

**Do Road-User Charges
Make Sense for Texas?**

More States Are Exploring
Alternatives to the Motor Fuels Tax

**Comprehensive Compaction
Monitoring System**

TTI Develops 3-Step Process to Measure
the Quality of New Asphalt Pavement

**TTI Researchers
Contribute to the 2014
TRB Annual Meeting**

TEXAS TRANSPORTATION

Researcher

VOL. 50 | NO. 1 | 2014



Yesterday's Inventions, Tomorrow's Innovations

PAGE 10



tti.tamu.edu

TEXAS TRANSPORTATION Researcher

VOL. 50 | NO. 1 | 2014

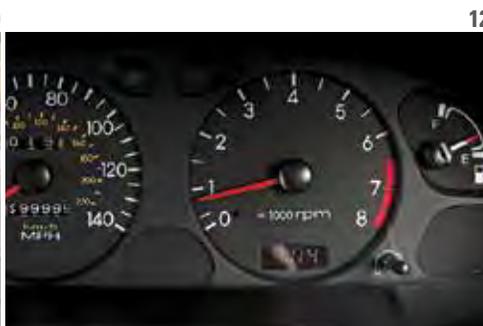
ON THE COVER: An integral part of the Comprehensive Compaction Monitoring System, this infrared sensor makes it possible to record the surface temperature of pavement materials in real time.



8



10



12



14

3

Building on the Past to Plan the Future

4

Happy Birthday to *Texas Transportation Researcher*: 50 Years of Informing, Sharing and Promoting TTI Research and Implementation

6

Texas Drivers Report Improvements in Some Safety Behaviors

8

TTI's Advanced Traffic Forecasting Helps Austin Prepare for 2035

10

Comprehensive Compaction Monitoring System: TTI Develops 3-Step Process to Measure the Quality of New Asphalt Pavement

12

Do Road-User Charges Make Sense for Texas? More States Are Exploring Alternatives to the Motor Fuels Tax

14

TTI Researchers Contribute to the 2014 TRB Annual Meeting

16

TTI-UMTRI Partnership: LINK Alliance

17

TTI Director Emeritus Herb Richardson Inducted into Texas Transportation Hall of Honor

18

TTI Advisory Council

19

TTI News

20

TTI Publications

Publisher/Agency Director

Dennis L. Christiansen, P.E.

Editor

Kelly West

Managing Editor

Chris Pourteau

Writers

Samantha Atchison

Rick Davenport

Bernie Fette

Terri Parker

Chris Pourteau

Chris Sasser

Kelly West

Art Director

John Henry

Designers

Vicky Nelson

Stacy Schnettler

Photographer

James Lyle

Proofreaders

Michelle Benoit

Beverly Gracia

A PUBLICATION OF



Texas Transportation Researcher is published by the Texas A&M 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 does not necessarily imply endorsement by the Texas A&M Transportation Institute or The Texas A&M University System Board of Regents.

Texas Transportation Researcher (ISSN 00404748) is a quarterly publication of TTI Communications, Texas A&M Transportation Institute, 3135 TAMU, College Station, Texas 77843-3135. Periodicals postage paid at College Station.

Follow TTI on:



<http://www.youtube.com/user/ttitamu>

<http://www.facebook.com/ttitamu>

<http://twitter.com/TTI>

FOR A FREE SUBSCRIPTION TO THIS NEWSLETTER OR TO UPDATE YOUR SUBSCRIPTION INFORMATION:

Contact Susie Catalina (phone: [979] 862-6993, email: s-catalina@tamu.edu) or go to <http://tti.tamu.edu/publications/researcher/subscriptions/>.

POSTMASTER, PLEASE SEND ADDRESS CHANGES TO:

Texas Transportation Researcher
Texas A&M Transportation Institute
TTI Communications
3135 TAMU
College Station, TX 77843-3135



BUILDING on the Past to PLAN THE FUTURE

RESEARCH IS A BRIDGE.

In its simplest form, research involves taking what we know and building on it. The empirical process is how we explore possibilities, test new theories about old assumptions, and ultimately, through innovation, create a roadmap to a better future.

But new ideas have to come from somewhere. At the Texas A&M Transportation Institute (TTI), they've developed through a careful, investigative process that, ironically, examines what we think we know to determine how much we don't know. Through research, we discover the cracks in our armor (and our pavements), but we also figure out how to rehabilitate those cracks via implementable findings. The state of the art — through research — becomes the state of the practice.

Thomas Scullion has mastered that process like few others. Tom is a senior research engineer for TTI and manages our Flexible Pavements Program. For decades, his ability to think outside the pavement rehabilitation box has revolutionized road maintenance. This issue of the *Texas Transportation Researcher* highlights his latest idea: the Comprehensive Compaction Monitoring System. Tom has taken his past inventions and combined them into a seamless process that can

preserve our roadways longer and more cost-effectively while providing safer travel for motorists — nothing new for Tom, really.

As you'll see in these pages, other TTI researchers are paving new ground as well. In the next few decades, Austin is facing a tremendous mobility challenge as its population nearly doubles. A TTI team recently modeled that future reality to help stakeholders in the Texas capital avoid a driving dystopia.

Part of making transportation better in the future is figuring out, today, how to pay for the system we need for vital economic growth and a desirable standard of living. For example, TTI researchers are studying how other states are using road-user fees as one option for supplementing diminishing gas-tax revenues. And new partnerships — like TTI's LINK Alliance with the University of Michigan Transportation Research Institute — can leverage the best that each partner offers to produce research findings greater than the sum of the parts.

If you'll indulge me a moment, I'd like to note two landmarks in 2014. Since its inception in 1965, the *Researcher* has shared TTI innovations — our contribution to the process of building on what we know to improve what we have — with the world. We invite



*by Dennis Christiansen
Agency Director*

you to celebrate with us 50 years of spreading the good word by turning this page. You'll no doubt note how the magazine itself has been innovated over time to meet the needs of its evolving readership.

