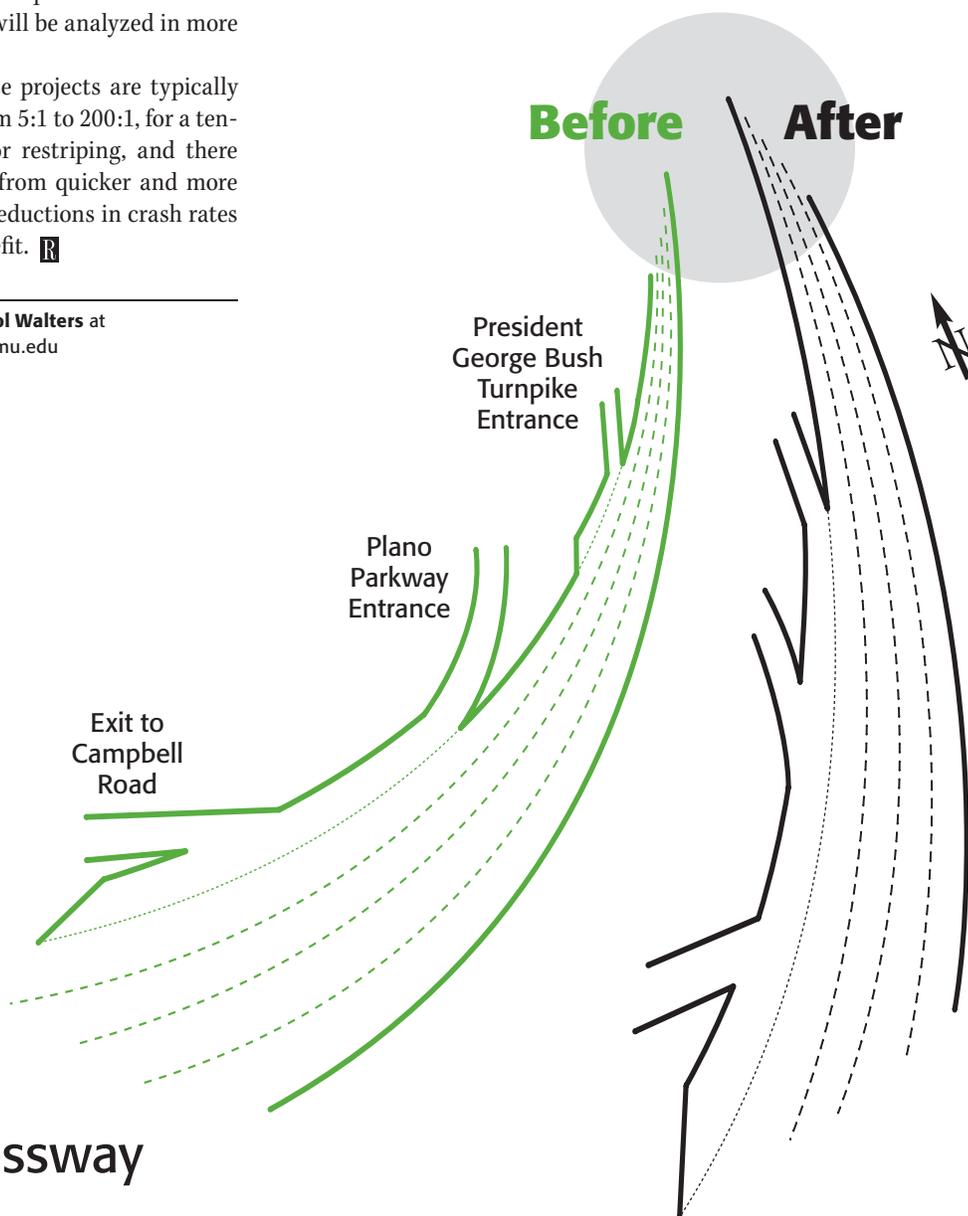
* Benefits due to reduction in delay only. Crash data not yet available.

Dallas. This allowed bypassing a constrained weave section that was backing up I-35E southbound. Additionally, the weave occurs on a fairly tight curvature, a contributor to rollover problems for trucks during off peak time periods. Crash records will be analyzed in more detail when available.

In general, benefit-to-cost ratios for these projects are typically high, averaging around 20:1, with a range from 5:1 to 200:1, for a ten-year life. Costs are low, sometimes only for restriping, and there are thousands of freeway users who benefit from quicker and more reliable travel time. Further, in some cases, reductions in crash rates have been noted over time, adding to the benefit. **R**



For more information, contact **Carol Walters** at (817) 462-0523 or c-walters2@tamu.edu



North Central Expressway

Figure 1 ▶ Lane layout

Reversing the flow: Corpus Christi unveils new hurricane evacuation plan

The citizens of Corpus Christi were very shaken when Hurricane Brett, a Category 4 hurricane with top winds of 140 miles per hour, swirled around the Gulf of Mexico picking up steam as it headed toward the Texas coast. As Brett approached the coast, forecasters feared the hurricane would strike the highly populated city, but the storm turned south and came ashore in sparsely populated Kenedy County the early evening of August 22, 1999.

Because it took most people on the I-37 route to San Antonio an average of 3-5 hours just to get out of Corpus Christi, had the storm not turned south, the results would have been catastrophic. Later that year, Hurricane Floyd slammed the east coast. Even though there were deaths due to flash flooding and storm surge, many residents were spared due to reversing the flow of traffic on interstate highways. The resulting evacuation for Hurricane Floyd was the largest in United States history: six million people.

In the wake of these two storms, the city of Corpus Christi and the Texas Department of Transportation (TxDOT) realized the need to revise the area's hurricane evacuation plan. With assistance from Texas Transportation Institute (TTI), the plan was revised, modeled after the reverse-flow method used in the Carolinas.

TTI analyzed numerous alternatives using traffic simulation models with graphical user interfaces to visually show vehicles moving on the roadway network.

"The models available today provide the very high level of detail necessary for this project," says Russell Henk, lead researcher for TTI. "We needed to figure out what was going to happen at every intersection, and what was going to happen when we reversed flow on I-37—when the entrance ramps became exit ramps and vice versa."

The model was important to illustrate any potential problems in the network such as a critical point of congestion that could quickly create a non-recoverable traffic jam. "This is particularly true in an emergency condition where you have people who are unfamiliar with the route and there's an underlying sense of chaos among the evacuees," says Henk. "These people are not just worried about where they are going, but also what's going to happen to their home and their belongings—it gets pretty complex. When you also begin to try to factor in the evacuation of the elderly and ill from nursing homes and hospitals, it gets to be a real challenge. It is certainly not a 'normal' set of circumstances."

As the effort progressed, TTI presented the results of its findings to, and facilitated consensus-building among a 50-member hurricane evacuation committee which consisted of representatives from:

- TxDOT,
- Texas Department of Public Safety (DPS),
- Fire and Emergency Medical Services (EMS) officials from Corpus Christi and San Antonio,

- County sheriffs and cities along the evacuation route,
- Texas State Guard, and
- City of Corpus Christi.

According to Henk, the full support of the hurricane advisory committee was essential to the adoption of the new plan. The consensus of the committee was, with the adoption of the new plan, to reverse flow for approximately 90 miles of I-37. Estimates from the model showed that reverse flow would increase evacuation significantly by allowing over 40,000 more citizens to evacuate during a 12-hour period.

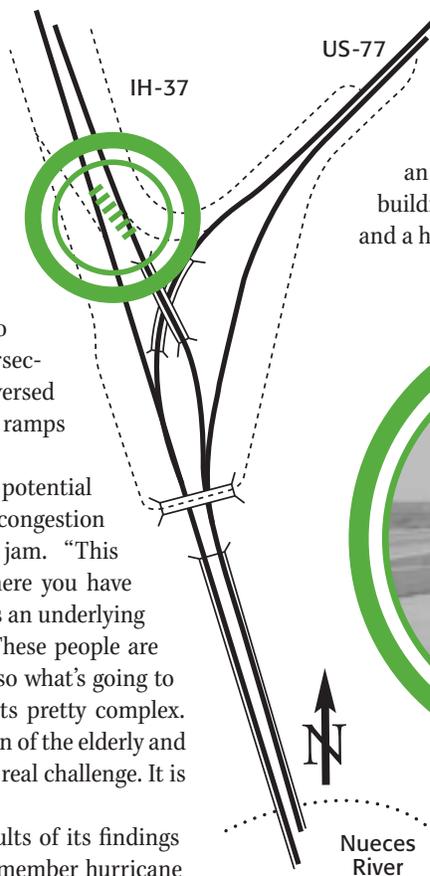
TxDOT presented the plan to county commissioners, with the meeting being broadcast over public access television. The plan met with endorsement from DPS, the agency in charge of evacuation procedures, and has been approved and adopted for use in any hurricane rated at Category 3 or above.

The evacuation plan includes going through the process of set-up/take-down logistics associated with the ramp and interstate reversal details, identifying all the human resource needs and determining which agency will staff each station. The operating agencies involved also perform an annual exercise nicknamed Hurricane Polly every April, just prior to hurricane season, where they walk through the processes involved with a major hurricane evacuation. Reversing the interstate ramps is a part of this exercise.

"During a hurricane evacuation in an urban area, you only get about 10 to 12 good hours of evacuation time," said Ismael Soto, Director of

Operations with TxDOT-Corpus Christi.

"Within that small window of opportunity, you need to utilize the available capacity to its fullest potential, and we need to do as much as we can to get the public out of here in an efficient, safe manner. The work and consensus-building accomplished by TTI was extremely valuable and a huge step forward for us here in this region." **R**



A paved median crossover will allow traffic flow to reverse when barriers are removed in an emergency.



For more information, contact **Russell Henk** at (210) 731-9938 or r-henk@tamu.edu

What's the weather like?

Study helps monitor Houston roadways



With an average annual rainfall of 46 inches and an occasional ice storm, warning Houston commuters of hazardous roadway conditions is of utmost importance. Texas weather can change with the blink of an eye, causing freeways, frontage roads, and major arterials to quickly become impassable, crippling mobility in the region. In these situations, knowing when a road should be closed and traveler information disseminated is key to the safety of motorists.

Researchers at the Texas Transportation Institute (TTI) recently completed a project to assist Texas Department of Transportation (TxDOT) engineers in Houston in their use of an environmental monitoring system (EMS) that facilitates efficient management of transportation during flash floods and ice storms. The study evaluated the maintenance and operational experience of the TxDOT EMS, as well as the public's understanding of associated advanced warning signs. "We are working with TxDOT to understand and utilize the system to its fullest potential," says Robert Benz, assistant research engineer with TTI who supervised the research project.

The TxDOT EMS is a variety of 29 field sensors placed at strategic locations throughout Houston. Each site contains one or more sensors that detect weather and road conditions such as:

- Roadway water depth
- Rainfall rate and accumulation
- Air temperature and humidity
- Wind speed and direction
- Pavement temperature and moisture.



After the environmental sensors at each site read the data, they relay the information via low-frequency radio to the Harris County Office of Emergency Management (OEM) ALERT database. The stored

"We are working with TxDOT to understand and utilize the system to its fullest potential."

information then undergoes quality control checks, and alarm thresholds are measured. If a threshold is met, an alarm is sent out via text pager or email. The information is provided to the public via an interactive website: http://www.hcoem.org/road/txdot_choose_date.asp.

TTI conducted an online survey to determine drivers' understanding of the active warning signs and how motorists obtain traffic and weather information. The survey found that the majority of commuters are aware and understand the meaning of the advanced warning signs on the roadway. The survey also revealed that 43 percent of the respondents use the Internet as their secondary method of accessing weather information.

The survey helped TTI and TxDOT determine that the website should have information for Harris County residents about

flooding, air temperature, wind, rainfall amounts, and other weather events that could lead to hazardous driving conditions. "People can access this website and plan their route knowing what the environmental conditions are so they don't get into a situation which endangers their lives or property," says John Gaynor, project director with TxDOT.

The researchers also evaluated the maintenance and operational experience of the EMS by tabulating two years of field maintenance reports collected from the OEM. Their study revealed that the system performs well with regularly scheduled maintenance and identified the devices that failed and required the most frequent service.

The researchers have also reviewed existing severe weather emergency plans and assisted in developing a draft EMS operations plan. "After storm events, we interviewed agency managers and asked how they reacted to the alert from the devices in the field, and what actions they took. It really is an evolving system, and we're still trying to get a handle on how the system will be used in the most effective way," says Benz.

"TTI played a big part in helping us determine the best way to implement the EMS to commuters," says Gaynor. "By accessing this data, it can help people know when conditions are such that they need to change their route, or in some extreme situations, that no route is safe to take." **R**



Field sensors that detect weather and road conditions are placed at strategic locations throughout Houston.



For more information, contact **Robert Benz** at (713) 686-2971 or r-benz@tamu.edu

Aggressive driving on urban freeways

*Research sheds light on causes and
promising solutions*

We've all heard stories of people getting shot or attacked because they cut in front of somebody or shouted at another driver. While this type of "road rage" makes headlines, it is not necessarily the norm. Related aggressive and unsafe driving behaviors, however, do take place frequently on urban roadways—often as a result of driver frustration with traffic conditions.

Texas Transportation Institute (TTI) recently completed a study sponsored by the Texas Department of Transportation (TxDOT) to examine road rage and related behaviors.

"We concentrated on aggressive driving because it's more common and more amenable to engineering-related solutions," says Carol Walters, the TTI research supervisor of the project. "If we better understand what transportation factors frustrate drivers, we should be able to improve road safety."

Researchers talked to commuters about the irritating and stressful factors that may lead to aggressive driving. The results showed that other drivers' behavior—weaving in and out of traffic, preventing other vehicles from merging, and driving inattentively—were the top three, and that merge-related behaviors accounted for over half of the complaints.

Based on findings from the focus groups and driver surveys, researchers investigated ways to mitigate transportation-related conditions that might lead to aggressive driving behavior. Possible solutions are highlighted below.

Incident Management

Using photogrammetry, police investigators take pictures of vital data from accidents such as skid marks and object locations and then return to the office to determine actual measurements using special software. Results in one city showed that photogrammetry reduced overall incident clearance time by 58 percent and reduced personnel from three officers to one.

Bottleneck Improvement

Researchers used two recognized bottlenecks in the Dallas area as case studies for this project. On Loop 12 near I-30, TxDOT converted an inside shoulder in each direction into a fourth lane to relieve traffic congestion. Responses gathered before the improvements indicated drivers experienced high stress levels along this section. Over 95 per-

cent of the respondents had experienced an act of rage or aggression at this location, and almost 75 percent said they experienced these behaviors on a regular basis.

On Woodall Rodgers, TxDOT made improvements to the east-bound connection with US 75, striping it from a one-lane ramp to a two-lane ramp. Approximately two months after the improvements, over 50 percent of the responses indicated reduced frequency and seriousness of aggressive behaviors. Drivers also reported improved personal stress levels and commute times.



"Let them take their turn!" "Don't let them in!"

Merge Signing

This third proposed strategy for reducing aggressive driving behavior—improved advance signing at lane closures—used driving simulation and field tests to study the late merge concept. Late merge encourages drivers to use all available lanes to the merge point and then to take turns merging. Results suggest both a delayed onset of congestion and a shortened maximum merging queue. A current

TTI project (0-2137) is further evaluating feasibility of a dynamic late merge using changeable message signs.

Findings of this project showed that both operational strategies, such as late merge, and roadway improvements, such as additional lanes, might reduce levels of driver stress and aggressive driving behavior. Working with police agencies in major urban areas to implement and evaluate photogrammetry as an incident investigation may help speed roadway clearance and mitigate driver frustration.

"The late merge concept looks promising, and we are very interested in seeing the results of the further evaluation," said TxDOT project director Terry Sams. "TxDOT will continue to examine the research recommendations of this study and work toward implementation where possible. The findings have provided us with some good insight into what causes driver frustration, and we'll use that information to continue improving our urban driving conditions." 



For more information, contact **Carol Walters** at (817) 462-0523 or c-walters2@tamu.edu

Related Publications: 4945-S, *Understanding Road Rage: Driver Irritants and Promising Mitigation Measures*

Dallas HOV lanes get the job done

Increasing the number of people within vehicles is one way to increase mobility on urban freeways, but getting Texans to carpool is a tall order. Based on a project studying Dallas area highways, designated lanes for high-occupancy vehicles (HOVs) are accomplishing that feat. While carpooling has declined nationally by an average of 30 percent over the past two decades, Dallas area freeway corridors with HOV lanes show significant carpooling increases.

“In Dallas, HOV lanes are moving more people and moving people more quickly. That’s an important distinction. We’ve seen a substantial increase in the number of people moved in each highway corridor as well as a substantial increase in the number of carpools in the lanes,” notes Doug Skowronek, the research engineer at Texas Transportation Institute (TTI) who heads the project.

The Dallas-area HOV lanes studied operate on I-30, I-35E, and I-635. Since opening, each of the lanes has seen a significant increase in carpooling—ranging from a 79 percent increase to a 296 percent increase. Freeways with an HOV lane increased 8 to 12 percent in average automobile occupancy, while the average on a comparison freeway without HOV lanes decreased by 2 percent. Increases in occupancy indicate that motorists are forming carpools to take advantage of benefits offered by HOV lanes.

“We just opened our fourth HOV facility in March,” says Stan Hall, TxDOT project director. “It’s our first barrier-separated reversible lane and, like the lanes already in place, a lot of people are using it. I think the public sees the benefits, and we consider HOV lanes a success in our area.”

When analyzing data collected during the projects, researchers also discovered:

- The HOV lanes monitored typically save motorists at least five minutes over comparative general-purpose lanes on incident-free days.
- Bus operating speeds have more than doubled since HOV lanes opened, and travel-time savings have decreased bus operating costs because fewer buses are required.
- All three HOV lane projects are cost-effective and have attained, or are projected to attain, a benefit/cost ratio greater than 1.0.
- A survey of HOV users on I-30 indicated that carpools and busriders use the HOV lane because it saves them time and money.



I-635 HOV lanes

“We collect data on travel time, vehicle occupancy, park-and-ride usage, just about every kind of measure you can imagine,” notes Skowronek. “What we’ve seen is that when an HOV lane has opened in the Dallas area, the number of carpools in the corridor during the peak commuting times increases substantially.”

Data collection has also shown an increase in total person movement, and highways with HOV lanes have shown no negative impacts on adjacent freeway lanes. Benefit-cost ratios indicate the lanes pay for themselves within five years.