The second landmark occurred on Feb. 19, when TTI welcomed its latest inductee into the Texas Transportation Hall of Honor. For 13 years, Herbert H. Richardson, my predecessor, served as director of TTI. In many ways, Herb's vision for what the Institute could be established TTI as the internationally recognized expert in transportation it is today. We honor Herb's contributions — both to the Institute as our director emeritus and to our global transportation system — with his induction.

Giants like Herb, Tom and TTI's other outstanding thought leaders continue to move us forward with their original thinking and their desire to transition the transportation system we have to the one we need. Their research helps make our transportation future one I look forward to sharing. I'm honored to work beside them at TTI. ■



HAPPY

BIRTHDAY

Texas Transportation Researcher

50 Years of Informing, Sharing and Promoting TTI Research and Implementation

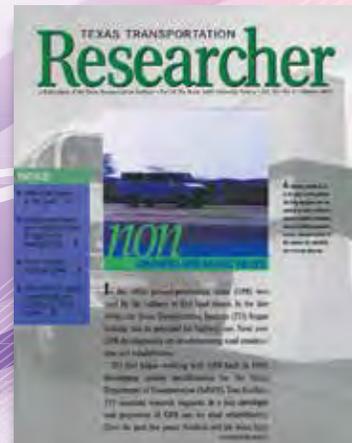
1965



1988



1998



The Texas Transportation Researcher, or *Researcher*, is the flagship publication of the Texas A&M Transportation Institute (TTI). In its current form, the quarterly magazine is intended to

- promote interest and inquiry into TTI’s research, technology transfer and education;
- encourage research implementation and application; and
- increase awareness of the diversity of TTI research, divisions, centers and urban laboratories.

While the look and style of writing have certainly evolved over the decades since the inaugural 1965 issue was published, the core goal has remained the same.

The newsletter’s founding editor Louis J. Horn, who served in that position for 20 years, described the original purpose in his parting 1985 issue: “This publication, full of usable information, has functioned as a window of happenings and breakthroughs in research. Through the years I have visualized our research in action with you of the readership putting its findings into the mainstream of progress with practical developments for our use and benefit.”

Susan Lancaster became the next editor in 1986. With an aggressive approach to disseminating the Institute’s research findings to possible sponsors, she worked with the Institute’s executive leadership — Dr. Charley Wootan and his team — to expand and maintain contact with hundreds of government entities and research organizations. The

subscriber list grew to over 3,000 transportation industry professionals, including both technical and nontechnical readers. The *Researcher* received a major facelift in 1988, modernizing with articles written in a more journalistic style for a wider, lay audience.

When Kelly West took over as editor in 2003, it was with the guidance of a newly established editorial board headed first by the Institute’s fourth director, Dr. Herb Richardson, and then by his successor, Dr. Dennis Christiansen. This strategic leadership — with the contributions of a team of writers, editors, designers and photographers — has ensured that the publication continues to stay current in its design, distribution channels and writing style.

Having undergone four more major redesigns over the last 25 years, today’s *Researcher* is published as a four-color magazine in both print and electronic format (via TTI’s website), and it goes out to approximately 4,500 readers across the United States and in 100 different countries around the globe. The *Texas Transportation Researcher* has received numerous awards for design and writing, and continues to help promote the Institute as a leader in transportation research. This success is largely due to the efforts, contributions and cooperation of the entire TTI research staff, who are always willing to share their research accomplishments and successes.

To begin receiving *Researcher* in either print or electronic form, go to tti.tamu.edu/publications/researcher/subscriptions/ or e-mail Susie Catalina at s-catalina@tamu.edu. ■



2001



2007



2013

Texas Drivers Report Improvements in Some Safety Behaviors

SURVEY ALSO TRACKS AWARENESS OF SAFETY PROGRAMS, CAMPAIGNS

TEXAS DRIVERS in 2013 were slightly less inclined to report they exceeded speed limits or talked on a cell phone while driving than they were the previous year, according to recent research.

In the study, funded annually by the Texas Department of Transportation (TxDOT) since 2010, the Texas A&M Transportation Institute (TTI) surveyed Texans' attitudes toward speeding, driving while intoxicated, distracted driving and seat-belt use in July and August.

John Barton, TxDOT's deputy executive director and chief engineer, comments on the importance of driver safety awareness: "The goal of this survey is to track, on a yearly basis, changes in Texans' attitudes and awareness of traffic safety and the consequences involved with violating traffic safety laws. The survey also focuses on awareness of TxDOT's year-round public education campaigns covering a number of safe driving topics."

Katie Womack, TTI project director for the Statewide Traffic Safety Awareness Study, says, "It's important to validate that the traffic safety programs, campaigns and media are hitting the mark. People are hearing and recognizing the programs, and some have been affected behaviorally. Researchers study crash rates, but this adds to the picture of how people are aware and mindful that these programs are going on."

The first set of questions measured changes in driver awareness from previous surveys by asking drivers questions about several traffic safety issues. An increased number of drivers this year — 27.4 percent — said they never go faster than 75 mph when the speed limit is 70 mph, up from 21.8 percent in 2012. Another improvement appears in the percentage of Texans who said they sometimes or regularly talk on a cell phone while driving — 41.6 percent in 2013, compared to 46.6 percent in 2012. However, the percentage who said they sometimes or regularly text while driving remained the same.

A discouraging statistic showed that 88.1 percent of 2013 respondents said the chances of getting a ticket for exceeding the speed limit by more than 5 mph was likely or very likely, a reduction from 93.1 percent in 2012.

Another survey looked into the opinions of Texans about driving safety laws and conditions. According to the 2013 Traffic Safety Culture survey sponsored by TTI's Center for Transportation Safety, results showed a healthy portion of Texans favored strengthening laws to advance traffic safety. The same survey was conducted in 2010.