“We have about 100,000 persons a day who are carried on our HOV system here,” adds Hall. “Despite the volume, our violation rates are minimal compared to ones in the rest of the country.”

Because of the types of HOV lanes in use in Dallas, the projects are able to monitor both concurrent-flow and contraflow lane operation. As evaluation continues, TTI researchers are conducting quantitative evaluations such as vehicle volume and occupancy data, speeds and travel times, transit operation, cost-effectiveness, enforcement and violations, air quality impacts and public acceptance. In addition, the projects include review of qualitative issues such as design requirements, implementation time, capacity, access, incident management and flexibility.

Data collected monthly for Dallas Area Rapid Transit and bi-annually for TxDOT has shown steady and significant growth of the HOV lanes. “We believe they improve safety as well as mobility, but it takes a while for HOV lanes to ‘mature’—to accumulate enough information to analyze for safety issues. Because our HOV lanes are fairly new here, we plan to continue to look at the monthly data from a number of perspectives,” says Hall. **R**



For more information, contact **Doug Skowronek** at (817) 462-0511 or d-skowronek@tamu.edu

Related Publications: 3942-S, *Project Monitors HOV Lane Operations*

Using historical traffic data to meet future urban transportation needs

“History is a vast early warning system”
—Norman Cousins

Transportation agencies collect real-time traffic data on a regular basis to help manage the transportation system. Many cities have installed Intelligent Transportation Systems (ITS) that automatically collect and archive the data. What happens to the data once it is archived? How can it be used to improve our transportation systems and services?

TTI recently completed the first year of a new Mobility Monitoring Program sponsored by the Federal Highway Administration (FHWA) and working with transportation operations centers in ten cities across the country. The project goal is to answer these questions and investigate how to improve use of collected and archived data.

During the first year of work on the project, researchers conferred with operations and planning groups in the ten participating cities. They discussed the local approach to data archiving and local analysis processes and measures, as well as identified the standards and guidelines used in the performance measure process.

The Mobility Monitoring Program is a key step toward providing transportation agencies the technical support needed to effectively store, manage and use ITS traffic data once it has been collected.

“Local involvement in the effort was very important—both to obtain the best data and information about the systems, as well as to encourage use of the resulting data and measures,” says

Shawn Turner, who is working jointly with Tim Lomax on the study.

The Mobility Monitoring Program is a key step toward providing transportation agencies the technical support needed to effectively store, manage and use ITS traffic data once it has been collected.

“Where ITS data collection systems have been deployed, we can automatically record traffic volumes on a specific roadway in five-minute increments throughout the day,” says Turner. “This data is much more detailed than the traffic data that has been traditionally used in planning studies.”

According to Turner, proper practice, operations and archiving of this detailed data will allow transportation experts to examine the concept of reliability more closely and gain insight they haven’t had in the past. “We’re always searching for ways to make the transportation system more reliable,” says Turner.

Urban drivers need to know they can count on a route that will get them safely and reliably to their destination in roughly the same amount of time every day. Knowing how congestion levels vary within



ITS data collection systems automatically record traffic volumes on a specific roadway.

a day and from day to day throughout the year gives experts a more comprehensive picture of the transportation system and its problems. It’s also important for the public to know that an investment in ITS technology that collects, archives and allows future use of traffic volume data gets them a better investment return.

The study team has identified many areas that are saving data in some form, but very few that are using the data to create information beyond a real-time operations application. The first-year efforts have led to the development of a set of measures and best practices for mobility monitoring. The resulting first-year FHWA report describes methods that should be used and identifies the issues or elements that need improvement. Technical and professional level staff can evaluate and “sell” the components of archived data systems that make the most sense for the public and decision-makers in their areas.

The second year of the study will expand to include data from 23 participating cities, with that number expected to jump into the 40s and 50s in future years as more cities install technologies that archive data, and as knowledge about how to use it expands.

The Kentucky Transportation Cabinet, one of the first-year participating agencies, has already started seeing the benefits of the Mobility Monitoring Program. “This project has given us a jumpstart toward advancing data archiving in the greater Cincinnati area of both Kentucky and Ohio,” says Rob Bostrom, transportation engineer specialist, Division of Multimodal Programs. “We’ve been able to look at the reliability of the data collection sensors in our advanced traveler information system—ARTIMIS—and to establish regular feedback and performance measures for that ITS system. We’ve also begun overcoming some organizational barriers that will help us in planning future system improvements and in gathering air quality information.” 



For more information, contact **Shawn Turner** at (979) 845-8829 or shawn-turner@tamu.edu

PLAN your trip in advance

Tired of hitting an unexpected road closure on the way home from work? Or maybe you'd like to sleep in that extra five minutes before heading to the office.

Texas Transportation Institute (TTI) researchers are working on a pilot project in San Antonio that promises to save commuters time on the city's freeways. Using a focus group of USAA employees, TTI researchers are testing the Personalized Assistance & Notification (PLAN) system software to determine its efficacy in helping commuters plan in-town trips. PLAN notifies commuters via email whenever there is a traffic problem along their route(s). Using that information, commuters can then plan when and where they're going and how to get there faster and more safely.

The research team is adding a fundamental element to the Advanced Traveler Information System for TransGuide (San Antonio's advanced traffic management center) and in the field of intelligent transportation systems (ITS). Russell Henk, principal investigator for the TTI project, explains, "We're getting pertinent real-time information in the hands of drivers when they want it, so they can make the best decision possible regarding their travel plans—and we're doing so in a way that's tailored to the public's needs."

The project is a cooperative effort with the Southwest Research Institute (SwRI), TransGuide's software maintenance and development contractor, and the Texas Department of Transportation (TxDOT). SwRI is writing the PLAN software code.

The way the system works is fairly simple. Commuters sign up to receive information that is tailored to their specific travel schedules. Leveraging information already gathered by TransGuide, the PLAN database emails them specific lane closures and traffic updates along their chosen routes. The commuters can even specify what time of day and how often they want to receive the email.

"At the moment, drivers can log on to the TransGuide web site and view current conditions any time they wish," says Henk. "Now—once they've programmed in the routes they travel and provided an email address—they don't even have to do that. If you're rushed or simply forget to check TransGuide, the proactivity of our system can mean the difference between minutes and hours spent sitting in traffic."

Commuters can even choose multiple routes and multiple times for email updates to reach them. A person might choose route A for getting to work and route B for going home. If, for example, you know you want to travel a stretch of I-10 to get to work by 7:30 in the morning, you might have the system email you at 6:40 with the latest update on traffic conditions.

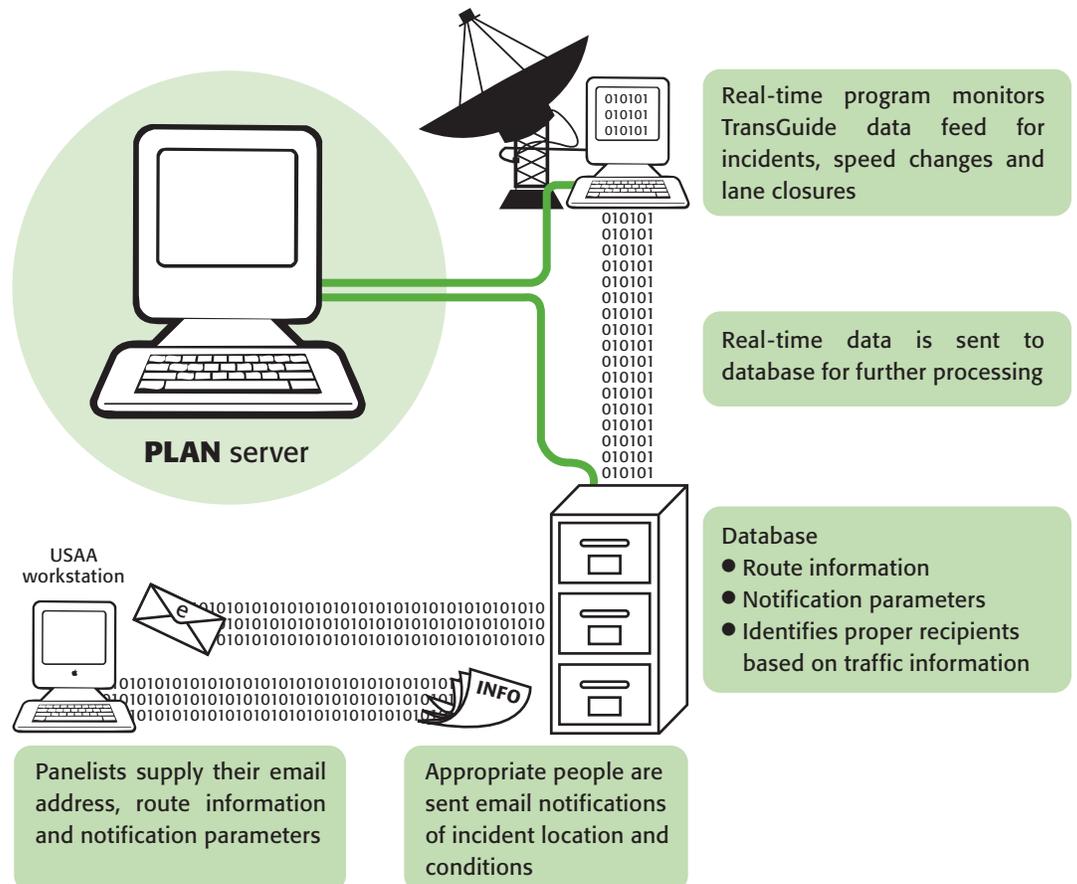
Pat Irwin, project director for TxDOT, says PLAN shows great promise for improving commuter travel time and overall traffic flow in San Antonio. "With better information, drivers can more effectively schedule their time on the road," says Irwin. "And less time in traffic congestion means a safer driving environment, less pollutants in the air and an overall more efficient operation of our facility."

Although only in the testing stages at the moment, there are numerous commercial, national defense and emergency services applications for PLAN beyond the San Antonio area. Trucking companies could potentially use PLAN to ensure the timely delivery of goods to market. The U.S. Army could use the software to choose the best routes for national guard deployment during a national security crisis. And relief agencies and emergency support services could use it to plan just-in-time rescue efforts to areas torn by natural disasters.

"At the moment we're looking to save commuters time with this software," says Henk. "But over the long haul, PLAN has the potential to save lives as well." **R**



For more information, contact **Russell Henk** at (210) 731-9938 or r-henk@tamu.edu



Texas Transportation Hall of Honor

As we move into a new century, it is appropriate that we look back and formally recognize the small group of individuals who have made exceptional contributions toward developing the multi-modal transportation system that exists in Texas. To that end, with strong support from the transportation community in Texas, a Texas Transportation Hall of Honor was established in 2000.

The purpose of the Hall is quite simple. For the period from Texas statehood to the present, recognize in a formal and permanent manner that small group of visionary leaders who have helped to provide Texas with the asset of an outstanding transportation system.

This Hall is housed in the Gibb Gilchrist Transportation Research Building, located on the Texas A&M campus in College Station. The Hall is overseen by a 5-member board comprised of senior transportation professionals with knowledge of the historical development of the transportation system in the state.

CALL FOR NOMINATIONS

The Hall provides an opportunity for our profession to recognize the state's transportation leaders. Your assistance in identifying and nominating individuals who should be considered for recognition is appreciated.

WHO IS ELIGIBLE?

With the exceptions noted below, any individual, living or deceased, is eligible for induction into the Hall. The Hall covers the period from Texas statehood, 1845, to present. The individual's contribution can be in any mode or aspect of transportation.

Those not eligible include: 1) individuals currently holding an elected office; and/or 2) individuals currently holding an appointed position to a policy board or entity overseeing transportation-related activities, e.g., TxDOT commissioner or transit board member.

HOW TO NOMINATE

Anyone can submit a written nomination, which should include the following.

- Nominee identification (name, positions held and dates, etc.)
- Description of why this person deserves this recognition. This description (3 pages or less) should include the nominee's lifelong contribution to the development and sustainment of the Texas transportation system. Additional supporting materials (e.g., press clippings, biographical data, reference letters, etc.) may be provided as appropriate (less than 7 pages).

DEADLINE FOR NOMINATIONS

Nominations must be received by October 1, 2002, to be considered this year. Submit nominations to:

*Deputy Director
Texas Transportation Institute
The Texas A&M University System
3135 TAMU
College Station, TX 77843-3135*

Within this room are recognized those individuals whose exceptional leadership and vision helped create and sustain the outstanding transportation system that supports the economic competitiveness of the state and enhances the quality of life enjoyed by all Texans.

1845 to Present

Hall of Honor Inductees 2000–2002

To date, eight individuals have been formally inducted into the Hall of Honor. A plaque that is on permanent display in the Hall recognizes each inductee.



FRANCIS C. "FRANK" TURNER

Francis C. "Frank" Turner (A&M '29) began his career with the Bureau of Public Roads. He spent the next 43 years with this organization and its successor agency, and was appointed Federal Highway Administrator in 1969.

During his career, Frank assumed numerous significant responsibilities, including construction of the Alaskan Highway during World War II, the rebuilding of the Philippine highway system following the war, and the creation and construction of the Interstate Highway System.

His contributions to the interstate program are so noteworthy that he is referred to as the "Father of the Interstate Highway System." He served as executive secretary of the Clay Committee, which was in charge of overseeing this massive public works project, and worked tirelessly as a liaison with Congress drafting the legislation that set forth the National System of Interstate and Defense Highways.

Frank Turner received many honors during his lifetime, and his name is included in prestigious lists such as "Ten People Who Changed the Way You Live" (American Heritage Magazine) and "25 Makers of the American Century" (U.S. News and World Report).

Francis C. Turner is the first individual inducted into the Texas Transportation Hall of Honor. **Inducted March 2000.**



DEWITT C. GREER

Dewitt C. Greer (A&M '23), known to most as "Mr. Greer," began his career with the Texas Highway Department in 1927. He spent the next

54 years serving that agency.

In 1940, at age 37, Mr. Greer was appointed State Highway Engineer and remained in that capacity for 27 years. He was named to the

Texas Highway Commission in 1969 and served until 1981.

Under Mr. Greer, the department launched a massive program of highway development. A farm-to-market system was built to "get Texas motorists out of the mud," and a system of interstate highways was developed. The Texas highway system expanded from 22,207 to 72,945 miles. While viewed as a master road builder, his even greater passion was roadway safety.

Through Mr. Greer's leadership, the department developed a strong reputation for integrity. As reported in Texas Monthly: "The special strength of the Texas Highway Department is its conscientious administrative tradition. ... The man most frequently credited with developing this high standard of honesty is Dewitt Greer."

Since Mr. Greer was known as the "King of the Highway Builders," the headquarters building for the Texas Department of Transportation was named the Greer Building, a rare honor for a state employee. **Inducted April 2001.**



HERBERT D. KELLEHER

Herbert D. "Herb" Kelleher co-founded Southwest Airlines in 1971. This new airline had the simple notion: If you get passengers to their destinations when they want to get there, on time, at the lowest possible fares, and make sure they have a good time doing it, people will fly your airline. Over the ensuing three decades, this airline and philosophy changed the way Texans travel and do business.

In 1978, Herb Kelleher began serving as interim president, CEO and chairman of the board, positions he would assume on a permanent basis by 1982. In 1998, Fortune Magazine named Southwest the best company to work for in America. In 1999, Herb Kelleher was named "CEO of the Year" by Chief Executive magazine and "CEO of the Century" by Texas Monthly.

Southwest began serving three Texas cities with three jets. Thirty years later, the airline was serving 58 cities in 29 states, flying 346 aircraft, and had become the fifth largest domestic carrier.

The success of Southwest Airlines is often attributed to the style of one man—Herb Kelleher. The fun-loving, team-oriented and creative corporate culture is key to this success. **Inducted June 2001.**



GIBB GILCHRIST

Gibb Gilchrist graduated in civil engineering from The University of Texas in 1909. After several years with the railroads, primarily the Santa Fe, and service in World War I, in 1919 he joined the Texas Highway Department as Division Engineer in San Antonio.

By 1924, he had risen to lead the department as State Highway Engineer. For reasons of ethics and politics, he left the department in 1925 but returned to leadership under a new Highway Commission in 1928. Under his leadership, the department established the culture of integrity, professionalism and reward for excellence that exists today.

Mr. Gilchrist joined the Agricultural and Mechanical College of Texas as Dean of Engineering in 1937, later becoming president of the college. He was elected as the first chancellor of the A&M College System in 1948 and served in this capacity until his retirement in 1953.

Together with State Highway Engineer Dewitt Greer, Mr. Gilchrist envisioned and created the cooperative research program between the A&M College and the Texas Highway Department in 1948. This visionary action, which remains the model for a state transportation research program, led to the creation of the Texas Transportation Institute in 1950. **Inducted December 2001.**



ROBERT C. "BOB" LANIER

For over two decades, Bob Lanier, a graduate of The University of Texas law school, has been a major transportation leader in Texas. From 1983 to 1987, he chaired the Texas Highway Commission. His accomplishments included securing the first gas tax increase in 13 years, developing new formulas for cost-effectively prioritizing highway funding, and initiating both the adopt-a-highway program and the now legendary "Don't Mess with Texas" campaign.

From 1988 to 1989, Mr. Lanier served as chair of the board of the Metropolitan Transit Authority of Harris County and moved swiftly to implement many elements of the transit plan, including the 100-mile transitway system. He served as chair of both the Regional Mobility Committee of the Houston Chamber of Commerce and the Texas Good Roads/Transportation Association.

Beginning in 1991, Mr. Lanier served three terms as mayor of Houston and gave improved regional mobility major emphasis. Texas Monthly named him the second best mayor of the 20th century in Texas.

Bob Lanier's consensus building was aimed toward making Texas mobility a nonpartisan effort. His rare combination of extensive technical knowledge and strong political skills brought a renewed dedication and sense of commitment to the development of the state's transportation network.



THOMAS H. BALL

While many leaders were instrumental in the development of the Houston Ship Channel and the Port of Houston, the contributions of Thomas H. Ball—known as the "Father of the Port of Houston"—were particularly significant. Beginning in 1895, for four decades Mr. Ball was one of the foremost leaders in the conception and development of these facilities.