More than 76 percent of respondents said they support passage of a mandatory motorcycle helmet law, and 34 percent said they support a law prohibiting cell-phone use while driving.

Despite improvements in some respects, Texans still generally felt that they were less safe on the road than they were five years before. That sentiment was shared by 40.8 percent of respondents in 2013, up from about 35 percent in 2010.

Despite improvements in some respects, Texans still generally felt that they were **LESS SAFE ON THE ROAD** than they were five years before.

The surveys also measured changes in driver awareness in regions throughout the state. For seat-belt use, the best improvement on a regional level was in El Paso. In 2012, respondents from the El Paso area were the least likely in the state (32.7 percent) to believe that a person would get a ticket for not wearing a seat belt. In 2013, the number who expected to be cited for a seat-belt violation jumped to 59.9 percent. Also, 72.3 percent of El Paso respondents — the highest in the state — reported they had heard a seat-belt enforcement message in the past 60 days in 2013. ■



For more information, contact **Katie Womack** at (979) 845-4872 or kwomack@tamu.edu.

TEXANS' AWARENESS OF Driving Safety Initiatives

2013

82.2%

recognized the
**"Click It or
Ticket"** slogan
(most recognized
message
2012–2013)



62.8%

read, saw
or heard
something
about
**seat-belt
enforcement**
(past 60 days)



42.6%

read, saw
or heard
something
about **speed
enforcement**



66.8%

read, saw or
heard something
about **alcohol-
impaired
driving
enforcement**
(past 30 days)



A photograph of the Austin skyline at dusk, with a busy highway in the foreground. A red callout box in the top right corner contains text about population growth. The year '2035' is overlaid in large, semi-transparent white numbers across the middle of the image.

Austin's population will almost **double** over the next **20 years**.

TTI's Advanced Traffic Forecasting Helps Austin Prepare for 2035

ACCORDING to the Texas Department of Transportation (TxDOT), 180,000 vehicles per day drive I-35 between US 183 and SH 71, the 10-mile central artery for travel and commerce in Austin. The Capital Area Metropolitan Planning Organization (CAMPO) estimates the city's population will almost double over the next 20 years.

Considering that 85 percent of current traffic is local, the prospect of doubling Austin's population is daunting. The Texas A&M Transportation Institute (TTI) conducted a recent project, Long-Term Central Texas I-35 Improvement Scenarios, to help local stakeholders in the Texas capital identify potential solutions to the looming mobility problem. Researchers looked at a larger segment of I-35, from San Marcos to Georgetown, approximately 70 miles across three counties. The study was funded as part of TTI's Mobility Investment Priorities Project (Rider 42) and involved the Central Texas Working Group.

"We used traffic modeling software to explore alternative strategies," explains TTI Associate Research Scientist Jeff Shelton. "Modeling lets us cost-effectively evaluate all the options so we can focus time and effort on developing the best ideas."

The team started with the CAMPO regional travel model — a representation of where people live, work, shop, go to school, etc. A dynamic-traffic assignment model — a relatively new tool — helped researchers achieve a more accurate portrait of projected traffic trends. TTI created a visual representation of projected traffic levels in 2035. Akin to a weather map showing thunderstorm intensity, the colors reflect how fast or slow traffic is moving at a given time of day; the bluer, the better. Red means traffic is nearly at a standstill.

"If we maintain this business-as-usual approach, some folks 20 years from now wouldn't get home from work until 10 p.m.," explains Shelton. "And that will cause the local economy and quality of life to suffer."

TTI looked at eight possible improvement scenarios, beginning with CAMPO's existing plan (adding

no I-35 capacity) and evaluating various managed-lane options to handle area congestion. Researchers only examined traffic performance in the study and did not consider costs or other feasibility issues — the point was to identify ideas that might benefit from further study.

One option to increase capacity would add six lanes (likely tunneled below existing infrastructure) from SH 45 North to SH 45 South with access to and from the new lanes along the way. Another, hybrid strategy combines multiple approaches that would involve drastic changes to travel behavior, including commuters working from home two days per week; 30 percent fewer students commuting to the university and 10 percent fewer people making shopping trips; travelers shifting to off-peak hours; and increased use of high-occupancy vehicle, transit and non-motorized modes by 25 percent each.

“If we maintain this business-as-usual approach, some folks 20 years from now wouldn’t get home from work until 10 p.m.”

Jeff Shelton, manager of TTI’s Research and Implementation Office – El Paso

Under these more aggressive approaches, the traffic forecast in 2035 is much brighter. The red areas are essentially gone, though a few localized bottlenecks remain. Local operational strategies could troubleshoot these bottlenecks (assuming implementation of the drastic behavioral changes detailed in this article).

As a prime example of how research can inform policy discussions and actions, TTI’s results can contribute to the region’s 2040 plan development now under way, though ultimately it’s up to local agencies and policymakers to decide which options to pursue. The hybrid strategy will require significant consultation with the public, changes in travel behavior, and decisions to alter the current course of development. Research into the issue will continue through TTI’s Transportation Policy Research Center.

“TTI’s long-term analysis is a useful complement to the near-term improvements now being planned,” says Terry McCoy, TxDOT’s deputy district engineer for Austin. “Their modeling effort provides key information that is helping shape the current planning effort.” ■

Numbers Worth Noting

3.25 million

Austin’s estimated regional population in 2035 (nearly double today)



45–60 minutes

Average commute, downtown Austin to Round Rock



\$10 billion

Lost time/wasted fuel in Texas due to congestion annually



6 hours

Congested hours from US 183 to SH 71 along I-35 in Austin (10.2-mile segment)



86 percent

Local percentage of traffic along I-35



“TTI’s long-term analysis is a useful complement to the near-term improvements now being planned.”