Elected to Congress in 1896, Tom Ball assumed the full burden of Houston's deep-water dreams. He served four terms and was the only Texan on the powerful Rivers and Harbors Committee. Mr. Ball overcame fierce political opposition to funding the

channel, and the deep-channel project was completed in 1914. As a private citizen, and then as general counsel for the Port Commission from 1922 to 1931, Tom Ball was a leader in resolving numerous physical, financial and institutional issues impacting channel and port development.

Tom Ball and many others, through years of service and sacrifice, made a vision come to pass in a way unequalled in America. The Port of Houston, which has grown to a 25-mile-long complex of diversified facilities, is ranked first in the United States in foreign waterborne commerce and second in total tonnage.



WESLEY E. FREISE

Wesley E. Freise, P.E. (Oklahoma State '71), has been a transportation leader for three decades. Following service with the City of Houston,

Mr. Freise joined the Harris County Toll Road Authority in 1984. In 1985 Mr. Freise became executive director and served in that capacity for 15 years. He has served on the board of the International Bridge, Tunnel and Turnpike Association.

Mr. Freise provided "hands on" involvement in every aspect of toll road development. Built at a total cost in excess of \$1 billion, the 85-mile Harris County system was implemented ahead of schedule and below estimated cost. The roadways, supported entirely by user revenues, are used by over one million vehicles daily and offer Harris County citizens an alternative to growing mobility problems. Segments of the system have been recognized by national professional organizations as outstanding civil engineering projects, being among the safest toll roads and effectively utilizing toll innovation.

The successful development and operation of the Harris County toll roads demonstrated the potential of these facilities to help meet mobility needs. This experience, led by Wesley Freise, resulted in significant statewide commitments to the use of toll facilities in infrastructure development.



ALTON MCDONALD

Alton McDonald began his half-century career in public transportation in 1929 at the Jacksonville, Florida, Traction Company. From 1943 to 1945, he served as treasurer of National Air Lines and then returned to his first love, surface transportation.

Between 1945 and 1972, he gained national recognition for directing successful public restoration of failing private bus companies throughout the United States. In 1972, Alton McDonald founded McDonald Transit Associates in Fort Worth to assist the city with acquisition and public management of the faltering private bus company. The success of CITRAN, the city's first public transit system, set the stage for voter approval of the Fort Worth Transportation Authority and the creation of the T. The company he founded grew into the oldest and largest independently owned transit management firm in the United States.

Prior to his retirement in 1979, Mr. McDonald chaired many committees for the American Public Transit Association and served two terms as its vice president and a member of its board of directors.

His no-nonsense, passenger-oriented approach set the standard for the transition of failing private companies into effective, responsive public transportation systems. **R**

Lanier, Freise, Ball earn place in Texas Transportation Hall of Honor



TTI Deputy Director Dennis Christiansen at podium, seated r-l Mayor Bob Lanier, Majority Whip Tom DeLay, Executive Vice President of the Texas Associated General Contractors Tom Johnson, and former Texas Transportation Commission Chairman Ray Stoker



(R-L): Dave Walden, former chief of staff to Mayor Lanier, Dennis Christiansen, Mayor Lanier at podium, Tom DeLay, Tom Johnson, Ray Stoker

The Texas Transportation Hall of Honor welcomed its 2002 inductees during three separate ceremonies held this spring.

Guests including much of the state's transportation leadership from the past two decades honored Bob Lanier, the former mayor of Houston, at a ceremony in the Lanier home on March 15. Speakers at the event included: Ray Stoker, former Texas Transportation Commission chair; Tom Johnson, Texas AGC executive vice president; Dave Walden, former chief of staff to Mayor Lanier; Doug Pitcock, president of Williams Brothers Construction; and Tom Delay, majority whip of the U.S. House of Representatives.

Dennis Christiansen, deputy director of the Texas Transportation Institute (TTI) and chairman of the Hall of Honor's board of directors, highlighted Lanier's many achievements during the ceremony. "The primary purpose of the Hall is to recognize in a formal and permanent manner that small group of individuals whose vision and leadership brought about the outstanding transportation system that serves this state," Christiansen said. "Bob Lanier clearly belongs in this select group of individuals."

Lanier's transportation service record spans all levels of government from city hall to the steps of the U.S. Capitol. After chairing the Texas Highway Commission and the board of the Metropolitan Tran-

sit Authority of Harris County, Lanier focused much of his efforts as mayor of Houston on mobility issues.

Wesley Freise, P.E., former executive director of the Harris County Toll Road Authority (HCTRA), joined the elite group of transportation industry legends as he was inducted into the Hall of Honor during a West Houston Association luncheon attended by over 150 people on April 10.

Throughout his career spanning three decades as a registered professional engineer, Freise worked extensively in the transportation industry. Freise's belief that a sound transportation infrastructure system is essential to the economic health and development of the entire community is evidenced through his work experience at the City of Houston with the planning, development and implementation of a \$350,000,000 capital improvement program and then as the executive director of the HCTRA.

Dennis Christiansen joined State Senator Jon Lindsay in citing Freise's numerous contributions and leadership during the induction ceremony. "Wesley Freise's hands-on involvement with every facet of the Houston toll roads' operation has directed HCTRA to its enviable level of achievement," Christiansen said. "He is also recognized for his outstanding commitment and contributions to improving Texas mobility."

Tom Ball, known as the "Father of the Port of Houston," became the eighth member selected for the Texas Transportation Hall of Honor during a luncheon saluting the Port of Houston Authority on May 5. This event was attended by 500 people.

Ball, a lawyer and politician, began his political career in 1877 as a three-term mayor of Huntsville. He first became active in Texas state politics in 1887 as an advocate of a prohibition amendment to the state constitution.

Elected to Congress

in 1896, Ball became a vigorous promoter of publicly owned port facilities in Texas. He served four terms, and was the only Texan on the powerful Rivers and Harbors Committee.

"I think you could safely say we wouldn't have the Port of Houston without him," says Jim Edmonds, chairman of the Port of Houston Authority. "If you go back and look at all the trials and tribulations he went through and all the opposition he overcame, it's really quite remarkable."

Tom Delay delivered the keynote address. His remarks focused on the life and career of Tom Ball. In 1907, the community of Peck, northwest of Houston, was renamed Tomball in Ball's honor. He died in Houston on May 7, 1944. **R**

"The primary purpose of the Hall is to recognize in a formal and permanent manner that small group of individuals whose vision and leadership brought about the outstanding transportation system that serves this state."

TTI assists in nation's first statewide air quality campaign

On March 25, 2002, Texas became the first state in the nation to launch a statewide public outreach and education campaign to improve air quality.

The campaign, *Drive Clean Across Texas*, educates Texans about air quality and provides five steps Texans can take to reduce mobile-source emissions. The steps toward cleaner air include:

- proper vehicle maintenance
- driving less
- buying vehicles with cleaner burning engines
- driving the speed limit
- reducing the amount of time spent idling cars in drive-thrus and outside stores.

Texas Governor Rick Perry offered his support to the campaign at its launch, which was held in Austin.

"I'm proud that Texas is the first state in the nation to take a statewide approach to improve air quality," Perry said. "From El Paso to Texarkana, and everywhere in between, Texans will see the *Drive Clean* message."

The *Drive Clean Across Texas* campaign is co-sponsored by the Texas Department of Transportation (TxDOT) and the Texas Natural Resource Conservation Commission (TNRCC).

Governor Perry highlighted this important collaboration between state agencies.

At the campaign's inception, TxDOT and TNRCC teamed with their funding partner, the Federal Highway Administration (FHWA), to address the increasing air quality challenges in Texas and to help prevent a rise in pollution-related health problems. Jean Beeman, director of communications for TxDOT's Environmental Affairs Division, and Israel Anderson, director of TNRCC's Small Business & Environmental Assistance Division, directed the campaign. Texas Transportation Institute (TTI) support was led by Brian Bochner, senior research engineer and head of TTI's Center for Air Quality Studies. The Sherry Matthews Advocacy Marketing Group lent creative support to the effort throughout the campaign's conception and launch.

Israel Anderson, TNRCC, said the campaign team struck a chord with Texans when they selected the *Drive Clean Across Texas* logo.

"It's simple and direct, and it captures the theme of the campaign," Anderson said. "It's distinctly Texas."

In preparation for developing and launching the statewide air quality campaign, the campaign team coordinated statewide surveys and conducted focus group campaign polling, as well as preliminary public outreach and education efforts. The campaign elements contain the logo and slogan, television and radio ads, a website (www.drivecleanacrosstexas.org), English and Spanish brochures, billboards and a speaker's kit.

Jean Beeman, TxDOT, said volunteer speakers are a pivotal part of spreading the clean air message in Texas.