Terry McCoy, TxDOT’s deputy district engineer for Austin



For more information, contact **Jeff Shelton** at (915) 532-3759 or j-shelton@tamu.edu.



Comprehensive Compaction Monitoring System

TTI Develops 3-Step Process to Measure the Quality of New Asphalt Pavement

Construction defects in new asphalt layers often cause early pavement failures. Imagine a time when these are eliminated.

“I think that time is here,” says Tom Scullion, manager of the Flexible Pavement Program at the Texas A&M Transportation Institute (TTI). Scullion is speaking of a three-step process (detailed in this article) that uses technologies developed at the Institute over the last 5 to 10 years. “There is no question that if these three steps were followed, pavements would last longer, money would be saved, and safety would be improved.”

Individually, each device or technology addresses three components of what is necessary to achieve ideal compaction of the asphalt pavement mat: uniform mat temperature, full compaction coverage and the correct layer density.

Collectively, what Scullion calls the Comprehensive Compaction Monitoring System gives the purchasing agency the confidence of getting a quality mat and that every precaution has been taken to make sure the asphalt will last. “Longer-lasting pavement is what this is about — fewer lane closures for repairs, as well as increased safety for the traveling public and maintenance crews,” he says.



1

PAVE-IR

PAVE-IR is an infrared imaging system mounted on the back of a lay-down machine to ensure that the mat is placed without any cold spots. It consists of a set of 10 temperature sensors mounted on the rear of the paver. The surface temperature of the mat is recorded in real time. Operators know immediately if the temperature falls below the target values, and corrective action can be taken.

“If the mat falls below that level, compaction is not possible,” Scullion points out. “Having the right temperature uniformly throughout the new mat is critical; otherwise, the pavement life span will be shortened.”

PAVE-IR allows for 100 percent of the mat to be tested. After TTI developed the hardware and software, a technology development company built a PAVE-IR prototype and refined it. So far, 50 of the PAVE-IR systems have been sold and are in operation statewide. The Texas Department of Transportation wrote the field specifications, and efforts are under way to introduce PAVE-IR on the national level.



2

INSTRUMENTED ROLLER

Once the asphalt has been laid and the temperatures are right, a steel-wheel breakdown roller is used to compact the mat. It’s a critical element of road construction.

“Much of road construction is done during nighttime hours now, so it’s easy for the roller operators to miss some of the mat,” Scullion says. “We developed a GPS [global positioning system]-based system that is mounted on the roller and a

computer monitor display system to show the operator the completed coverage. This is an easy way of permitting the operators to visually determine if they have completed their assigned pattern. During compaction, operators can also now closely monitor asphalt temperatures by viewing a sensor mounted on the equipment.”

Because proper compaction is written into most road construction contracts, Scullion points out that road construction companies, as well as taxpayers, benefit from instrumented rollers.



3

ROLLING DENSITY METER

The final tool developed by TTI researchers is a GPR-based rolling density meter. This device is noncontact and is pushed over the new mat to measure the mat’s density levels in a one-step, real-time procedure.

Until now, density levels were checked by a destructive process that included taking core samples of the road. Not all of the surface could be tested, and the sample areas had to be patched. “The process was less than ideal, so we worked with a GPR manufacturer and told them what we were trying to accomplish,” TTI Associate Research Scientist Stephen Sebesta says. “Eventually, they determined a new nondestructive testing device could be built.”

“The Comprehensive Compaction Monitoring System is a combination of the technologies that have already been field-tested,” Scullion reiterates. “I can see a time in the near future when the system could be required by every department of transportation across the country.”

PAVE-IR and the rolling density meter were ranked this year by the American Association of State Highway and Transportation Officials as the most valuable products of the national Strategic Highway Research Program 2. ■



For more information, contact **Tom Scullion** at (979) 845-9913 or t-scullion@tamu.edu.



Do Road-User Charges Make Sense for Texas?

More States Are Exploring Alternatives to the Motor Fuels Tax

When we pay for electricity, the charge is based on the number of kilowatt hours we use. For natural gas, we pay for the number of cubic feet we use. For cell-phone service, it's typically the number of minutes we use.

If we think of transportation as another utility service, does it make sense to consider basing the charge in the same way — according to how much we actually use?

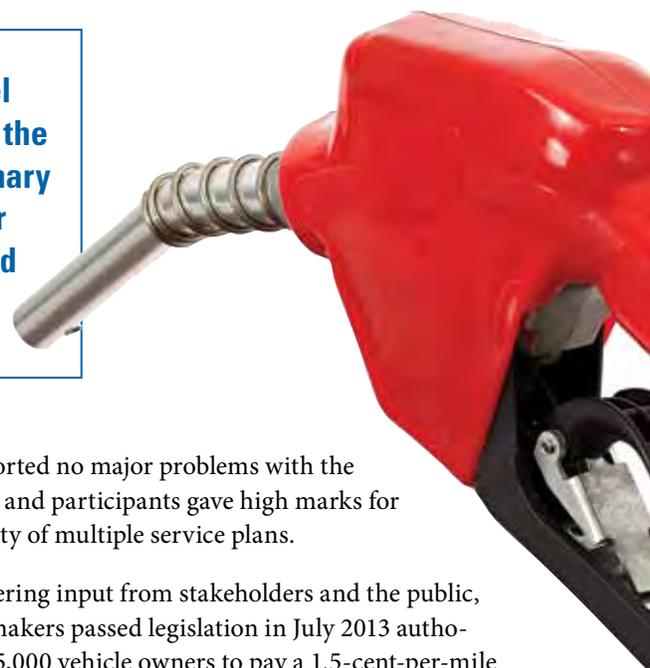
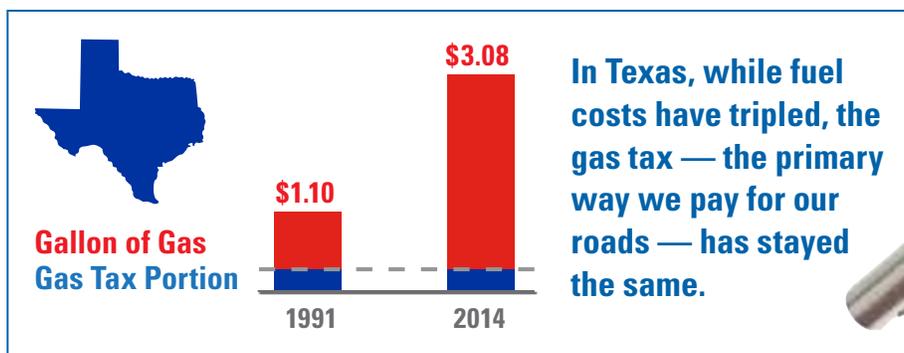
That's the question on the minds of officials in some states determining how best to fund their transportation needs. Many see a need for a revenue source more sustainable than the motor fuels tax, the value of which has eroded over time due to inflation and increased fuel efficiency.