(L-R): State Senator Buster Brown, Representative Warren Chisum, EPA Region 6 Administrator Greg Cook, TNRCC Commissioner Robert Huston, Transportation Commissioner John Johnson

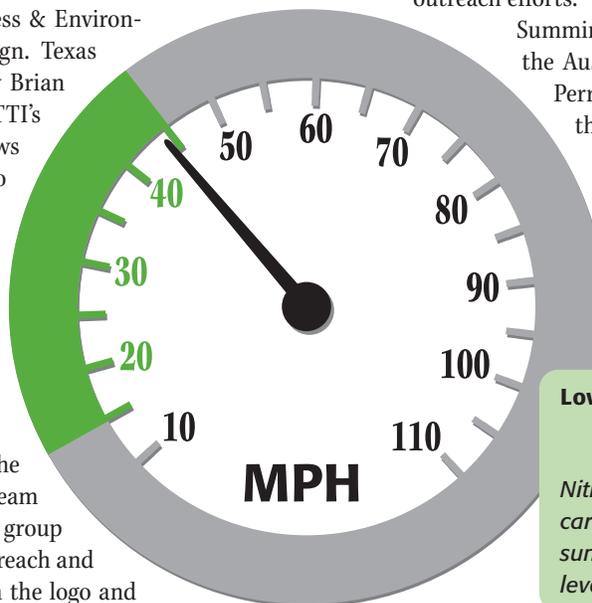
"Members of our campaign speakers' bureau will be talking to groups in communities all across our state," Beeman said. "These important speakers will share the steps Texans can take toward reducing their transportation-related emissions."

Special campaign emphasis will be directed to nine areas of Texas—four metropolitan areas that have exceeded federal limits on mobile source air pollution and five that are nearing federal limits. The areas that have exceeded federal limits, called non-attainment areas, include Houston-Galveston, Dallas-Ft. Worth, Beaumont-Port Arthur and El Paso. Areas nearing federal limits, near non-attainment areas, include Austin, San Antonio, Victoria, Tyler-Longview and Corpus Christi.

The *Drive Clean Across Texas* campaign will leverage initiatives of the local air quality coalitions that have been hard at work in non-attainment and near-non-attainment areas implementing policy and outreach efforts.

Summing up the thoughts of many at the Austin campaign launch, Governor Perry paraphrased the spirit behind the *Drive Clean Across Texas* effort.

"We're proud of our state," Perry said. "The blue skies of Texas are valuable to us, and we intend to keep them clean." 



Lowest NOx emissions:

15–45 mph

Nitrogen oxide (NOx) from car engines combined with sunlight produces ground-level ozone.

To learn more about driving clean across Texas, please visit: www.drivecleanacrosstexas.org or call the campaign hotline at (979) 862-3705.

Texans deserve clean air

Drive Clean Across Texas Will Help Us Get There

Texas is experiencing rapid growth. According to the 2000 census, our population ranks second in the nation with 20.8 million people. In just a few decades, that number is expected to double with more than 50 million people calling the Lone Star state home. With such growth, there are benefits, and there will be challenges. One of these challenges will be the increased use of our roadways. In this past year, vehicle registrations jumped by 500,000. Today, nearly 18 million registered vehicles travel an average of 586 million miles in a single day. The bottom line is this: our success is having a negative effect on the air we breathe and our quality of life. All this travel leads to roadway congestion and transportation-related air pollution.

Clean air is important to the health of every citizen. The incidence of asthma is on the rise in Texas, and it is well documented that air pollution contributes to other respiratory ailments. Lung disease is the third leading and fastest growing cause of death in the United States. Unfortunately, our most vulnerable citizens—our children and elderly—are most at risk from poor air quality. Although new technological advances are helping to reduce harmful vehicle emissions, more cars on the road means more traffic, which, in turn exposes more Texans to this health risk.

Improving air quality is something we can all be a part of, and it starts by raising awareness of transportation-related air quality challenges and building a commitment to clean air practices. Enter the Drive Clean Across Texas campaign. It is a collaborative effort by the Texas Department of Transportation, the Texas Natural Resource Conservation Commission, and the Federal Highway Administration.

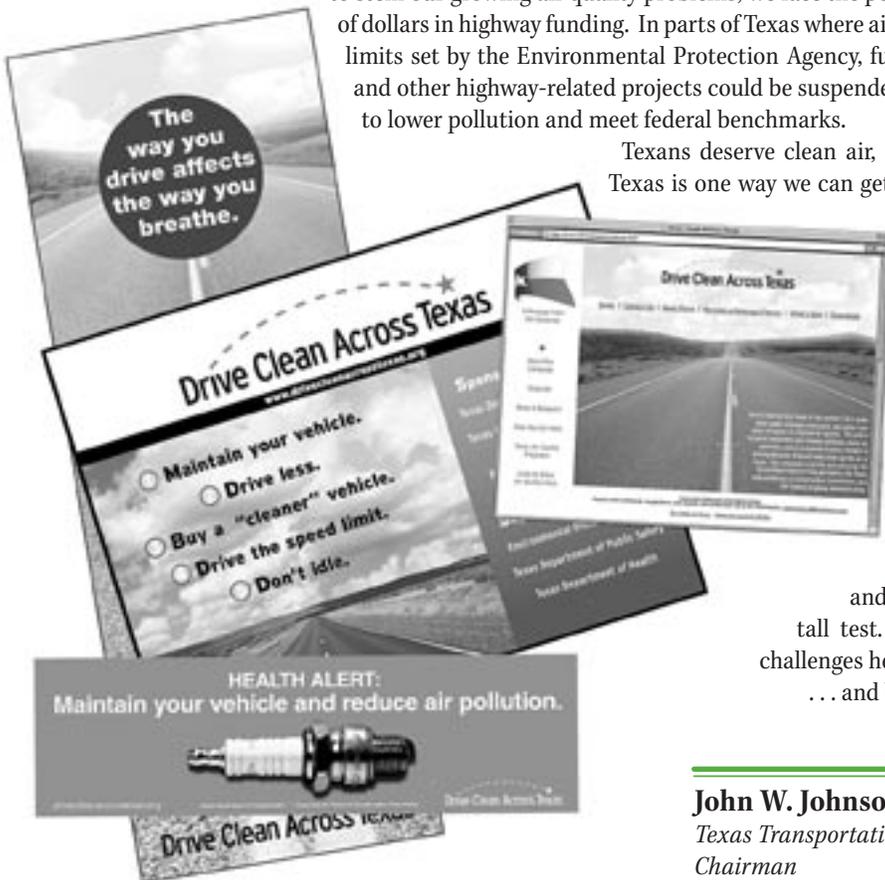
Through this campaign, we're spreading the word that all of Texas must raise air quality awareness and change the way we think about transportation. Not only is our health at stake, but if we don't act now to stem our growing air quality problems, we face the possible loss of millions of dollars in highway funding. In parts of Texas where air pollution exceeds the limits set by the Environmental Protection Agency, funding for future roads and other highway-related projects could be suspended unless we take action to lower pollution and meet federal benchmarks.

Texans deserve clean air, and driving clean across Texas is one way we can get there. By following common

sense, air-friendly steps, we can show the nation that Texas is committed to having healthy citizens, a prosperous economy and beautiful blue skies. We can all do our part by maintaining our vehicles, carpooling, combining errands, and using alternative transit.

Improving the air we breathe and improving our quality of life is a tall test. But Texas was built on meeting challenges head-on. . .

. . . and **beating** them.



John W. Johnson

*Texas Transportation Commission
Chairman*

Robert Huston

*Texas Natural Resource
Conservation Commission
Chairman*

DRIVE CLEAN ACROSS TEXAS

Raising the Bar on Safety

Third annual forum on public health and transportation safety held in Houston

In September 1899, Henry H. Bliss became the first person killed in an automobile crash when he stepped off a street corner in New York and was struck by a horseless carriage. Since that time, more than three million people have been killed in motor vehicle crashes on the streets and highways of the United States and many times that number have been seriously injured. One hundred years after Bliss's death, much still remains to be done to reduce transportation-related deaths and injuries in this country.

More than 100 professionals from engineering, public health, the social sciences and law enforcement joined forces to discuss ways to reduce transportation deaths and injuries in the United States at the Third Annual Forum on Public Health and Transportation Safety held at the Hornberger Conference Center in Houston on March 12-13. The forum was organized by the Center for Transportation Safety at the Texas Transportation Institute (TTI) in College Station.

"No profession has a monopoly on reducing motor vehicle deaths and injuries in this country," said Dr. Lindsay Griffin, III, interim director of the Center for Transportation Safety. "This forum provided an opportunity for professionals with diverse backgrounds and experience to learn more about transportation-related deaths and injuries and to consider how they might better contribute to addressing this major health problem."

The forum included presentations and panel discussions from the nation's best experts on topics including transportation safety in the community, enhancing traffic law enforcement, emergency medical services, young and older drivers, pedestrian and bicycle safety, and construction work zones.

Texas Senator Steve Ogden, who introduced legislation to establish the Center for Transportation Safety in an effort to determine ways to decrease the fatality rate in Texas, opened the forum. The keynote address was presented by David Sleet, associate direc-

tor for science, Division of Unintentional Injury Prevention, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. Dr. Jeffrey Runge, administrator of the National Highway Traffic Safety Administration, United States Department of Transportation and Dr. Richard Wainardi, president, CEO and COO of Texas Medical Center gave presentations during the lunch session.

Dr. Runge addressed the topic of motor vehicle safety. "Increasing seat belt use is the most effective way to reduce injuries and save the lives of drivers and passengers," said Runge. "Every day, 155 people are killed in motor vehicle crashes. Nearly half of the passenger vehicle occupants killed in 2000 were not wearing seat belts or secured in child safety seats."