It's also the focus of one of the first studies undertaken by the Texas A&M Transportation Institute's (TTI's) new Transportation Policy Research Center (TPRC). Assistant Research Scientist Trey Baker examined Oregon's experiment with road-user charges (RUCs) and the concept's potential applicability in Texas.



In a 2002 pilot test, the Oregon Department of Transportation (ODOT) first tested the RUC concept with about 285 vehicles outfitted with a specially designed road-use measurement system. The system allowed vehicle owners to pay their travel fees where they'd routinely pay their fuel tax: at the gas pump. In examining an array of RUC factors — privacy being high on the list — officials determined the concept was viable.

“The actual implementation of these fee systems is likely to be a lot less scary than what the public expects,” Baker says. “If a driver has concerns about ‘government tracking,’ then they will likely have the option of not using a device at all or



using one of many private-sector technology and account management service providers.”

“The actual implementation of these fee systems is likely to be a lot less scary than what the public expects.”

Trey Baker, TTI assistant research scientist

A second ODOT pilot test involved an RUC in lieu of fuel-tax payments. Participants were offered a range of options on several aspects of the program, including how the fees would be assessed and who would manage participants’ accounts — ODOT or a private-sector provider. Depending on the option chosen, participants could ensure that they were charged for all miles driven (basic), only for travel on state-maintained roadways (advanced), or for estimated annual mileage (flat fee). Participants could also choose to use a smartphone app, which allowed switching between the advanced and basic options.

Officials reported no major problems with the second pilot, and participants gave high marks for the availability of multiple service plans.

After considering input from stakeholders and the public, Oregon lawmakers passed legislation in July 2013 authorizing up to 5,000 vehicle owners to pay a 1.5-cent-per-mile RUC in place of the state’s motor fuels tax. The new law represents a step toward possible statewide implementation.

Regardless of whether Texas pursues a similar path, Baker’s research can provide insight to any related discussions.

“It’s important that more states are exploring alternatives for transportation funding, along with the related policy considerations,” says TPRC Director Ginger Goodin. “And our study is a prime example of how research can inform those policy considerations.” ■



For more information, contact **Trey Baker** at (512) 407-1113 or r-baker@ttimail.tamu.edu.



TTI Researchers *Contribute to the* 2014 TRB Annual Meeting

Texas A&M Transportation Institute (TTI) researchers joined nearly 12,000 attendees from around the world at the 93rd annual meeting of the National Academies' Transportation Research Board (TRB) Jan. 12–16 in Washington, D.C. This year's attendance set a new record.

“TTI researchers continue to play leadership roles in all aspects of TRB,” notes Katie Turnbull, TTI executive associate director and chair of the TRB Technical Activities Council. “Researchers at all levels within the Institute were active chairing and attending committee meetings, presiding at sessions, and delivering papers and invited presentations. In addition, TTI Communications developed a new video for TRB that opened the New and Young Members Welcome Session.”

Several TTI researchers were recognized with special awards during the annual meeting. Both the Committee on Operational Effects of Geometrics — chaired by TTI Roadway Design Program Manager Kay Fitzpatrick — and the Committee on Geometric Design received TRB's

Blue Ribbon Award for Advancing Research. Other TTI researchers on these committees include Research Engineer Karen Dixon, Assistant Research Engineer Vichika Iravarapu and Associate Research Engineer Marcus Brewer. The two committees jointly developed a strategic geometric design research program in consultation with the American Association of State and Highway Transportation Officials Technical Committee on Geometric Design.

“TTI researchers continue to play leadership roles in all aspects of TRB.”

Katie Turnbull, TTI executive associate director

TTI Transportation Planning Program Manager Ed Hard and Research Scientist and Mobility Management Program Manager Stacey Bricka are members of TRB's Travel Survey Methods Committee, which received the Blue Ribbon Award for Communications. This award recognizes the committee's work providing the travel-survey community with access to the best, most current information on travel-survey methods.



(Left to right): Katie Turnbull of TTI, chair of the Technical Activities Council; Kay Fitzpatrick of TTI, chair of the Operational Effects of Geometrics Committee; Eric Donnell, chair of the Geometric Design Committee; Stacey Bricka of TTI; Guy Rousseau, chair of the Travel Survey Methods Committee; Elaine Murakami of the Federal Highway Administration; Jason Bittner, chair of the Conduct of Research Committee; and Heather Rothenberg and Marsha Anderson Bomar, co-chairs of the Women's Issues in Transportation Committee.

TTI Executive Associate Director Jon Epps was appointed as a new emeritus member of the Committee on General Issues in Asphalt Technology. The emeritus membership category recognizes the long-term contributions and outstanding service of individuals through participation in TRB standing committees.



(Left to right): Tom Kazmierowski, chair of the TRB Design and Construction Group; Roger Bligh of TTI; Rory Meza of TxDOT; Dusty Arrington of TTI; and Bob McGennis, chair of the TRB Design and Construction Group Paper Awards Subcommittee.

TTI Roadside Safety Program Manager Roger Bligh, Associate Transportation Researcher Dusty Arrington and Rory Meza of the Texas Department of Transportation (TxDOT) were honored by the TRB Design and Construction Group with the Practice-Ready Paper Award. The paper, "MASH TL-2 Guardrail-to-Bridge Rail Transition Compatible with 31-Inch Guardrail," received the top honor from among the almost 1,000 papers reviewed by the 60

committees that comprise the group. A Practice-Ready Paper Award is bestowed each year based on the potential for immediate implementation in the design and construction of transportation facilities, and is selected using criteria that include "readability, breadth of applicability and impact."



Melissa Finley is presented the best paper award from Work Zone Traffic Control Committee Chair Timothy Baughman.

TTI Research Engineer Melisa Finley won the best paper award in the TRB Committee on Work Zone Traffic Control. Her paper, "Field Evaluation of Automated Flagger Assistance Devices (AFADS) in Work Zones on Two-Lane Roads," details a two-year research project sponsored by TxDOT. The AFADS are operated remotely by flaggers, away from the danger of work-zone traffic. As a result of the research, TxDOT has used AFADS in nearly every district across the state.

Kay Fitzpatrick, TTI Assistant Transportation Researcher James Robertson and TTI Associate Research Scientist Raul Avelar received the top award in the TRB Pedestrian Committee for their paper, "Closed-Course Study of Driver Detection of Pedestrians Beyond Flashing Beacons Within a Sign Assembly."

In addition, TTI conducted four focus groups at the annual meeting to assist TRB with updating the TRB Strategic Plan. Moderated by Associate Research Scientist Tina Geiselbrecht, manager of TTI's Public Engagement Planning Program, the four focus groups included members of the young members' council; university representatives; committee, section, group and panel chairs; and a cross section of additional transportation professionals. Results of the focus-group meetings will be combined with a survey to assist the TRB Executive Committee in the development of a new strategic plan. ■



For more information, contact
Katie Turnbull at (979) 845-6005
or k-turnbull@tamu.edu.



TTI-UMTRI Partnership: **LINK Alliance**

It's the best of both worlds as the Texas A&M Transportation Institute (TTI) and the University of Michigan Transportation Research Institute (UMTRI) join forces in redefining transportation for a connected and automated world.

The recently formed initiative, named the LINK Alliance, is a combined effort to collaborate on new transportation research connecting people, vehicles and roadways in a way that benefits safety, mobility and the environment.

TTI Research Scientist John Maddox, who is also an UMTRI researcher, leads the LINK Alliance. John notes that the group will use the strengths of each research institute — UMTRI in vehicle research and TTI in transportation infrastructure research — to undertake new and innovative projects.

“Both institutes are affiliated with top-tier research universities, which bring an incredibly broad and deep level of expertise in many transportation and



related areas, as well as the innovative thinking and enthusiasm of students,” says Maddox. “This combination provides great value to government and private organizations, including original equipment manufacturers, and will facilitate the advancement of the transportation system as a whole.”

To kick off the LINK Alliance’s research

efforts, UMTRI and TTI were awarded a \$1.4 million grant from the U.S. Department of Transportation in October 2013 to establish the Center for Advancing Transportation Leadership and Safety (ATLAS Center). The center sponsors research, education and technology transfer activities to find integrated, innovative solutions for transportation safety. Three of its early projects will focus on alcohol-impaired nighttime driving; child safety in cars; and reducing fatalities, injuries and societal costs of crashes involving heavy trucks. ■



For more information, contact
John Maddox at (972) 994-2251
or j-maddox@tamu.edu.

TTI Director Emeritus Herb Richardson Inducted into Texas Transportation Hall of Honor

Herb Richardson, director emeritus of the Texas A&M Transportation Institute (TTI), was inducted as the 39th member of the Texas Transportation Hall of Honor during a Feb. 19 ceremony at TTI.

Established in 2000 to recognize those individuals who played significant roles in the development and advancement of Texas transportation, the Hall of Honor is located in the main conference room of TTI's Gibb Gilchrist Building on the campus of Texas A&M University. Each inductee is represented by a plaque that bears his or her likeness.

"We have a state that has been blessed to have an outstanding transportation system, a system that has served the state well," TTI Agency Director Dennis Christiansen said during the ceremony. "It's widely recognized that the development and sustainment of that kind of system is the result of visionary leadership by a relatively small group of individuals."

Richardson became director of TTI in 1993 and oversaw a vast expansion of its mission to include all modes of transportation. During his 13-year tenure, numerous centers of excellence were established, and research expenditures grew significantly, which solidified TTI's reputation for expert transportation research around the world.

"Herb is truly a remarkable person. Innately bright, very well educated, remarkably intuitive, dedicated, personable, explicitly honest and honorable," said Erle Nye, chairman emeritus of both TXU Corp. and The Texas A&M University System Board of Regents. "It is hard to imagine anyone in the field of transportation that has made more comprehensive and positive impacts than Dr. Herb Richardson. His intellect, integrity, good humor and endearing personal manner have contributed mightily to his success."

Several other colleagues spoke at Richardson's induction into the Hall of Honor, including David Cain, chair of the TTI Advisory Council and president of David Cain Consulting; John Junkins, distinguished professor of aerospace engineering and director of the Texas A&M Institute for Advanced Study; and Penny Beaumont, TTI associate director emerita. Richardson received a standing ovation before addressing the crowd.

"As I accept this place in the Hall of Honor with great humility, I do so on behalf of all those at TTI and elsewhere who worked tirelessly with exceptional competence to make Texas transportation more efficient, safer and more accessible for everyone," he said. "Looking to the future, TTI is in good hands under Dennis Christiansen's clearly effective leadership."