Runge explained that traffic enforcement is key to gaining people's attention in this national priority to buckle up. He noted that South Carolina's "Click it or Ticket" campaign, which utilized paid media and targeted law enforcement, increased seat belt use by 8.7 percent. During this Memorial Day holiday,

A commitment to cooperation

At a reception on the eve of the Third Annual Forum on Public Health and Transportation Safety, the Texas Transportation Institute (TTI) and the Highway Safety Research Center (HSRC) at the University of North Carolina-Chapel Hill signed a memorandum of agreement for cooperative research and training in transportation safety between the two leading research centers. The reception was graciously hosted and funded by the American Road and Transportation Builders Association (ARTBA).

Although the centers have some overlapping capabilities, to a large extent their skills and capabilities are complementary. A multi-disciplinary research team that includes HSRC and TTI will have considerable advantages in developing and conducting safety research.

"We believe that such a team can be instrumental in significantly improving transportation safety in the United States," says TTI Director Herb Richardson.



Dr. Herb Richardson, TTI, and Dr. Doug Robertson, HSRC

the National Highway Transportation Safety Administration (NHTSA) conducted a 12 state demonstration of the campaign to evaluate its effectiveness with a larger audience. States that participated are Texas, Vermont, New York, West Virginia, Ohio, Indiana, Illinois, Michigan, Florida, Alabama, Nevada and Washington.

The Fourth Annual Forum on Public Health and Transportation Safety will be organized and hosted by the Highway Safety Research Center at the University of North Carolina at Chapel Hill in spring 2003. Dr. Doug Robertson, director of the Highway Safety Research Center, looks forward to increasing participation in the forum. "This year's forum was a long needed blending of both public health officials and transportation safety," said Robertson. "It was inspiring to see the exchange of ideas and information, which builds expectations to expand the forum next year and in the future." **R**

The Third Annual Forum on Public Health and Transportation Safety was sponsored by:

- AAA Foundation for Traffic Safety
- American Road and Transportation Builders Association (ARTBA)
- Highway Safety Research Center at the University of North Carolina
- National Safety Council
- One DOT (Region 6 of the U.S. Department of Transportation)
- Texas A&M University System Health Science Center
- Texas Department of Health
- Texas Medical Center
- Texas Workers' Compensation Commission
- Texas Department of Transportation
- Traffic Safety Center at the University of California
- Texas Transportation Institute
- Transportation Research Board
- University of Michigan Transportation Research Institute
- University of Texas Health Science Center at Houston



TTI welcomes new safety center director

David Willis was appointed director of TTI's Center for Transportation Safety on April

1. Formerly the president and CEO of AAA Foundation for Traffic Safety in Washington, D.C., Willis has more than 25 years of transportation safety experience.

"David is extremely versed in highway safety issues, which will enable him to serve very well as the director of the center while leading the activities of the staff," said interim Center for Transportation Safety Director Dr. Lindsay Griffin III. "I have the highest personal and professional regard for David in 30 years of knowing him."

As the new director, Willis will focus on several principle safety areas including:

- Determine the causes of and countermeasures for transportation-related crashes.
- Continue research of human factors including how people interact with electronic machinery (e.g. cell phone usage, driver distraction).
- Increase research of public health aspects of transportation safety by sharing resources with the Centers for Disease Control.

- Secure a continued source of funding for the center.

"This is an excellent opportunity to take an infant organization into its next stage," said Willis. "I hope to be a mentor for the employees by providing advice and additional resources at their request."

Noting that Texas Senator Steve Ogden has challenged the center to find three cost-effective ways to cut the traffic fatality rate in half by 2010, Willis has made this challenge one of his top goals during his tenure.

Willis has numerous career accomplishments in the area of transportation safety. As president and CEO of AAA Foundation for Traffic Safety, he oversaw the foundation's fundraising, research, outreach and product marketing. During his tenure, the AAA Foundation for Traffic Safety concentrated research efforts on behavioral problems behind traffic accidents. Specifically, research was targeted toward fatigued, distracted, unlicensed and drunk driving.

Previous to his leadership role at AAA Foundation for Traffic Safety, Willis served as senior vice president at The ATA Foundation (affiliated with the American Trucking Association, Inc.). **R**

Senator Ogden opens forum

A long-time advocate for improved highway safety, State Senator Steve Ogden led off the Third Annual Forum on Public Health and Transportation Safety by describing why he believes this subject is so important.

"Improving highway safety is a major issue for me and the people I represent," said Ogden. "Some 270 people died in my district over the past year, 2½ times more than the average in other senate districts. The 5th Senatorial District is largely rural, and 60 percent of all fatal accidents occur on rural roads. In fact, more Texans are killed on farm-to-market roads than on interstates in Texas. But with a focused effort, I'm confident we can make a real difference in highway safety."

Senator Ogden outlined four possible areas for improvement: laws, law enforcement, highway construction and driver training. While noting that considerable progress has been made already, he would like the legislature to consider revocation of driver's licenses in some instances and higher speeding fines. A 10 percent increase in the number of state troopers would certainly allow better enforcement of existing laws, he added. Improved contracting and performance measures could speed highway project completion, and he would also like to see better driver training, including tougher defensive driving courses and a new approach to helping seniors drive safely.

"Texas needs to halve its fatality rate in 10 years," Ogden said. "I believe this is an achievable goal. I challenge this group and the Texas Transportation Safety Center to tell me what three things would help most in meeting that goal." **R**

TTI looks to council for guidance and direction

Since its creation more than 50 years ago, the Texas Transportation Institute (TTI) has always had some form of an advisory council. Over the years the size, composition and role of the Council has been altered on several occasions to more effectively meet the changing needs of the Institute.

As we enter the new century, the transportation research field is changing in many ways. The Institute believed it was time to again look at the make-up and role of the Council. Several meetings were convened with individuals who have supported TTI over the years, and from these meetings ideas emerged on how to structure and operate a Council to better meet the current needs of TTI.

The Institute is confident that it has found ways to effectively use the Council to provide relevant guidance in the development and conduct of TTI programs. The new Council is considerably smaller than its predecessor, and is comprised of distinguished, high-level transportation professionals. This is certainly one of the most influential groups of transportation leaders and professionals to commit to advising a university-affiliated transportation research center. Arnold Oliver, retired TxDOT executive director, agreed to serve as chair of the Council.

The new Council had its inaugural meeting in College Station on April 30th. The meeting was structured to allow the majority of the time to be devoted to the Council members providing TTI leadership with their thoughts and ideas concerning transportation, research and the role of TTI. Pete Ruane, CEO and president of the American Road and Transportation Builders Association, was the guest speaker at lunch. At the meeting's conclusion, Oliver noted, "this initial council meeting was very productive, with excellent comments and participation in a manner which was beyond our expectations."

Larry Heil, chair of McDonald Transit Associates, Inc., was recognized and thanked at the meeting for serving as chair of the TTI Council from 1994-2000. **R**



TTI Council



(L-R): Herb Richardson, Pete Ruane (President and CEO of the American Road and Transportation Builders Association), Mike Behrens (TxDOT Executive Director), Jack Albert (President, Reece Albert Construction) and Mark Stiles (Senior Vice President, Trinity Industries)



Larry Heil (former chair of TTI council) and TTI director Herb Richardson



Arnold Oliver (chair of TTI council) with Mayor Bob Lanier to his right

TTI Advisory Council 2002

Mr. Jack Albert

President
Reece Albert, Inc.

Dr. Don Avilés, P.E.

President
Avilés Engineering Corporation

Mr. Michael Behrens

Executive Director
Texas Department of Transportation

Mr. Rollin Bredenberg

Vice President
Service Design and Performance
Burlington Northern Santa Fe Railroad

Mr. Alan Clark

Transportation Manager
Houston/Galveston Area Council

Mr. Robert Cuellar

Executive Vice President-Transportation
Turner, Collie, and Braden, Inc.

Mr. Kris Heckmann

Transportation Policy Director-Transportation Policy
Office of the Governor

Mr. Larry Heil

Chairman
McDonald Transit Associates, Inc.

Mr. Roger Hord

President and CEO
West Houston Association

Mr. Tom Johnson

Executive Vice President
AGC of Texas

Mr. Bob Jones

President
Jones & Carter, Inc.

Mr. Thomas Kornegay

Executive Director
Port of Houston Authority

Mr. Paul Krugler

Director
Research and Technology Implementation
Texas Department of Transportation

Mr. David Laney

Former Commissioner of Transportation
Jenkins & Gilchrist

Mr. Robert C. Lanier

Former Mayor of Houston
Landar Corporation

Ms. Margaret E. Lonero

Airport Manager
William P. Hobby Airport

Ms. Katie Nees

Deputy Director
North Texas Tollway Authority

Ms. Dianna Noble

Director
Environmental Affairs Division
Texas Department of Transportation

Mr. Arnold W. Oliver

Retired TxDOT Executive Director
HNTB Corporation

Mr. Lawrence Olsen

Executive Vice President
Texas Good Roads/Trans. Assoc.

Mr. Doug Pitcock

Chairman of the Board
Williams Bros. Construction

Mr. Carroll Robinson

Houston City Council Member

Mr. Mark Stiles

Senior Vice President
Trinity Industries, Inc.