Richardson joins other Hall of Honor inductees that include Raymond Stotzer, Dolph Briscoe, H. B. Zachry and Lady Bird Johnson. ■



(Left to right): TTI Agency Director Dennis Christiansen, Chairman Emeritus of TXU Corp. and The Texas A&M University System Board of Regents Erle Nye, Chair of the TTI Advisory Council and President of David Cain Consulting David Cain, TTI Director Emeritus Herb Richardson, Distinguished Professor of Aerospace Engineering and Director of the Texas A&M Institute for Advanced Study John Junkins, TTI Associate Director Emerita Penny Beaumont, and Former Chair of the Texas Senate Finance Committee Steve Ogden.

"It is hard to imagine anyone in the field of transportation that has made more comprehensive and positive impacts than Dr. Herb Richardson. His intellect, integrity, good humor and endearing personal manner have contributed mightily to his success."

Erle Nye, chairman emeritus of TXU Corp. and The Texas A&M University System Board of Regents

TTI ADVISORY COUNCIL

The Texas A&M Transportation Institute (TTI) Advisory Council is comprised of a small group of high-level transportation professionals from across Texas and every sector of the transportation world. The council, which meets annually, offers a tremendous service to the Institute by advising on transportation issues and trends and supporting TTI's research programs and initiatives. TTI profiles several council members in each issue of *Researcher*. ■



Michael Behrens

Director, National Transportation Programs, Michael Baker Corporation
Yoakum, Texas

Mike Behrens provides advice and guidance on project-delivery methods for clients and participates in national transportation initiatives at Michael Baker Corporation. He served as executive director of the Texas Department of Transportation (TxDOT) from 2001 to 2007, where he managed TxDOT programs, policies and operating strategies, as well as represented the agency before the Texas Legislature. Behrens began his career with TxDOT in 1971, formerly serving as district engineer in the Yoakum District and as assistant executive director for engineering operations.

Behrens has served on the Transportation Research Board Executive Committee, and the American Association of State Highway and Transportation Officials, and as past president of the Western Association of State Highway and Transportation Officials.



Thomas Kornegay

Former Executive Director, Port of Houston Authority (Retired)
Houston, Texas

In his position as executive director of the Port of Houston Authority (1992–2009), Thomas Kornegay oversaw a 25-mile-long complex of 150-plus diversified public and private facilities along the Houston Ship Channel. He is credited with developing two container terminals and was instrumental in the completion of the \$700 million Houston Ship Channel deepening and widening project. The port is ranked first in the United States in foreign waterborne tonnage and second in U.S. total tonnage.

Kornegay joined the Port Authority staff in 1972, previously serving as the managing director. He is a past president of the International Association of Ports and Harbors, former chair of the American Association of Port Authorities, former president of the Gulf Ports Association, and former chair of the EX-IM Bank Advisory Board.



Phil Ritter

Executive Vice President, Government and Stakeholder Affairs, Dallas/Fort Worth International Airport
Dallas, Texas

Phil Ritter directs public policy and oversees industry and association leadership, media relations, community relations and other public affairs functions for Dallas/Fort Worth International Airport. Before taking this position in 2009, he was senior vice president of public affairs at Texas Instruments, Inc., for eight years. While there, he directed the company's public affairs initiatives, including government relations, philanthropy and community affairs. He is a former staff member for the Texas State Senate.

Ritter's board service includes the Dallas Symphony Orchestra Board of Governors, Dallas Foundation Trustee, former chair of the United Way of Metropolitan Dallas, former chair of the Texas Education Reform Caucus, and former board member of Dallas Area Rapid Transit and the North Central Texas Council of Governments Regional Transportation Council.

Carlson Honored with Regents Fellow Service Award



Carlson

The Texas A&M University System Board of Regents has presented Paul Carlson, research engineer and head of TTI's Operations and Design Division, with the Regents Fellow Service Award. The award is presented annually "to recognize and honor service, extension and research professionals who have provided exemplary professional service to society that has created large and lasting benefits to Texas and beyond."

Carlson said he is humbled by the award and that his time at the Institute is what led to his receiving it. "TTI provides a unique environment that supports and encourages innovation and collaboration in an entrepreneurial setting," he says. "You are free to make the most of it and set your own bar." Carlson leads TTI's Visibility Research Laboratory, where he tests new retroreflectivity materials for traffic signs and pavement markings to create a safer environment for people driving at night. ■

Crawford Selected for Inaugural LeadershipITE Class



Crawford

Jason Crawford, regional manager of TTI's North Texas Region based in Arlington, Texas, has been selected as a member of

the LeadershipITE Class of 2014, the program's inaugural class. LeadershipITE is a new program from the Institute of Transportation Engineers (ITE) designed "to identify, develop, and engage leaders to ensure that ITE and its members are positioned to engage and shape the future of transportation."

Crawford says he is honored to have been selected as a member of the inaugural LeadershipITE class. "I am very much looking forward to working with my class peers and learning more about leadership styles and applications over the course of this program," he notes. ■

For more information, contact Rick Davenport at (979) 862-3763 or r-davenport@tamu.edu.

Briaud Gives Three Lectures in Russia



Briaud

Jean-Louis Briaud — manager of TTI's Geotechnical and Geoenvironmental Program and Buchanan Chair Professor at Texas A&M University — continued his international travel last fall with three lectures in St. Petersburg, Russia, at the G. V. Plekhanov State Mining Institute and Technical University (also known as the Mining University of Russia), one of the oldest mining schools in Europe. "The Mining University is known worldwide for its emphasis on mining

research," Briaud says, "so it was a great honor to continue my relationship with the students and the university president." ■

Research Specialist Debbie Jasek Retires



Jasek

After nearly a quarter century with the Institute, Research Specialist Debbie Jasek retired Jan. 31, 2014. Jasek headed up TTI's Summer Transportation Institute and other programs aimed at inspiring secondary-school students to pursue science, technology, engineering and mathematics (STEM) careers. "There is no one who could fill Debbie Jasek's shoes," TTI Director of External Initiatives Melissa Tooley said at Jasek's retirement party. "What she did for years was to spend every single summer showing other people's children the opportunities available to them." Some 14,000 kids attended Jasek's summer programs over the years, and many of them credit those programs with their eventual careers and success in the STEM fields. ■

TEXAS A&M TRANSPORTATION INSTITUTE
PUBLICATIONS

A full catalog of TTI publications and other products is online at <http://tti.tamu.edu/publications>. You can find the publications by searching for either the title or publication number listed here. Most of these publications are available as free downloads in portable document format (PDF).

Printed, bound versions of these reports are also available through the URL above.

RESEARCH VIDEOS

Access the research topics listed below via the URLs shown.

The Comprehensive Compaction Monitoring System: <https://vimeo.com/88664312>

Decision Time: Addressing the Urgency of Texas' Growing Mobility Problems: <https://vimeo.com/87572769>

Mileage-Based User Fees: <https://vimeo.com/71848261>

TTI Investigates Intercity Passenger Rail: <https://vimeo.com/70408029>

TTI Research on the U.S.-Mexico Border: <https://vimeo.com/66665274>

Women Leaders at TTI: <https://vimeo.com/77974866>

TECHNICAL REPORTS

Application of a Performance Management Framework for Priced Lanes, by Ginger Goodin, **9-1002-12-10**, January 22, 2014.

Crash Test and Evaluation of the TxDOT T631 Bridge Rail, by William Williams, **5-6396-01-1**, November 22, 2013.

Design and Construction Recommendations for Thin Overlays in Texas, by Bryan Wilson, **0-6615-1**, September 11, 2013.

Development and Evaluation of a MASH TL-3 31-Inch W-Beam Median Barrier, by Akram Abu-Odeh, **9-1002-12-8**, January 28, 2014.

Development and Testing of a Non-pinned Low-Profile End Treatment, by Lynn Beason, **9-1002-12-7**, November 13, 2013.

Development of a Specification for Flexible Base Construction, by Jon Epps, **0-6621-2**, January 10, 2014.

Development of Texas Mechanistic-Empirical Flexible Pavement Design System (TxME), by Sheng Hu, **0-6622-2**, January 17, 2014.

Evaluating the Effectiveness of Performance Based Pavement Marking Maintenance Contracts in Texas, by Adam Pike, **0-6705-1**, January 23, 2014.

Evaluation of Binder Aging and Its Influence in Aging of Hot Mix Asphalt Concrete: Technical Report, by Charles Glover, **0-6009-2**, February 21, 2014.

Evaluation of Traffic Control Devices, Year 4, by Paul Carlson, **9-1001-3**, September 10, 2013.

Innovative Finance: Strategic Research Project, by David Ellis, **6-0700-1**, September 5, 2013.

Katy Freeway: An Evaluation of a Second-Generation Managed Lanes Project, by Ginger Goodin, **0-6688-1**, September 18, 2013.

Prototype Mobile Luminance Measurement System and Level of Service for Evaluating Rural High-Speed Nighttime Delineation, by Jeff Miles, **0-6647-1**, September 17, 2013.

Traffic Control Device Evaluation Program: Technical Report, by Paul Carlson, **9-1001-4**, January 9, 2014.

Warrants and Criteria for Installing and Sunsetting TxDOT ITS Equipment, by Kevin Balke, **0-6773-1**, January 21, 2014.

PROJECT SUMMARY REPORTS AND PRODUCTS

Briefing Paper: Toward a Best Practice Model for Managed Lanes in Texas, by Ginger Goodin, **0-6688-P1**, September 18, 2013.

Evaluate Binder and Mixture Aging for Warm Mix Asphalt, by Charles Glover, **0-6613-S**, January 7, 2014.

Evaluating the Effectiveness of Performance Based Pavement Marking Maintenance Contracts in Texas, by Adam Pike, **0-6705-S**, January 27, 2014.

Evaluating the Need for Surface Treatments to Reduce Crash Frequency on Horizontal Curves, by Mike Pratt, **0-6714-S**, January 13, 2014.

Evaluation of Generic and Branded Herbicides, by Jett McFalls, **0-6733-S**, December 9, 2013.

Fleet Equipment Performance Measurement Preventive Maintenance Model (PM2), by Tara Ramani, **0-6626-S**, December 9, 2013.

Implementation of a Texas Mechanistic-Empirical Thickness Design System (TxME), by Fujie Zhou, **0-6622-S**, February 10, 2014.

ITS Strategic Plan for Texas, by Ed Seymour, **0-6672-S**, January 2, 2014.

Managing the Travel Model Process: Small and Medium-Sized MPOs, by Karen Lorenzini, **0-6691-P2**, September 12, 2013.

Texas-Specific Drive Cycles for Using with EPA's MOVES Model, by Reza Farzaneh, **0-6629-S**, December 13, 2013.

Texas-Specific Drive Cycles for Using with EPA's MOVES Model: Database, by Reza Farzaneh, **0-6629-P1**, November 12, 2013.

Texas Traffic Thermostat Marketing Package, by Tina Geiselbrecht, **5-6396-01-P2**, November 21, 2013.

Texas Traffic Thermostat Software Tool, by Yatinkumar Rathod, **5-6396-01-P1**, November 21, 2013.

Toward a Best Practice Model for Managed Lanes in Texas, by Ginger Goodin, **0-6688-P2**, September 17, 2013.

Warrants and Sunset Requirements for ITS Equipment Installations on Texas Highways, by Kevin Balke, **0-6773-S**, January 15, 2014.