Mr. Gary Trietsch

District Engineer
Texas Department of Transportation

Ms. Linda Watson

General Manager
Corpus Christi Regional Transportation Authority



LOMAX JOINS SWUTC

Tim Lomax, TTI research engineer, has agreed to serve as an associate director (research) of the Southwest Region University Transportation Center (SWUTC). Lomax will provide leadership in the formulation of SWUTC's research agenda and guidance to researchers at the Texas Transportation Institute (TTI) and Texas

A&M University who participate in the SWUTC research program. He joins the consortium counterparts at the University of Texas/Center for Transportation Research (UT/CTR), Dr. Randy Machemehl, and Texas Southern University (TSU), Prof. Khosro

Godazi, in preparing annual research programs for approval by the SWUTC executive committee members.

Lomax will work closely with Dock Burke, who serves as director of the SWUTC at TTI and Texas A&M. "Tim Lomax brings a plethora of research experience to SWUTC. He will add technical depth to the current program, innovative ideas for future developments and professionalism to the consortium. Welcome, Tim," says Burke.

According to TTI Director Herb Richardson, "SWUTC will benefit from Dr. Lomax's detailed understanding of the research cycle and his broad knowledge of the real-time status of transportation research."

ENVIRONMENTAL LAB MOVES ROADSIDE INSIDE

On February 11, the Texas Transportation Institute (TTI) dedicated a new laboratory that brings the outdoors in. The lab, located on Texas A&M University's Riverside Campus in College Station, serves as a test facility for erosion and sediment control products used in roadway construction and maintenance. Products that pass the laboratory's testing program are placed on the Texas Department of Transportation's (TxDOT) approved product list.

For over a decade, with the support of TxDOT research projects, the Hydraulics, Sedimentation, and Erosion Control Laboratory (HSECL) has provided performance comparisons of products used for stormwater quality improvement and for erosion and sediment control. Its operation met wide acceptance, but the unpredictability of weather created constant obstacles. In 2000, TTI and TxDOT evaluated the HSECL and began redesign and renovation to decrease the impact of climate variations and increase testing precision. At the February



Harlow Landphair points out the pulley mechanism used to hoist the test bed to the proper angle.

dedication of the expanded lab, transportation officials formally launched the new facility. Jett McFalls, associate transportation researcher, estimates the lab will cut the time and cost needed for product tests by half.

Harlow Landphair, research scientist, oversees HSECL operation. McFalls serves as lab manager, and TTI personnel Rodney Jackson, Doug Artz and Alex Ferrazas monitor ongoing tests and maintain the facility.



Demonstration of flume used to test shear strength of erosion control materials for use in ditch bottoms.

Check out the web site at:
http://tti.tamu.edu/enviro_mgmt/facilities/hec

THIRD ANNUAL TEXAS RURAL TRANSPORTATION CONFERENCE HELD IN LAREDO

The Third Annual Texas Rural Transportation Conference was held on the campus of Texas A&M International University (TAMIU) in Laredo on March 8, 2002. The theme of the conference focused upon transportation services and employment, transportation issues in colonias neighborhoods and rural transportation providers in the border region.

TAMIU President Dr. Ray Keck, Texas Transportation Institute (TTI) Director Dr. Herb Richardson, and TTI Regional Division Head at West Texas A&M University Dr. Duane Rosa welcomed 94 conferees to the day-long conference, which featured an opening presentation by Ms. Diane D. Rath, chair of the Texas Workforce Commission. Rath emphasized the importance of transportation in supporting the employment of the state's labor force.



Diane D. Rath

In the afternoon's session, State Representatives Ignacio Salinas and Richard Raymond each described priorities for rural transportation, particularly in the border region of Texas. Mr. Oscar Muñoz and Dr. Marlynn May of Texas A&M University outlined some of the unique challenges facing the residents in the Texas border colonias neighborhoods from Brownsville to El Paso. Central to their presentation was a description of a TTI project, which is funded through a

grant provided by the State Energy Conservation Office, to acquire vans that are used to support the activities and residents served by the Community Resource Centers being built and operated by the Center for Housing and Urban Development (CHUD) at Texas A&M University.



Rep. Richard Raymond

In his remarks to the conference, Webb County Judge Mercurio Martinez endorsed the successful Community Resource Center and van service program that CHUD is operating in some colonias in Webb County. Texas Department of Transportation's (TxDOT's) Laredo District Engineer Luis Ramirez closed the conference program with a presentation describing how the new \$175 million bond-financed road building program will be used to plan, identify, select and build road projects to improve transportation accessibility for colonias residents in the state's border counties.

TTI and its regional divisions at Texas A&M International University and West Texas A&M University sponsored the conference. Co-sponsors included the Southwest Region University Transportation Center, TxDOT, and the Texas Workforce Commission. Funding was provided by the TAMUS/Kellogg Collective Leadership Project and Kellogg/Texas Agriculture Program TexLINC.



STEVE ROOP TO HEAD NEW MULTI-MODAL FREIGHT PROGRAM

Steve Roop has been named the director of a newly established Multi-modal Freight Program at TTI. The program is a combination of The Center for Ports and Waterways (CPW), rail research, pipeline research and intermodal trucking. Roop is also the interim replacement for Colonel John Basilotto,

who retired in January as head of CPW.

According to Roop, having the freight modes under one umbrella will allow TTI to study them individually as well as to investigate the interconnectivity between the modes, doubling the potential for research topics.

"Freight is becoming a bigger part of the transportation research question," said Roop. "So much freight is on the highways, and so many questions abound about how we can better accommodate freight movement. Unless we do it effectively, the economy, roadway system and safety suffer."

With the different groups combined to form the Center, the stage is set for a large amount of research covering a wide spectrum of areas from technology to economics.

"Relative to the Center for Ports and Waterways, there's been a change in focus in that we are now seeking sponsored research, and we are going to be far more aggressive in seeking out competitive research opportunities," said Roop. "And the challenge is going to be to employ all the resources of the consortium to meet the needs of our research sponsors."

THE BACK ROAD



Anyone who drives in one of Texas' cities—or any major city in the nation—sees the increase in travel times and overall congestion, and doesn't have to be told that mobility is a major problem in our urban areas. This issue highlights the latest mobility research, and offers information about several topics related to improving mobility—reducing or eliminating traffic

'bottlenecks,' designing and utilizing managed lanes, and the effects of 'value pricing' and High-Occupancy Vehicle (HOV) lanes on traffic congestion. In each case, the goal is to give motorists more travel choices and to offer options for improving mobility throughout the roadway system. There is also a story about how Texas Transportation Institute (TTI) researchers are looking for ways to mitigate those traffic problems that particularly frustrate drivers, resulting in aggressive driving, or at worst, actual road rage. Options include improving incident management and getting traffic moving again quickly, reducing bottlenecks, and the concept of 'late merge,' which also can reduce driver frustration by shortening merge queues.

Despite significant advances, much remains to be done to reduce transportation-related deaths and injuries. In 2001, State Senator Steve Ogden passed legislation that created the Texas Center for Transportation Safety. Dave Willis, formerly president and CEO of the AAA Foundation for Traffic Safety, has now been appointed to head the Center and direct the research program. This Center provides a focus for safety-related research, bringing together existing TTI programs while expanding into new areas of interest such as the public health aspects of transportation safety.

We have been fortunate over the years to have the support and interest of many leaders in transportation through the TTI Council. Over the years, the size, composition and role of the Council has changed to more effectively meet the changing needs of the Institute. The new TTI Council, described in this issue, is one of the most influential groups of transportation leaders ever assembled to advise a university-based transportation research center. Chaired by Arnold Oliver, retired Texas Department of Transportation executive director, the new, smaller TTI Council will be a tremendous asset to the Institute, and we appreciate the time and interest of all its members.

We appreciate your interest in TTI, and hope you'll call on us if we can be of service.

Researcher

Texas Transportation Institute (TTI)/Information & Technology Exchange Center (ITEC) • The Texas A&M University System

Dr. Herbert H. Richardson *Publisher/Director, TTI*

Susan M. Lancaster *Editor/Director, ITEC*

Kelly West *Managing Editor/Writer*

Penny Beaumont *Contributing Writers*

Rhonda Brinkmann

Bernie Fette

Chris Pourteau

Jennifer Ryan

Chris Sasser

Bill Stockton

Carol Walters

Brandon Webb

Marcus Overton *Designer/Production Artist*

James Lyle *Photographer*

John Henry *Art Director*

Rhonda Brinkmann *Copy Editor/Proofreader*

Texas Transportation Researcher is published by the Texas Transportation Institute to inform readers about its research, professional and service activities. Opinions expressed in this publication by the editors/writers or the mention of brand names do not necessarily imply endorsement by the Texas Transportation Institute or The Texas A&M University System Board of Regents.

Texas Transportation Researcher (ISSN 00404748) is a quarterly publication of the Information & Technology Exchange Center, Texas Transportation Institute, The Texas A&M University System, 3135 TAMU, College Station, Texas 77843-3135. For more information or to be added to the mailing list, contact this address, call (979) 845-1734, or e-mail Debra Svec at d-svec@tamu.edu. Periodicals postage paid at College Station.

Postmaster/Bulk Mail Clerk

Send address changes to:

Texas Transportation Researcher

Information & Technology Exchange Center

Texas Transportation Institute

The Texas A&M University System

3135 TAMU

College Station, TX 77843-3135



Visit TTI on the Internet at <http://tti.tamu.edu>

Researcher

Texas Transportation Institute/Information & Technology Exchange Center
The Texas A&M University System
3135 TAMU
College Station, TX 77843-3135

Periodicals
Postage
PAID
College Station
Texas 77843